

The Dynamics of Prosthetics Care Continuum for Persons with Amputation

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Problem Identification

- WHO estimates that ~0.5% of any given population require prosthetics and orthotics services¹
- Without timely and accessible prosthetic interventions, persons with major lower-limb amputation experience a loss of mobility and independence, lower quality of life, and decreased life expectancy²⁻³
- Although lacking definitive data, WHO approximates that only 5 to 15% of PwA have access to prostheses¹
- Even for those with prosthesis, about 50% abandon it due to poor outcomes, including discomfort and pain³⁻⁵
- Given such outcomes, it is pertinent to investigate the underlying system of care for PwA and prosthetics service provision

Dynamic Hypothesis

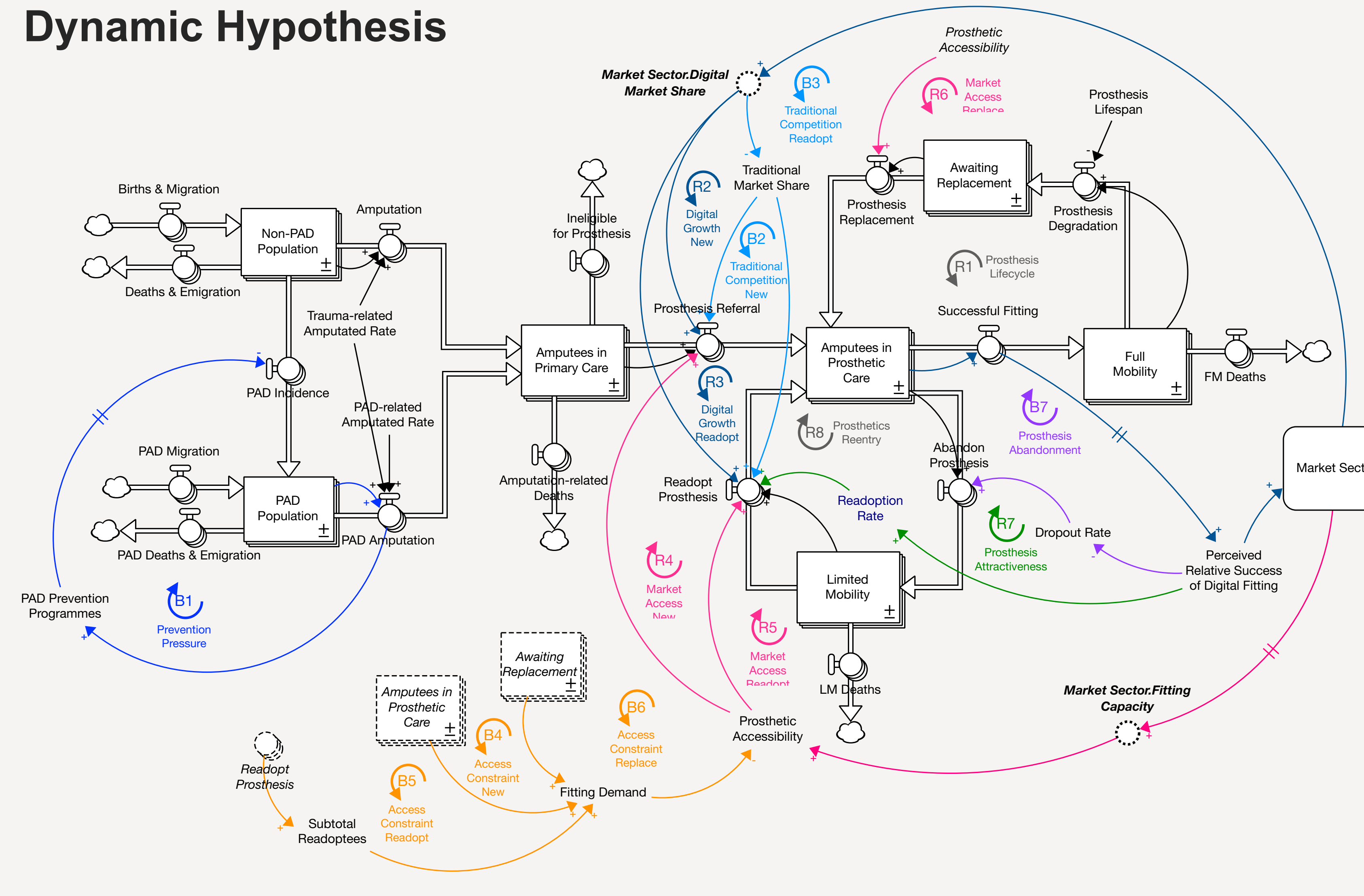


Figure 1: Top-level model conceptualisation of prosthetics care continuum

Research Objectives

- Identify high-leverage policies capable of alleviating the barriers to access across PwA patient journey
- Enhance the health and economic outcomes from prosthetics care
- Scenario analysis and policy testing using a system dynamics simulation model
 - Specifically, it will test the efficacy of digital-based prosthetics provision vs. traditional plaster-casting manufacturing

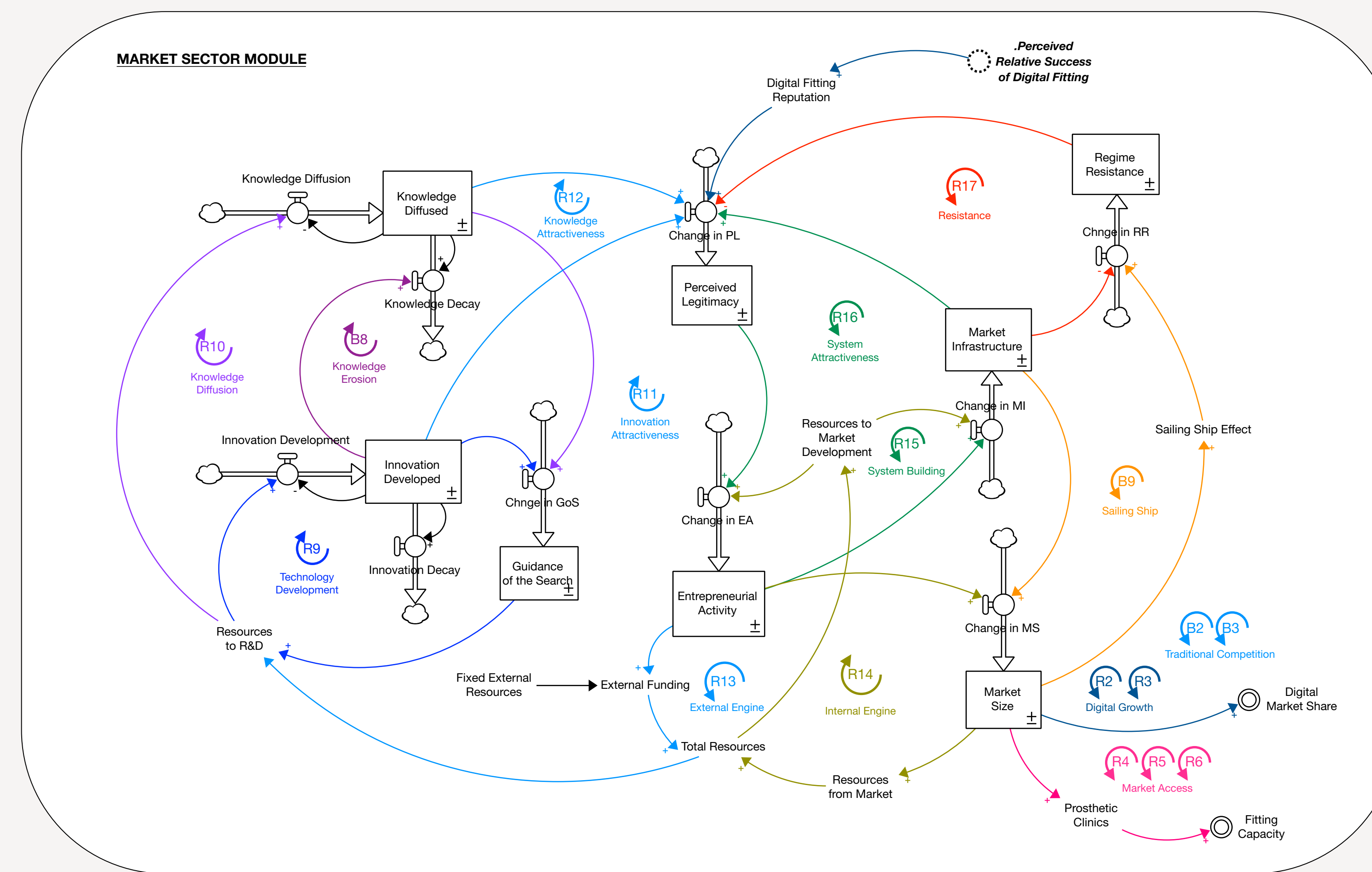


Figure 2: Market Sector partially adapted from Walrave & Raven⁶

Preliminary Results

- Model is calibrated to United Kingdom based on secondary data sources, existing literature and expert opinion
- Graphs below show the comparative results for two scenarios: (1) optimistic scenario where digital market share increases to 60% by 2050, and (2) pessimistic scenario where digital market share fails to take-off

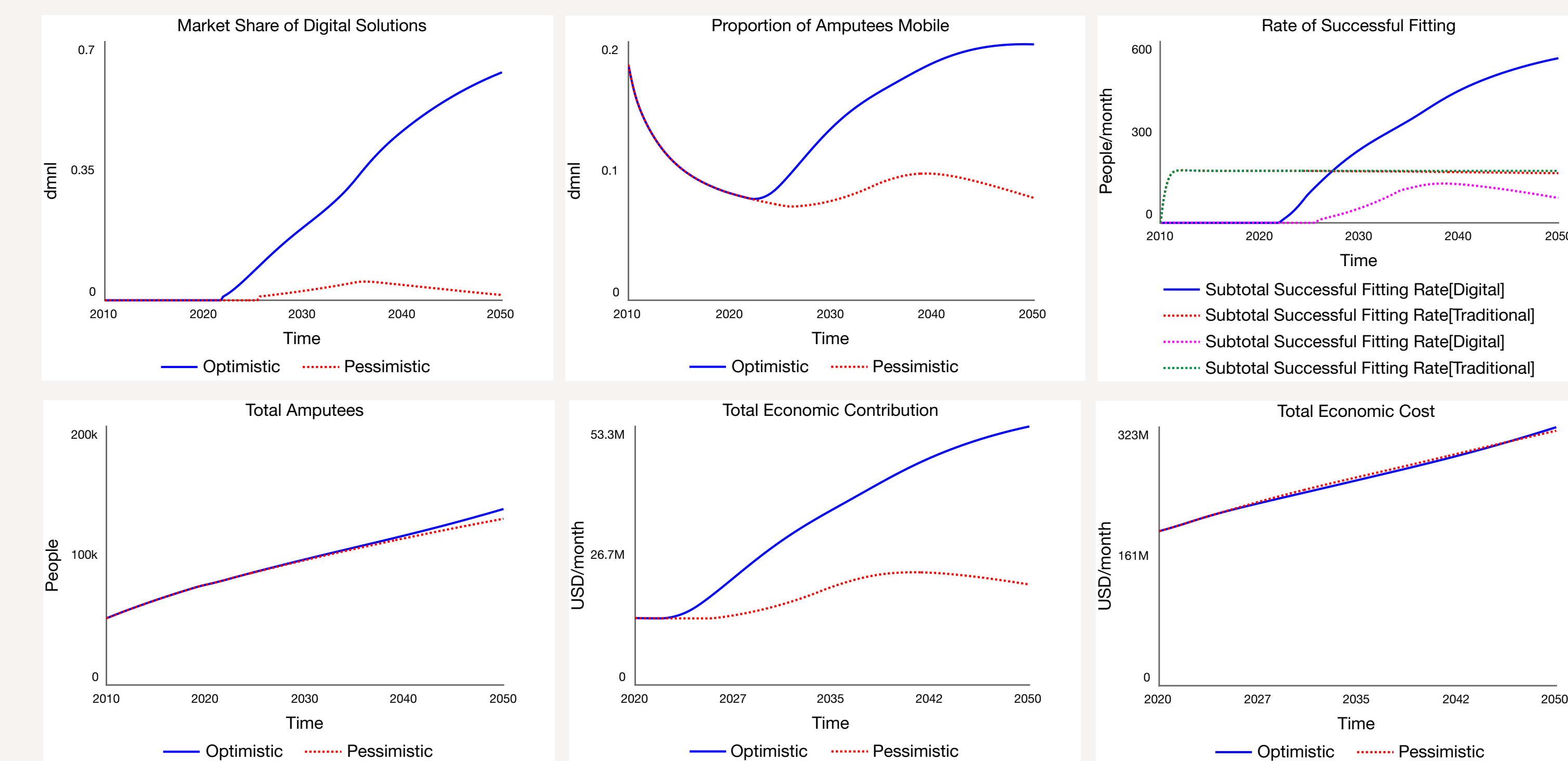


Figure 3: Preliminary results of some key indicators

- **Key Finding:** In general, with sufficient funding for digital market formation, we can expect to double the rate of mobility amongst PwA, and significantly increase the health economic benefits accrued from expanding access to prostheses

Status of Work

- Research is in its model testing and analysis phase
- The research is being conducted in collaboration with ProsFit Technologies and the Toyota Mobility Foundation – who provide data and other relevant inputs for model conceptualisation and scenario analysis

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