



Joint Action Health Workforce
Planning and Forecasting

The Portuguese Pilot Project «Forecasting Model Structure»



JOINT ACTION HEALTH WORKFORCE
Brussels, 24, June 2015

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Agenda

«Forecasting Model Structure»

1. Pilot Project & Global Strategy
2. Forecasting Model Premises
3. Forecasting Model Components
4. Issues and Open Questions
5. Pilot Project Implementation Plan

1. Pilot Project & Global Strategy

I. Strategic Goals:

- Provide to the system the necessary HWF to satisfy the health care demand/needs.
 - ❑ (Ambition)
- Ensure greater efficiency of public resources, and contribute to system sustainability.
 - ❑ (Ambition)

1. Pilot Project & Global Strategy

II. Specific Objective - Pilot Project

- Anticipate imbalances (Supply Vs Demand) in the medium and long term
 - ❑ (framework of JA - Doctors and Nurses)
 - In case of imbalances, prepare and propose measures to the political level
 - Provide the Ministry of Education information about *numerus clausus* needed for the training of health professionals

1. Pilot Project & Global Strategy

III. Operational Objectives - Pilot Project

- Stocks characterization
 - ❑ (Doctors, Nurses, Dentists & Pharmacists)
- Imbalances characterization
 - ❑ (Doctors & Nurses)
- Human resources' stock projections for a specific time frame
 - ❑ (Doctors & Nurses)
- Calculation and forecast healthcare demand/needs
 - ❑ (activity, extra-time, etc.)

1. Pilot Project & Global Strategy

IV. Pilot Project & National Inventory of HWF

- National Inventory of the Health Professionals (NIHWF) for public, private and social sectors, has been approved by Parliament as a whole and is now being under analysis of the speciality commission.
- <http://www.parlamento.pt/ActividadeParlamentar/Paginas/DetalhelIniciativa.aspx?BID=39356>

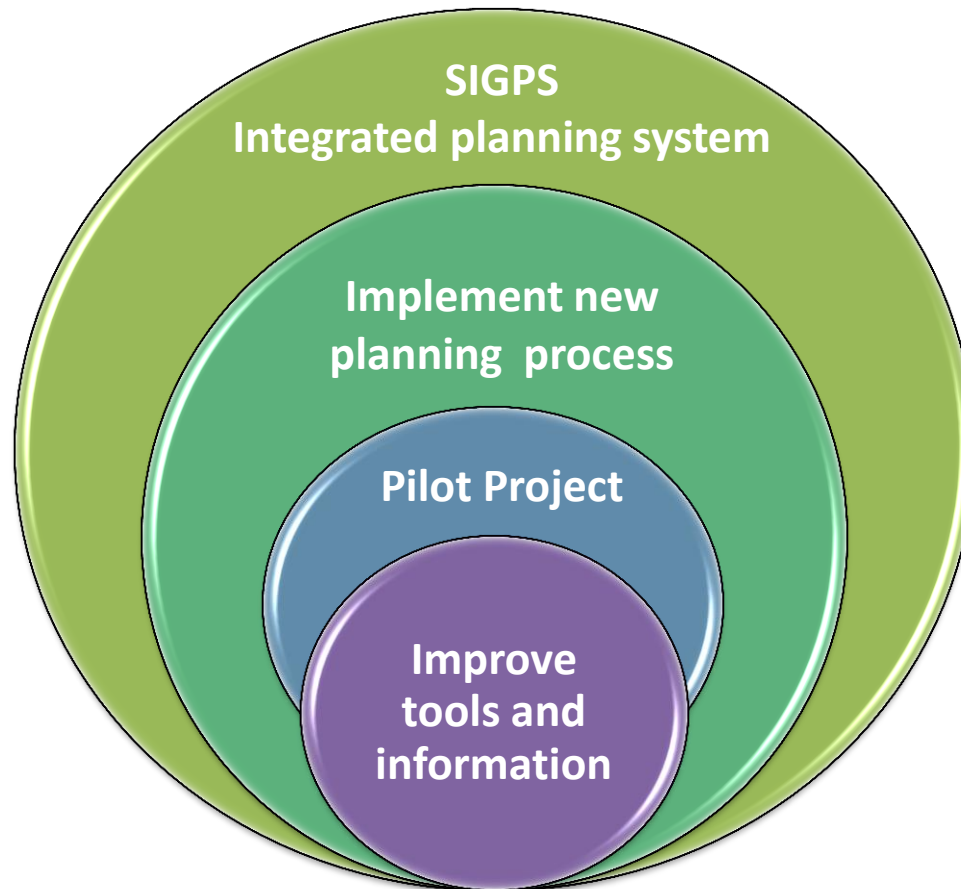
1. Pilot Project & Global Strategy

IV. Pilot Project & Global Strategy to improve HWF management

- As previously stated, the goals for the pilot project have a shorter range than those of ACSS to implement a better planning system, since it is clear that is not possible to achieve such a wide range of results and outputs within the period provided for the implementation of pilot.

1. Pilot Project & Global Strategy

IV. Pilot Project & Global Strategy to improve HWF management



2. Forecasting Model Premises

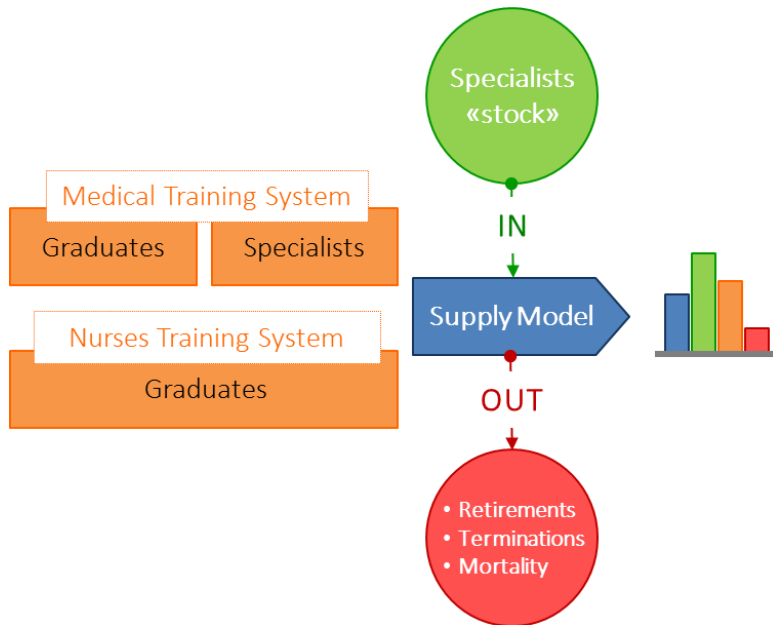
- i. The model's design follows the recommendations of the Handbook on HWF Planning methodologies across EU countries;
- ii. The model is based upon both the supply side and the demand/needs side;
- iii. It includes doctors and nurses (although the methodology is the same for both professions, the models are not integrated);
- iv. In the first stage, the pilot project includes only the professionals working on the public sector (for which there is reliable data);
- v. The next stage of the project (October 2015), is the inclusion of medical doctors and nurses working in the private health sector, for which the data collection from professional associations is still in analysis;

2. Forecasting Model Premises

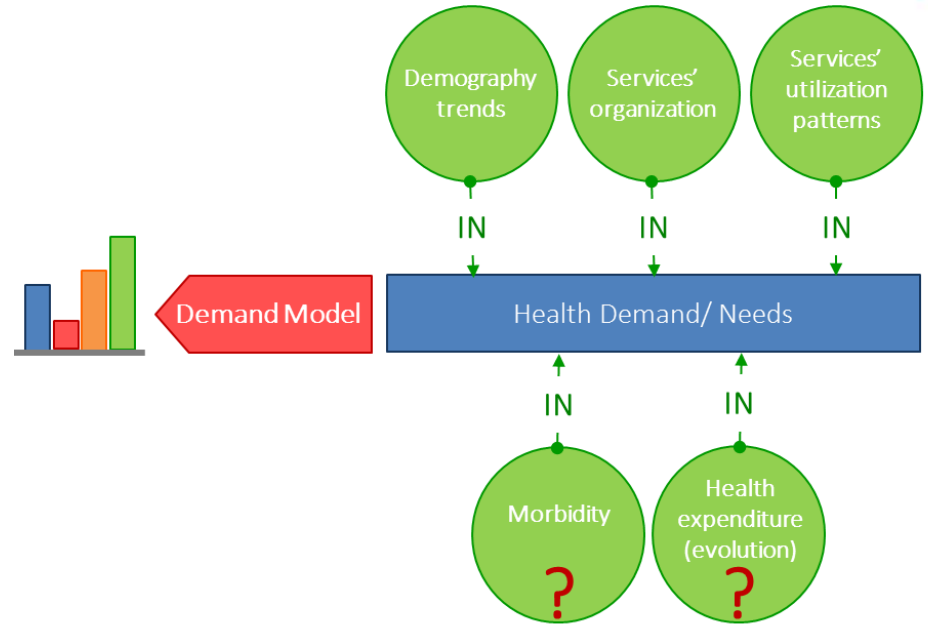
- vi. The Portuguese pilot includes the stock characterization of dentists and pharmacists (but not a forecasting model for these professionals);
- vii. The data included in the model are annually updated;
- viii. The model uses several statistical methods, namely time series analysis, and linear and non linear regression analysis models;
- ix. The model will generate a baseline scenario with 2 alternatives (typically, one considering an increase, and other a decrease or maintenance of health professionals).

3. Forecasting Model Components

Supply Side



Demand Side

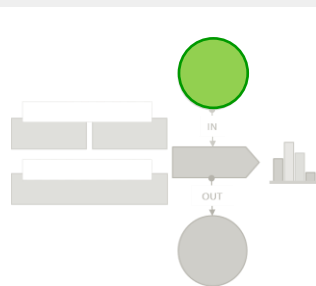


3. The Forecasting Model Components

I. «Stock» characterization

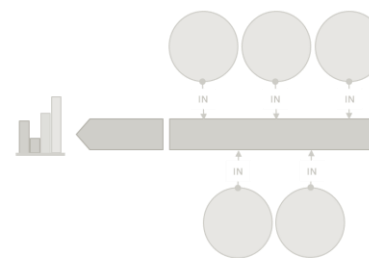
Public sector doctors database

- Information source:
ACSS - list of doctors in December 31 (since 2010 to 2014), containing individual information of all the doctors in the NHS on gender, date of birth, nationality, working place, working schedule, employment contract, professional category and medical speciality.
- Methodology: Headcounts and FTE; Time series analysis



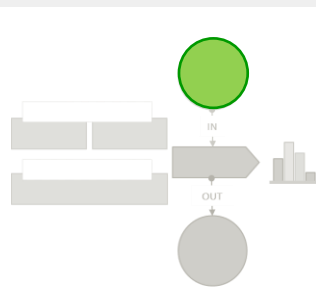
Public sector nurses database

- Information source:
ACSS - list of nurses in December 31 (since 2010 to 2014), containing individual information on gender, date of birth, nationality, working place, working schedule, professional category and employment contract.
- Methodology: Headcounts and FTE; Time series analysis



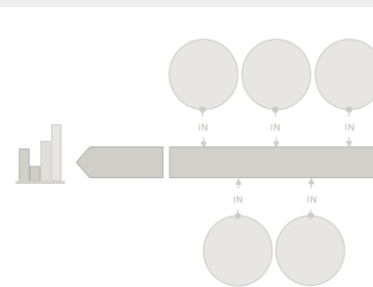
3. The Forecasting Model Components

I. «Stock» characterization



Private sector doctors database

- Information source:
Professional Order registers of doctors licensed to practice containing aggregated information on gender, age group, and place of work
GEP - statistic source containing aggregated information on nr. of professionals and type of contract (full time or part time).
- Methodology: Headcounts; Time series analysis



Private sector nurses database

- Information source:
Professional Order registers of active nurses containing aggregated information on gender, age group, and place of work
GEP- statistic source containing aggregated information on nr. of professionals and type of contract (full time or part time).
- Methodology: Headcounts; Time series analysis

3. Forecasting Model Components

II. Supply side - Inflow



Graduates in Portuguese medical schools:

- Information source:
Directorate General of Education and Science
- Methodology:
School Success Index calculation and projection into the future (with data since 1995)

Graduates in foreigner medical schools:

- Information source:
ACSS - Medical internship candidates
- Methodology: Average rate based on historical data

Graduates in Portuguese nursing schools:

- Information source:
Directorate General of Education and Science
- Methodology:
School Success Index calculation and projection into the future (with data since 1995)

3. Forecasting Model Components

II. Supply side - Inflow

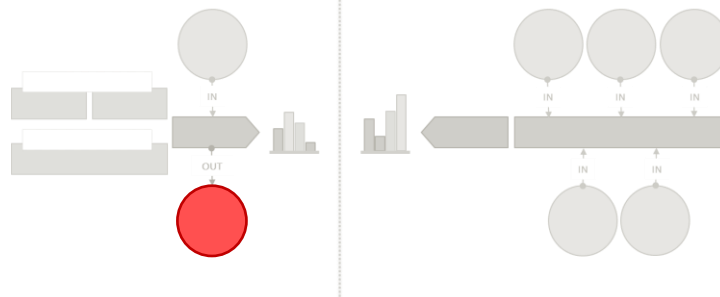


Specialist doctors (per medical speciality)

- Information source:
ACSS - List of placed candidates in the medical internship (in each of the 47 medical specialities)
- Methodology:
«Success rate» calculation and projection into the future (for each medical speciality)

3. Forecasting Model Components

II. Supply side - Outflow

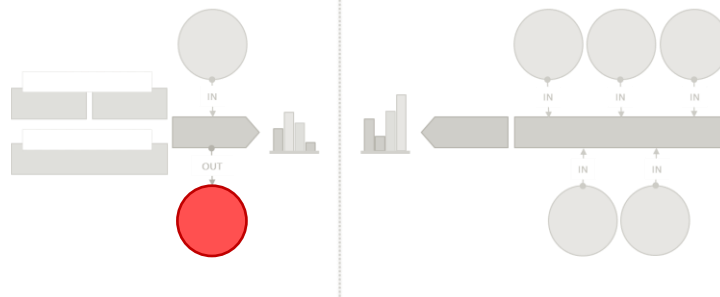


Retirement of doctors and nurses:

- Information source:
ACSS - list of doctors and nurses in December 31 (since 2010) and annual list of professionals leaving public administration (per motive)
- Methodology in the public sector:
Application of minimum legal age for retirement rule, adjusted with a correction factor (based on historical data per profession and, for doctors, per medical speciality).
- Methodology in the private sector:
Assumption of a conventional age for retirement?

3. Forecasting Model Components

II. Supply side - Outflow

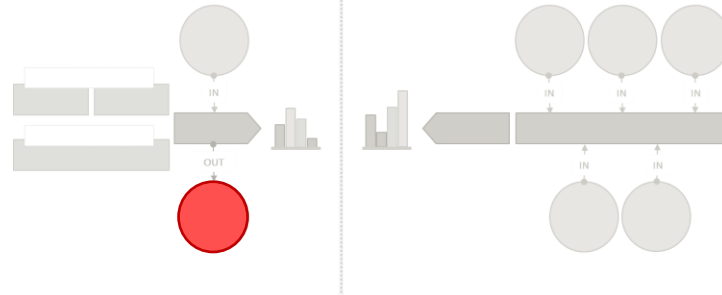


Employment Contract Terminations - Doctors and nurses (public sector):

- Information source:
ACSS - list of doctors and nurses in December 31 (since 2010) and annual list of professionals leaving public administration (per motive).
- Methodology:
Historical data on employment contracts terminations analysis and «trend projection», per medical speciality

3. Forecasting Model Components

II. Supply side - Outflow

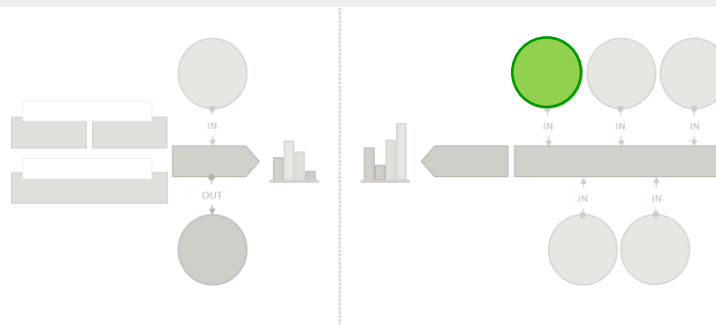


Mortality rate of doctors and nurses:

- Information source:
INE (Portuguese national authority in statistics) - mortality rates
- Methodology:
Application of INE mortality rate for active age population (adjusted by doctors and nurses' age)

3. Forecasting Model Components

III. Demand side

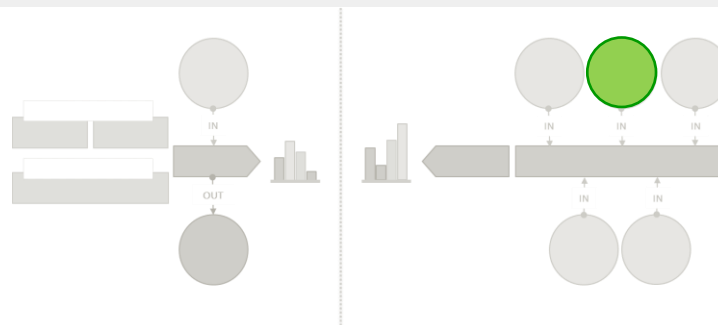


Demographic trends:

- **Information source:**
 - INE (Portuguese national authority in statistics) - demographic forecasts;
 - Health Resources Stock (ACSS);
 - Global Optimal ratios assumed by International Authorities
- **Methodology:**
 - Estimate the needed number of doctors and nurses (using «optimal ratios»), based on future changes in population size and structure

3. Forecasting Model Components

III. Demand side

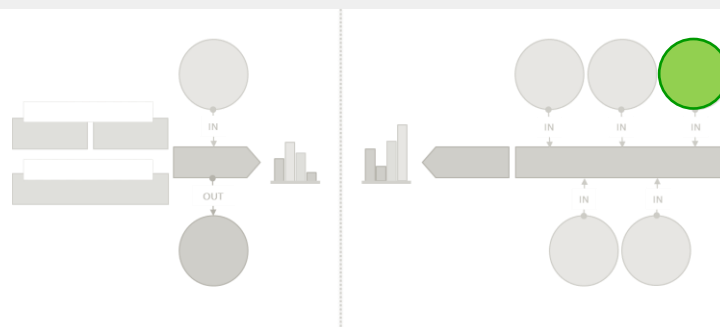


Health care delivery organization

- **Information source:**
Portuguese legislation and reforms being implemented
- **Methodology:**
Estimate the needed number of doctors and nurses, based on the current legislation on the reforms that are being carried out
(Ex: Recent Primary Care legislation establishes that each doctor of PC should be responsible for a list of 1.900 inhabitants, the goal being to give each citizen access to a family doctor)

3. Forecasting Model Components

III. Demand side



Services' utilization patterns:

- Information source:

ACSS; DGS (Directorate-General of Health), ...

- Methodology:

Trends on health services utilization, based on recent patterns of hospitalization, surgical procedures and primary care consumption (by gender and age), and project them in the future population to determine the required number of doctors and nurses

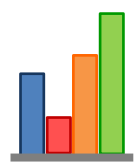
3. Forecasting Model Components



Supply Model



Demand Model



The combined analysis will reveal the imbalances between the supply side and the demand side, highlighting areas with deficits or surpluses.

4. Issues and Open Questions

1. What do you consider to be an adequate margin of surplus in medical and nursing training in relation to a system needs? Are there any international recommendations?
2. What actions can be taken to reduce the gap between supply and demand? How can we estimate and measure the impact of these actions? To measure the impact of these actions which variables have to be considered in the model?
3. Overtime should be considered to calculate FTE?
4. How can we establish a methodology to estimate all the dimensions of the stock characterization, including the private sector (FTE), for which we have only partial and aggregated data?

4. Issues and Open Questions

5. Considering that there is no available data relating to the number of schools / courses / numerus clausus for the future, the number of graduates will be constant in the model. It is reasonable or should be estimated potential variables that can influence this behavior?
6. How can we estimate the effect of early retirement?
7. Considering we can only know the retirement age in the public sector, do you consider acceptable the methodology of assuming an agreed age (70 years) as the limit age for practicing doctors in the private sector? And for nurses?

4. Issues and Open Questions

8. There is a recommended nurses' ratio for a country, or for the hospital sector, in order to esteem the current imbalance of nurses in the Portuguese health system? For primary care our legislation establishes a population/nurse ratio (1.550 inhabitants for each primary care nurse). Or is it admissible to consider international comparisons between countries? Or related ratios between doctors and nurses? Are hospital beds still considered a valid item for estimate nursing staff in the hospital sector? If so, what is the recommended ratio? What methodology do you recommend for this item?

4. Issues and Open Questions

9. Since our data model considers doctors by medical speciality (the 47 whose training is committed to Portuguese central administration) and in order to determine current imbalances we need to calculate those imbalances for each speciality. Are there recommendations to estimate the adequate number of doctors or population ratio for medical speciality? Are there other methodologies that can be applied?

10. We think that in the particular situation of Portugal, the inclusion of the economic and financial constraints in healthcare professional future demands in the forecasting model are important. What methodologies are available? Is it enough to establish a correlation between the projected GDP evolution and health expenditure in health professionals?

5. Pilot Project Implementation Plan

June 2015

1. EXPERT MEETING

- (Doctors, Nurses, Dentists & Pharmacists)

June/July 2015

2. DATA COLLECTION (public sector)

3. DEFINITION OF THE PLANNING GOALS & PILOT TARGETS

4. DEFINITION OF THE FORECASTING MODEL

5. CREATE DEFINITIONS OF IMBALANCES

October 2015

6. DATA COLLECTION (private sector)

March 2016

7. REPORT TO WP3 & INTEGRATING FINDINGS WITHIN WP5

**HANDBOOK ON
HEALTH WORKFORCE
PLANNING
METHODOLOGIES
ACROSS EU
COUNTRIES**

**LESSONS TO LEARN
&
TESTING**

Thank you!