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OBJECTIVES

Public health is a discipline that aims to protect and improve the general population’s health by decreasing health inequalities and assessing the needs of vulnerable groups. Thus, it differs from clinical health, which focuses on a single patient. Public health is a multidimensional subject that includes notions explored through simulation models such as epidemiology, community health, health economics, environmental impact on health, evaluation of health institutions and of the healthcare system. So-called ”public health” simulation models focus on estimating the expected benefits at either population or healthcare system level and can be distinguished from those used for medico-economic evaluation of healthcare products which aim to produce efficiency results that enable interventions to be prioritised over another.

Our objective was to evaluate the use of PH models (PHM) in assessing PH-related outcomes in France, including indication, methodology, developers, and decision-making implications.

Microsimulations and DES (**Figure 2**) were frequently employed (31%), particularly for topics involving individual behaviour and choices like COVID-19, oncology screening, and nutrition. Markov models were commonly used and applied across various subjects.

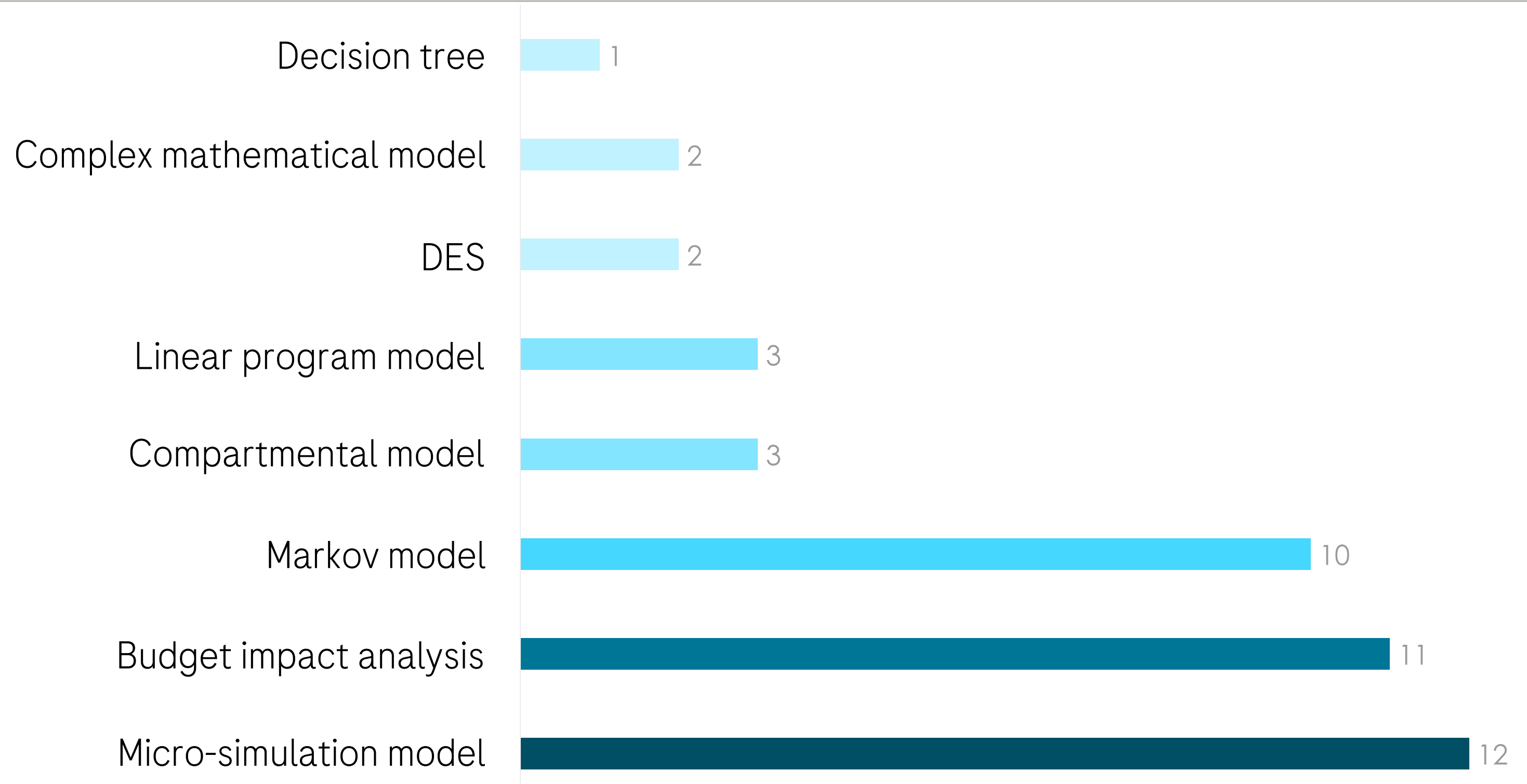




Figure 2 : Models types identified

METHODS

We conducted a systematic review of PHM in France, using PubMed/MEDLINE (since 2015) and ISPOR database. We also reviewed institutional websites, including French HTA, parliamentary, and national research organisations. Keywords included different types of models (e.g.,Markov model, discrete-event simulation [DES], microsimulation). RCT and CEM assessing drugs were excluded, while articles simulating PH initiatives in France were included.

-  **Microsimulation** : focus on individual behaviours related to COVID, oncology screening, nutrition and the environments
-  **BIM** : focus mainly on biosimilar subjects and aim to assess resources used and expenditure avoided.
- Markov models** : widely used for a variety of topics

Only 3 PHMs were identified from French agencies, conducted by Santé Publique France (SPF) and the French National Cancer Institute (INCa). Except fort CEA, only 13 articles were identified on HAS website, none of which presented original models.

RESULTS

286 publications were identified, and 44 (**Figure 1**) were retained after screening. Infectiology and vaccination models accounted for 30% of the results, with a significant portion focusing on COVID-19 (14%). Cancer screening (14%), nutrition (11%), organisational measures and care pathways (9%) were also commonly studied.

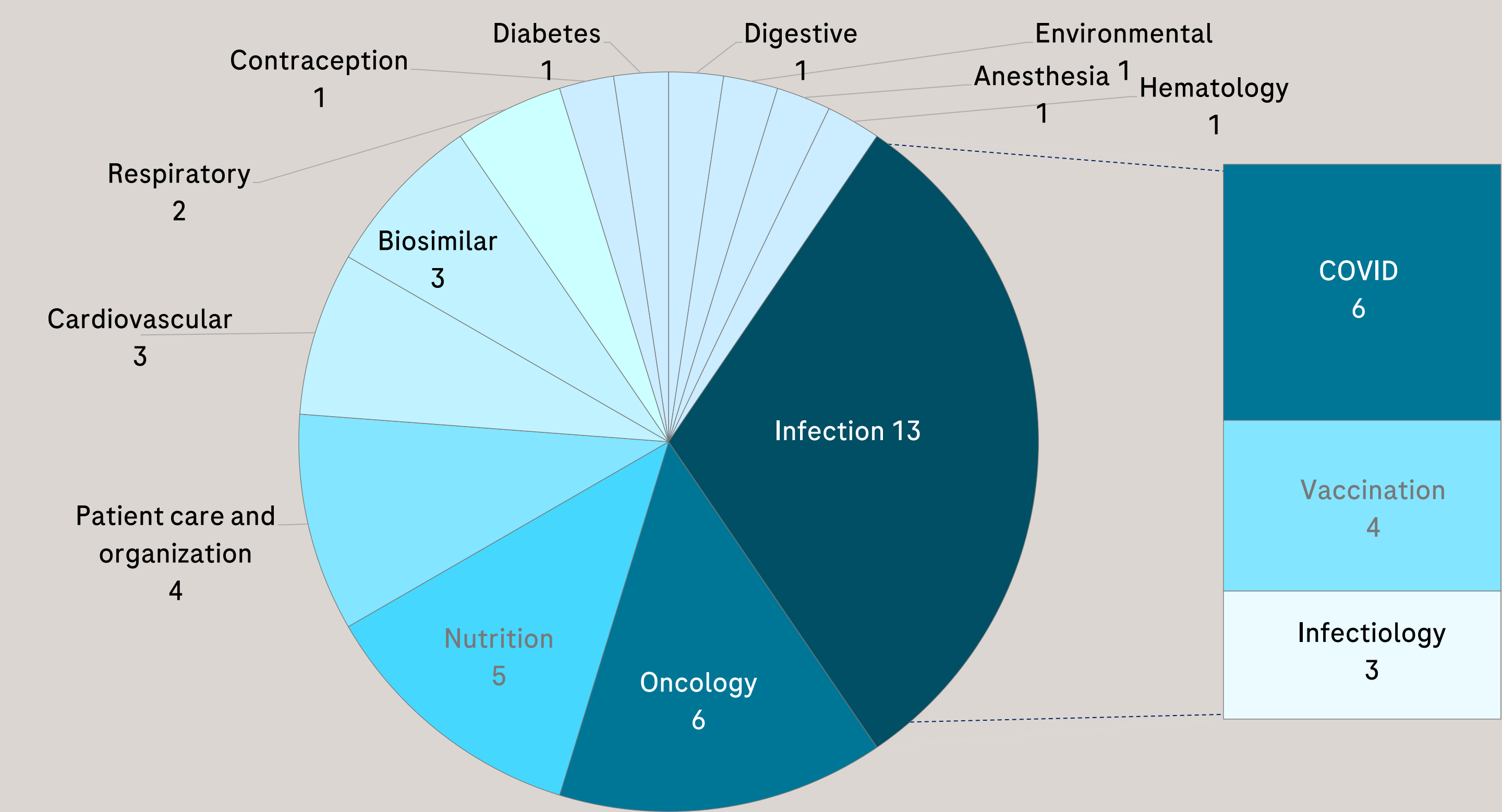


Figure 1 : Therapeutic area distribution


CONCLUSIONS

This review highlights the growing interest in France in the production of public health models to support communication on the value of healthcare products, both via scientific communications and through MSLs and local access teams, in response to increasing demand for information and involvement of clinicians in assessing the overall cost and impact of therapies.

PHMs help to highlight the effects of therapeutic innovations that cannot be assessed through clinical trials. PH modelling is an innovative approach that can generate a large amount of data, according to a wide range of evaluation criteria, without the constraints of medico-economic evaluation, and represents an opportunity to complete or reinforce pharmaceutical companies' knowledge and involvement within the relevant healthcare sectors.

MAIN FINDINGS

This review shows the increasing trend of PHM since the COVID-19 crisis, confirmed at ISPOR Europe 2022, with France presenting the most PHM studies. It reflects public authorities’ support for evaluating health promotion and prevention programs, considering various aspects. PHMs offer a comprehensive approach for manufacturers to assess and predict the value of health innovations, benefiting practitioners, authorities, and encouraging pharmaceutical companies’ involvement in healthcare.

 Four areas in which PHM have been most frequently developed in the French context: - Vaccination and infection, Oncology, Nutrition, Organization of care pathways.