

WP5

Report on the Pilot Project in Italy



Version	Last updated	Owners
Version 01	04/04/2016	Ministry of Health - Italy.
Version 02	24/05/2016	Ministry of Health - Italy.

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The Joint Action Health Workforce Planning and Forecasting

The Joint Action on Health Workforce Planning and Forecasting is a three-year programme running from April 2013 to June 2016, bringing together partners representing countries, regions and interest groups from across Europe and beyond, but also non EU countries and international organisations. It is supported by the European Commission in the framework of the European Action Plan for the Health Workforce, which highlights the risk of critical shortages of health professionals in the near future.

The main objective of the Joint Action Health Workforce Planning and Forecasting (JA EUHWF) is to provide a platform for collaboration and exchange between partners, to better prepare Europe's future health workforce. The Joint Action aims at improving the capacity for health workforce planning and forecasting, by supporting the collaboration and exchange between Member States and by providing state of the art knowledge on quantitative and qualitative planning. By participating in the Joint Action, competent national authorities and partners are expected to increase their knowledge, improve their tools and succeed in achieving a higher effectiveness in workforce planning processes. The outcomes of the Joint Action, among other things, should contribute to the development of sufficient health professionals, contribute to minimise the gaps between the needs and the supply of health professionals equipped by the right skills, through the forecast of the impact of healthcare engineering policies and of the re-design of an education capacity for the future.

This document contributes to achieving this aim by describing how the good practices described in the Handbook on Health Workforce Planning and Forecasting have been implemented in Italy through a Pilot Project.

This document has been approved by the Executive Board of the Joint Action on Health Workforce Planning & Forecasting on [date].

Contributors and Acknowledgements

The preparation of this deliverable was led by Annalisa Malgieri (Ministry of Health - Italy) and Paolo Michelutti (AGENAS - Italy).

In addition, we would like to highlight the contributions that have been invaluable in preparing the materials reflected in this document. Within this particular work we are grateful for being able to count on the knowledge and expertise of associated and collaborating partners participating on this specific document.

Our sincere gratitude goes to the following partners who directly contributed to the realization of the Pilot Project in Italy:

Elena Kostner - Provincia Autonoma di Bolzano
Franca Bellotti - Provincia Autonoma di Trento
Luigi Franciotti - Regione Abruzzo
Maria Carmela Panetta - Regione Basilicata
Vito Mancusi - Regione Basilicata
Raffaele Visconte - Regione Basilicata
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Angelo Ricciuto - Regione Molise
Loredana Mantuano - Regione Piemonte
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Mervi Jokinen - RCM

We would like to extend our thanks to all partners engaged in the Joint Action and we would like to highlight Michel van Hoegaerden, Tina Jacob, Damien Rebella and Maria D'Eugenio (Belgian Federal Public Service of Health, Food Chain Safety and Environment; coordinator of the Joint Action) for their leadership and support.

Finally, the financial support from the European Commission is gratefully acknowledged and appreciated. In particular we would like to thank Caroline Hager, Isabelle Deve from the European Commission DG Health and Consumers, and Jurgita Kaminskaite from the Consumers, Health and Food Executive Agency (CHAFAEA).

Glossary

Term	Definition
Affordability	Keeping the costs of healthcare services within the threshold of what is considered sustainable by the population, national government and/or EU definition.
Age groups	A division of the population according to age, in a pre-determined range, used to distinguish differences among populations. Examples: 0-4; 5-9; 10-14; ... 60-64; 65+.
Anticipation	Thinking ahead of an occurrence in order to determine how to handle it, or how to stop it from happening.
Big picture challenge	A fundamental challenge that policy makers are facing across the (healthcare) system. Meeting a big picture challenge requires focused action at the highest level across the health, social care, education and employment sector.
Circular mobility	A form of migration that is managed in a way allowing some degree of legal mobility back and forth between two countries
Cluster	A set of system factors and driving forces, similar to each other and linked through cause and effect relationships, which describe a key focal issue of concern.
Demand (of HWF)	Number of health professionals required to fill in open vacancies. It should ideally be expressed both headcount and in full-time equivalent (FTE), depending on the forecasting purpose.
Driver / Driving force	A factor that causes or might cause changes, measurable movements or trends in the HWF of a health care system.
Events	Occurrences that can impact the healthcare system.
Emigration (outflow)	The act of leaving one's current country, in this context with the intention to practice a profession abroad.
Factors	A circumstance, fact or influence that contributes to a result. Factors are linked to each other through cause and effect relationships. A change to a factor often will influence one or more other factors in the system.
Full-time equivalent (FTE)	Unit used to measure employed persons to make them comparable, as they work a different number of hours per week, in different sectors. The unit is obtained by comparing an employee's average number of hours worked to the average number of hours of a full-time worker of same kind. A full-time worker is therefore counted as one FTE, while a part-time worker gets a score in proportion to the hours he or she works or studies. For example, a part-time worker employed for 24 hours a week where full-time work consists of 48 hours, is counted as 0.5 FTE.
Healthcare production	The output of healthcare services that can be produced from the given combination of human and non-human resources.
Health professional	Individuals working in the provision of health services, whether as individual practitioner or as an employee of a health institution or programme. Health professionals are often defined by law through their set of activities reserved under provision of an agreement based on education pre-requisites or equivalent.
Health workforce	The overarching term for the body of health professionals (trained and care workers directly involved in the delivery of care) working in a healthcare system.
Horizon scanning	A systematic examination of information to identify potential threats, risks, emerging

	issues and opportunities allowing for better preparedness.
Imbalances (major)	The uneven spread of the active health workforce across countries, regions or professions, resulting in <i>underserved/overserved areas</i> .
Indicators (key planning)	A quantitative or qualitative measure of a system that can be used to determine the degree of adherence to a certain standard or benchmark
Job retention	The various practices and policies which enable healthcare professionals to chose to stay in their countries to practise for a longer period of time, or to stay in their practice, or even to keep working full time.
Labour force	The total number of people employed or seeking employment in a country or region.
Megatrend	A large, social, economic, political, environmental or technological change that is slow to form and difficult to stop. Once in place, megatrends influence a wide range of activities, processes and perceptions, both in government and in society, possibly for decades. For example, the ageing population megatrend is composed of trends in birth rate, death rate, quality of healthcare, lifestyle, etc.
Migration (inflow)	The act of (either temporarily or permanently) moving into a country, in this context in order to practice a profession.
Minimum data set (MDS) for Health Workforce Planning	A widely agreed upon set of terms and definitions constituting a core of data acquired for reporting and assessing key aspects of health system delivery
Planning process	A process of defining health workforce planning perspectives, based on needs assessment, identification of resources, establishing the priority of realistic and feasible goals, as well as on administrative measures planning to achieve these goals
Planning system	Strategies that address the adequacy of the supply and distribution of the healthcare workforce in relation to policy objectives and the consequential demand for health labour force
Population	A group of individuals that share one or more characteristics from which data can be gathered and analysed.
Population healthcare needs	The requirements necessary to achieve physical, cognitive, emotional, and social wellbeing, at the individual, family, community and population level of care and services.
Professions (withing JA scope only)	The professional qualifications of physicians, nurses, midwives, pharmacists, and dentists, included in the Directive 2005/36/EC of the European Parliament and of the Council.
Qualitative information	Information collected using qualitative methodologies to identify and describe key factors in the health workforce system which are likely to affect the supply and demand of workforces.
Qualitative methodologies	Methods used to gather qualitative information on key factors which are likely to affect the supply and demand of health workforces through techniques such as interviews, document analysis, or focus groups. Includes methods to quantify uncertain parameters for forecasting models.
Reliance on foreign health workforce	The share of foreign (trained & born) health professionals within a country's health workforce in a given year, expressed as a percentage of the stock of the workforce

Retirement	Period or life stage of a health care worker following termination of, and withdrawal from the healthcare system. It is expressed in the number of healthcare professionals retiring from the labour market.
Scenario	A description of a sequence of events, based on certain assumptions. Scenarios are used for estimating the likely effects of one or more factors, and are an integral part of situation analysis and long-term planning.
Shortage	The negative gap between supply and demand.
Stakeholder	Groups or individuals that have an interest in the organisation and delivery of healthcare, and who either deliver, sponsor, or benefit from health care.
Stock (of HWF)	Number of available practising and non- practicing health professionals in a country, recorded in a registry or database. It should ideally be expressed in headcount and in full-time equivalent (FTE)
Supply (of HWF)	Number of newly graduated health professionals available to fill in open vacancies. It can be expressed in headcount or in full-time equivalent (FTE)
System	A network of interdependent components that work together to try to accomplish the aim of rendering medical and other health services to individuals.
Threat/opportunity	A future event or system state which may occur due to changes in the system. The impact to the system may be viewed as detrimental (a threat) or beneficial (an opportunity); or a combination of both.
Training	The process by which a person acquires the necessary skills and competencies for delivering healthcare, possibly through post-graduate training programmes (in the framework of Continuous Professional Development) in addition to graduate training programmes
Trend	An emerging pattern of change, likely to impact a system.
Universal coverage	A healthcare system that provides effective, high quality and free of expense preventive, curative, rehabilitative and palliative health services to all citizens, regardless of socio-economic status, and without discrimination
Underserved areas	A region or area that has a relative or absolute deficiency of medical personnel or healthcare resources. This deficiency could present itself in shortages of professionals/specialities/skills required to deliver health services
Variables	A characteristic, number or quantity that can increase or decrease over time, or take various values in different situations.
Weak signal	Barely observable trends or events that indicate that an idea, threat or opportunity is going to arise. Sometimes referred to as <i>early signals</i> .
“Wild card”	A situation or event with a low probability of occurrence, but with a very high impact in a system. Sometimes they can be announced by a weak signal.
Healthcare Workforce planning	Strategies that address the adequacy of the supply and distribution of the health workforce, according to policy objectives and the consequential demand for health labour (National Public Health Partnership, 2002).
Workforce forecasting	Estimating the required health workforce to meet future health service requirements and the development of strategies to meet those requirements (Roberfroid et al, 2009; Stordeur and Leonard, 2010).

Executive summary

The Italian Ministry of Health, supported by the Italian Agency for the Regional Health Services (Age.Na.S.), managed a 16-months' Pilot Project with the scope to improve the Italian planning system, both at regional and national level, for the following 5 professions: medical doctors, nurses, dentists, midwives and pharmacists. The pilot project was part of the activities developed by the Italian Ministry of Health as leader of the Workpackage 5 in the framework of the Joint Action on Health Workforce Planning and Forecasting (<http://healthworkforce.eu/work-package-5/>).

Starting from the suggestions contained in the “Handbook of health workforce planning methodologies across EU Countries” delivered by the Workpackage 5, and taking account the Italian health workforce planning system background and context, the Ministry of Health together with Age.Na.S. improve the planning system with regard to:

- Data collection and data analysis on the current supply and demand for the five professions in focus;
- Projection of the health workforce supply and estimation of the health workforce demand in the long term (namely out to 2040);
- Involvement of the regional and national stakeholders inserting in their political agenda the strategic relevance of the Joint Action on Health Workforce Planning and Forecasting and its inherent issues.

The pilot project as such involved about 150 people from 50 different organizations, both nationally and regionally. In 16 months of work, about 100 meetings and conferences were organised.

As main results, a forecasting mathematical tool was developed for the five aforementioned professions. The tool allows to project the current supply in the next 25 years in comparison with the estimated demand. 19 regions out of 21 used the new tool as the 5 Professionals Bodies did to forecast their professional needs at national level.

Finally, the Italian Government and the Regions signed on June 9th 2016 a legal agreement containing specific reference to the Pilot Project results showing how the Joint Action on Health Workforce Planning and forecasting (and its related issues) has become part of the Italian political actions.

The Ministry of Health, and all the stakeholders involved, considered the pilot project as the first step of an improvement process of the health workforce planning. Indeed, the pilot project was the opportunity to evaluate the planning capacity of the Italian system and, moreover, to propose further progresses.

1. Introduction

1.1. The Health care sector in Italy

In Italy National Health Service is essentially constituted by different Regional Health Services, by prominent Bodies and Institutions and by the State (Ministry of Health), all with the aim to grant health care and consequently protection and preservation of citizens' health, which, as for Italian law, are the fundamental rights of each citizen and at the same time interest of the collectively, strictly connected with the respect of the dignity and freedom of human person.

Following the principal of subsidiarity, NHS is articulated following various level of responsibility and government:

- Central Level: the State has the responsibility to ensure to all citizens the health rights through a strong system of guaranties and through the Essential Level of Assistance;
- Regional Level: Regions have the direct responsibility of the realization of the government and of the expenses in order to reach the objective of the health of the Country.

Regions have an exclusive competence in the regulation and organization of services and activities directed to the safeguard of health and to criteria of financing of Local Health Agencies and Hospitals, also in relation to the management control and evaluation of quality of performances, following those principals fixed by law.

The current situation of Italian health care sector is strongly affected by the economy crisis which risks to undermine those which are the fondant values of our health system, in fact recent financial budget have foreseen cuts to the funding of the NHS whose effect will of course impact on those most fragile people, who see the reduction of those forms of assistance which have been an answer to their more serious needs.

On the other hand, the aging of Italian population is strictly connected with a consequent increasing of chronic diseases and so a major demand of health assistance, which sometimes may not be satisfied by the public sector. The consequence is that since some years the only answer to the economic crisis which has affected also health care system is the increasing of the recourse to some integrative form of private financing.

1.2. Health workforce planning system in Italy

In Italy, a National Decree of 1992 regulates the functioning of the National Health System (Legislative Decree 502/1992). In particular, article n° 6-ter of the above mentioned Decree, titled "health workforce needs", describes the process to gather those needs:

"Each year, by April 30th, the Minister for Health, after receiving the opinion of the Government-Regions Standing Committee and the opinion of the National Federation of Health Professionals Associations, decides the needs of medical doctors,

*veterinarians, dentists, pharmacists, biologists, chemists, physicists, psychologists, as well as nurses and caring personnel for the National Health Services, also divided per Region, and for the sole purpose of planning, by the **Ministry of Education**, the students access to degree courses and training specialisation schools. The same process to establish the needs of opticians, dental technicians and other health and social care personnel which operates in the National Health Service Institutions. To determine those needs, it is necessary to take account of:*

- a) National Healthcare Plan and the Regional Healthcare Plans;*
- b) models of providing healthcare;*
- c) health workforce supply;*
- d) health workforce demand;*
- e) the students already in training and the unemployed health workers”.*

So, what are the points that the Italian law secures?

- 1) the determination of health personnel needs is decided "only in order" to regulate access to degree courses;
- 2) that determination is the result of a collective decision in which the regions are involved and professional bodies;
- 3) the process is directed to all types of health workers;
- 4) the process is annual;
- 5) the determination of the needs must take into account some strategic and operational aspects of both demand than supply.

Even today, the Decree 502/1992 regulates the planning of students' access to degree courses, but with some significant differences. In fact, in 2001 a constitutional reform occurred¹ giving autonomy to the Regions on health expenditures (budget) and health care organisation, allowing a limited coordination role by the central state. Consequently, and in practice, the Regions, since 2001, have had autonomy also in the decision making process on health professionals needs. Furthermore, in the early 2000s, there were significant Education reforms introducing new University degree courses for health care professionals (for example, for nurses) and, in some cases, new legal length of degree courses (for example, for dentists) and new rules for access.

¹ Constitutional Law October 18th 2001, n. 3 "Modifications to title V of the second part of the Constitution".

A quick look at the institutional HWF planning process in Italy

ACTORS: Ministry of Health; Ministry of University; Regions; Professional Orders

FREQUENCY and DEADLINE: Every year, by the end of April

FACTORS TO CONSIDER: Goals of the NHS and essential level of assistance; service delivery models; Labour market conditions (supply and demand)

SCOPE: In order to determine the number of intakes at universities (agreement among Government and the Regions)

The current practice of determining the needs for all the health professionals (thus focusing on the number of students' intakes, namely the establishment of annual quotas on the number of students admitted to different degree courses, which remains a powerful political lever to adjust the supply of health professionals based on the expected demand) is the following.

- Every year, each Region proposes, looking at its own needs, the number of students' intakes to the degree courses of the next academic year; those "numbers" are calculated on the basis of regional needs and are established without the use of a common methodology shared with the other Regions², even though most of the regions take into account similar drivers (the turnover of health workers employed in the public sector, for example). Moreover, most of them consult Universities with medical schools located in their geographical area about their training capacity.
- Then, usually on February each year, the Regions present their needs to the Ministry of Health³, which also collects similar health workforce needs by each of the National Professionals Body, expressed, as for the Regions, in terms of "number of students' intakes".
- A specific unit within the Ministry of Health collects such data (regional training needs on one hand and training needs expressed by the Professional Bodies on the other hand) and, by comparison and analysis, validates the results which are then discussed in a meeting between all stakeholders for a final tuning (usually late March). By April 30, the Government-Regions Standing Committee formalises those results in a specific Legal Agreement.

² But the 502/1992 National Decree advises on the variables to be considered in the calculation: "[it] shall take account of: a) National Healthcare Plan and the Regional Healthcare Plans; b) models of providing healthcare; c) health workforce supply; d) health workforce demand; e) the students already in training and the unemployed health workers".

³ The practice is that the Coordinating Region (i.e. Region with coordinating role between the different Regions regarding health care, as defined by the Government-Regions Standing Committee), collects HWF needs from the various Regions and sends them to the Ministry of Health.

- The "training needs", as agreed between the Ministry of Health and the Regions, are expressed in terms of the total number of new intakes to degree courses both at the national level and also split between the different Regions. Then, the Ministry of Education, University and Research receives the agreement and makes the decision on the final numbers of intakes for each university. **This decision-making process has been designed as a multi-level negotiation** involving (again) representatives of the Ministry of Education, the Ministry of Health, Regions, universities and various national associations representing health care professionals. **The final result is a compromise between the health professionals needs, as agreed in the early stages, and the training capacity of the University.**

A similar decision-making process takes place every three years in order to determine the exact number of places for the medical specialities in the medical schools.

Over the years, the well-established practice has gained strengths and weaknesses:

Strengths

A national legal framework that induces a yearly collection process of health workforce needs.

An organised involvement of stakeholders at regional and national level.

Specific units both at national level (Ministry of Health) and regional level dedicated to measure and to collect the health workforce needs.

Weaknesses

No common understanding of the meaning "health workforce needs" among the involved stakeholders (only public sector or health workforce needs of the entire system? Training capacity or actual population needs?)

No common methodology to measure the health workforce needs at regional and national level; moreover, methods used are not often not explicit and clear.

Policy actions limited to numerous clauses. Furthermore, for some of the health professionals (for example, pharmacists, the number of clauses is set at local level without any national planning).

Not clear role of the involved stakeholders in the various stages of the process, in particular among the stages before the Legal Agreement coordinated by the Ministry of Health and the stages after it coordinated by the Ministry of Education.

Quotas on the number of students admitted each year are decided for each profession in isolation without any consideration of vertical or horizontal substitution.

Quotas decided looking at short-term goals (3-5 years).

2. The implementation of a new planning system for medical doctors, dentists, pharmacists, nurses and midwives.

The aim of the pilot project in Italy was to correct and improve some of the weaknesses highlighted above, leveraging and reinforcing the strengths. So, it has to be intended not as a pilot study but as an implementation project.

The borders, and the limitations, of this implementation were:

- The legal framework described above and in which the pilot project has entered, no ambition to act on it or modifying it;
- The policy on regulation of access to University degree courses (numerus clausus) established by the regulatory framework itself which is then considered by the pilot project as the only regulatory policy lever applicable and usable;
- The health professions subject of the pilot project, limited at only five health professions, the ones the Joint Action takes into account and therefore doctors, nurses, pharmacists, midwives and dentists;
- Twice geographical reference of the pilot project, namely the national and regional levels; about the latter, each of the 21 Regions (namely 19 Regions and 2 Autonomous Provinces).

Considering those limits and borders, the **objectives** of the Italian Pilot Project were:

- 1) Starting from the good practices described in the “Handbook on Planning Methodologies across EU Countries”⁴ delivered by the *Joint Action on Health Workforce Planning and Forecasting*, to test in Italy the “implementation path” suggested at page 24 of the book and made up of 7 steps “on how to implement a new planning system starting from scratch”;
- 2) To overcome the various and not clear methods in use by the Italian Regions to measure the health workforce needs by developing and implementing a common and shared methodology among Regions and National stakeholders involved in the planning process;
- 3) To include in the forecasting model, both public and private sector and to make projections on the long term (at least 20 years);
- 4) Finally, to use this methodology to determine the needs for the 5 professions in focus and to set the related number of students’ intakes to university degree courses for the academic year 2016/2017.

The above 4 objectives were presented and agreed during the first Steering Committee of the Italian Pilot Project where the most relevant stakeholders were involved (for further information on the Steering Committee, see chapter 2.1 on the management of the project). In particular, the stakeholders highlighted that health workforce planning in Italy

⁴ “Handbook on Health Workforce Planning Methodologies across EU countries”, A. Malgieri, P. Michelutti, M. Van Hoegaerden, Slovakia, Joint Action Health Workforce Programming & Forecasting, Funded by the Health Programme of the European Union (<http://healthworkforce.eu>), 2015

presents a critical issue due to the fact that the National needs are determined by the sum of Regional needs and Regions are characterized by a lot of difference one from the other. Furthermore, the determination of needs of health professions is nowadays characterised by a large variety of subject involved, methodologies adopted, indicators and variable used. In this light, all the stakeholders agreed that the pilot project was an opportunity to move forward a more efficient process of national planning.

- From the minutes of the first meeting of the Italian Pilot Project Steering Committee:
The Veneto Region Representative underlines the will of her Region to participate in the European project as the only opportunity to identify a common methodology among Italian regions for the planning of the health professions: a result that single regions would find difficult to reach such past experiences have shown. This is the reason why Veneto Region has joined the project by being an active part to spread it in other regions. Objective of the Veneto and other Regions is therefore to develop a common methodology that would allow a comparison among regional needs. Moreover, the common methodology will ensure the Regions to be able to place themselves in a strong way in respect of the Universities, given the fact that the need for health professions is now submitted to the Ministry of Education, which over the years has contested the not-clear and variegated methodologies used by the Regions for the HWF needs determination.

In order to measure at the end of the pilot project the success rate of the project itself, the Steering Committee agreed also on three specific **targets**:

- to create a new forecasting methodology, based on quantitative methods, for the 5 professions in focus (medical doctors, dentists, pharmacists, nurses and midwives) by December 2015;
- to have at least 5 regions using the common forecasting methodology created during the pilot study to set the HWF needs by January 2016;
- to annex to the yearly Government-Regions Agreement, containing the “needs” of student intakes at the medical universities for all the health professions, a document describing the methodology used to set the health workforce needs (by April 2016).

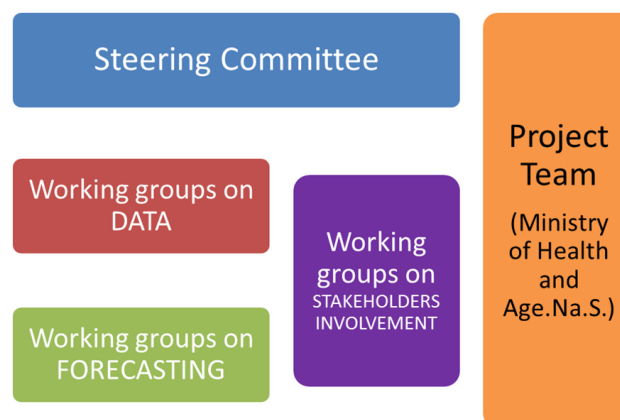
2.1. The pilot project’s management

The Pilot Project in Italy was managed by a **Project team**, led by Italian Ministry of Health, in collaboration with AGENAS, in charge of the planning and realization of the objective of the Project. The Project team has been responsible for all the activities, for the project plan and for the deliverables, through two major activities: on one hand the coordination of all the planning activities, making the data collection and the simulations that will produce the forecast, on the other hand activating the stakeholders that will discuss the planning model, the forecasting model and the results. The project team was made up by 3 people: one full time project manager, one full time project assistant and one part-time statistician.

In its activity the Project team has been flanked by a **Steering Committee** composed by at least one representative of all Italian Regions and Autonomous Provinces, as well as Stakeholders representatives of each of the five health profession in focus (Dentists, Doctors, Midwives, Nurses and Pharmacists), Ministry of Education, Ministry of Economics and Finances, National Institute of Statistics, Co.Ge.A.P.S. (Consortium for the Management of the Registry of Health Professions), ENPAM (National Body of Social Security and Assistance for Doctors and Dentists). The Steering Committee met once every two or three months (5 meetings in 16 months), in order to discuss on the activity done, to validate the interim results and to propose and decide on how to go on with the further planned activities. About 50 people attended regularly the Steering Committee meetings.

Meanwhile the activity has been carried out in **working groups** made up of representatives of stakeholders, which met regularly at least once a week, especially via web meeting. The working groups were organised around three main topics that were developed during the pilot project concerning three of the seven steps of the implementation path (see chapter 2, objective 1 of the Pilot Project):

- 1) The data necessary for the planning of health professionals:
 - a. one working group on data gap analysis
 - b. and one working group on knowing about the current health workforce stock;
- 2) The future prediction model of supply and demand for health professionals:
 - a. one working group on the evaluation of the current situation;
 - b. one working group on the setting of the forecasting requirements,
 - c. one working group on the development of the supply side forecasts;
 - d. one working group on the development of the demand side forecasts;
- 3) The organised involvement of the stakeholders:
 - a. one working group on the stakeholder analysis
 - b. and one working group on the dissemination on the pilot project results among the stakeholders.



The main activities and findings of those groups were:

1) Data:

- a. data gap analysis: being the main objective of the group the mapping of available flows on the five profession, the work done shown some lack of information, with regard to the Minimum Data Set, as well as a lot of variety among Regions on the level of knowledge and use of the flows and so the urgency of a huge use of information available at a central level;
- b. knowing about the current health workforce stock: due to the lack of an individual data-base, the group has evidenced the necessity to integrate data from different data-bases, once the data were collected, with progressive figuration the group did an analysis of the current stocks;

2) Forecasting:

- a. assessing the current situation: the situation at the present was analysed on the basis of specific parameters contained in the *Handbook on Planning Methodologies across EU Countries* (pages 304-305 of the book), some of which were considered applicable in Italy (relation between population and number of professionals, growing of workforce, turnover, level of employment) and other not (waiting lists);
- b. forecasting requirements: the group mainly worked on the distinction between demand and supply and agreed to build a model that takes into account data and information available at a central level, starting from a picture of the present situation in order to analyse the evolution in the future of both demand and supply.
- c. supply side forecasts: in the ambit of the activities of the group an Expert Meeting, Italian and European experts participating, was organized in Brussels on June 24th 2015, in order to have advices on the modus operandi by the Experts on the good practices described in the Handbook; for the forecasting model, the Experts in Brussels have suggested to conceive it in the simplest way;
- d. demand side forecasts: being the demand side the most difficult field to explore, the group was unable to reach an agreement on the evaluation of the current demand; about the future demand, European experts suggested to estimate future trends using a very easy quantitative indicator (as “number of health professionals per one thousands of inhabitants”) and then adjusted using qualitative methods.

Which forecasting method for the Italian pilot project?

The results the working groups on forecasting were submitted to the third Steering Committee meeting on July 2nd 2015: the Committee, after a long discussion, agreed to develop a simple linear model using Microsoft Excel easy to for all the stakeholders involved. Thus, during the months of July, August and September 2015, the Project Team developed a unique projection models differentiated for the five professions considered just for the data filled in the model. The model has been officially approved by the forth

Steering Committee held October 1st 2015. Then it was reproduced for each of the 21 Italian Regions which received each the 5 models for the 5 professions containing the data referring to the specific regional context. At the end, considering the 5 professions and the 21 regional contexts plus the national one, the project team developed 110 Excel files.

Actually the model is focused on the supply side, nevertheless also an indicator on demand side has been included. Such an indicator is connected with the dimension/evolution of the population. In order to improve such an important element and going in depth of such an aspect, it was used also a qualitative method, as suggested by the EU Experts in the Brussels' meeting: two Panel of Experts have been organized, the first on November 24th 2015 and the second on March 10th 2016 and it was conducted also a survey. The experts involved in the panel individuated the main future drivers of the demand and analysed them. The document "Future skills and competences of the Health workforce in Europe" delivered by the Joint Action was used as a knowledge base for the work of the panel.

3) Stakeholders' involvement:

- a. stakeholder analysis: the group evidenced that nowadays actors involved in the institutional process at regional level are Local Health Authorities and, in a relevant way, Local Universities, so the group agreed on the urgency to involve all those actors in the Pilot Project; the group also agreed that a weakness of the system is the lack of involvement of private providers;
- b. dissemination of the results among the stakeholders: in order to favour stakeholders involvement in the pilot project, the group organized on June 4th 2015 a meeting to disseminate the interim results; about 100 people attended the meeting in loco or via web-meeting, and all of them have agreed on the importance of the project; then, on May 19th 2016 a final conference was organised to show the final results of the pilot project and to discuss on the follow up activities and further implementations; about 200 people attended the conference.

The working groups were made up of about 15 people each (most of the people were involved in different working groups), with different skills: mainly statisticians, engineers or civil servants with law background in charge for their institution/region to manage the decision making process of the health workforce needs. The working groups were led the project team.

Those 3 lines of activities worked from January 2015 to October 2015.

Once the forecasting tool was delivered (on November 2015) the people previously involved in the working groups were engage to manage, each for its own Region, the implementation of the forecasting tool. It was the same for the representatives of the 5 professions who managed the forecasting tool implementation in their own professional body in order to use it to have forecasts for their profession at national level.

The Project Team led this **second stage from November 2015 to February 2016** supporting the people in their implementation process, both at national and at local level.

To facilitate the use of the forecasting tool the Project Team publish a User Guideline. The team also organised 15 training meeting “on demand” for the Regions asking for more explanation on how to use the tool.

Then, during the months of January and February 2016, five technical task forces (one per profession) have been organized in order to let Regions and Professional Bodies share their points of view on the first results of their projections and, in particular, on the parameters used on the demand side.

Finally, an International **Consultative Board** was constituted with the aim to compare Italian and European points of view as well as favour the discussion among national and international health professionals representatives on expectations and results of the project and received advices on how to implement and improve the pilot project results and how to keep and improve the collaboration among national and international stakeholders: Italian and European representatives of the five profession in focus, as well as a representative of Work Package 4 and a representative of the Italian National Institute of Statistic (ISTAT) have met twice.

- First time, it was October 1st 2015: the project team showed the activities carried on during the previous months and the European representatives discussed on that with the Italian representatives.
- On April 1st 2016 the second and last meeting of the Consultative Board was an opportunity not only to show the results if the project but, above all, to start a comparison among Italian and European stakeholders in particular on the possible future development of the activities started in the ambit of the project, but also on some possible future collaborations on the theme of health workforce forecasting. With this meeting the Pilot Project in Italy officially concluded, giving way to the institutional process of determination of health workforce needs.

The activities organised as such involved about 150 people from 50 different organizations, both nationally and regionally. In 16 months of work about 100 meetings and conferences were hold.

2.2. An interim check-up and fine tuning: the experts’ workshop in Brussels, June 24th 2015

What do external experts advise on the mathematical model? How to reach a better planning system set-up from the comparison with other regional or national systems? With these key questions in mind, the Workpackage 5 organise, with the support of the Workpackage 1 team, a workshop with the scope of submitting to a panel of experts⁵ (included in the Joint Action’ network of experts) the work in progress of the Pilot Project

⁵ Experts participating at the workshop came from: 1 from England; 3 from Belgium; 2 from Finland; 2 from Hungary; 3 from Spain; 3 from the Netherlands. From Italy there were 9 people, from Portugal there were 4 people.

in Italy as well the interim results of the pilot project in progress at the same time in Portugal.

Starting from the five key elements of a planning system shown in the Handbook: goals, data, forecasting model, link to policy actions and organization, the two Teams have developed a planning model starting from different context. This means that the five key elements to the end of the pilot study will prove to be different. Nevertheless, some solutions applied in a context may also be useful for the other one. As well as some issues can be discussed together, taking advantage of the common tips. The focus of the workshop was in particular in two key elements: data and forecasting model. The two teams then presented the data model and the forecasting model that they designed. The discussion with experts, organized in parallel sessions (session Italy and session Portugal) has been so focused on these two aspects.

So, Italian and Portuguese Pilot Project Teams prepared a series of questions regarding the most critical issues they are facing and then the experts gave their answers and suggestions to be applied in the two experimentation in progress in Italy and in Portugal. At the same time, the aim was also to evaluate the content of the questions asked by the Italian and Portuguese Teams and their responses, with regards to the content of the “Handbook on planning methodologies across EU countries” (focus points and recommendations).

An Evaluation Survey followed the workshop. There were 14 replies on 26 attendees, concluding that the expert meeting was a success and networking and exchange of point of views were appreciated.

In particular, as for the Italian Pilot Project, here follows the results of the workshop.

Issue 1: nurses and midwives “professionally active” count

The topic regards the endeavour to identify “professionally active” nurses and midwives, considering that in Italy there are not available data for this scope. The proposal submitted to the experts was to use the results of a survey made by the National Institute of Statistics (ISTAT) on the Labour Force in 2013 or an individual database from a Consortium (COGEAPS) who manages the CME credits for all the health professionals, including nurses and midwives, assuming that the professionals active in the CME training are active also as professionals in the labour market.

- Experts stated that the choice between ISTAT and COGEAPS database to identify the active personnel could be considered a convention: the use of one or other data source should not change the results in terms of flows. Anyway, the experts recommended considering both sources and assessing any differences.
- Experts noted by that in the chart on the distribution of nurses by year of birth the difference between registered and active CME does not seem to depend on age. It could therefore be useful in order to choose one or the other source deepen because of this evidence.

Issue 2: doctors and dentists “professionally active” count

The topic is similar to the previous one, but for medical doctors and dentists. The proposal submitted to the experts was to use alternatively: the database of the Social Insurance Institute for Doctors and Dentists (ENPAM) containing individual data on professionals with an insurance status, assuming that the professionals reporting more than 10.000 euros of annual income are active in the labour market; or, as for the nurses and midwives, the ISTAT Labour Force survey and the COGEAPS CME database.

- Experts agreed to split professionally active from not professionally active considering as minimum annual income 10.000 euros. The Belgian experts underlined that they are currently using a similar approach in which, instead of using a threshold on income they use a threshold on volume of activities weighted by their cost for the health system. They recommended understanding the gap of 48.000 professionals between the ISTAT survey and the COGEAPS database and they suggested crossing the two results in order to identify the little differences.

Another question regarded if and how to consider and to measure the medical doctors still in specialisation training in the medical schools.

- As far as medical doctor (MD) under specialization, the Belgian experts considered this issue very important and even if, in their model, they are still trying to figure out how to include this supply component. The experts from the Netherlands do not take into account the MDs under specialization since they are forecasting the already specialized ones. Finally, the Spanish experts already include the specializing doctors in their forecasting model and suggest doing the same in Italy. At the end the proposal was to split the inclusion process in two step, a first one in which the specializing doctors are not included and a second one in which a proper FTE estimation allows to take into consideration their support in terms of working hours.

Issue 3: nurses “practicing” count

The question was if the CME COGEAPS database could be useful also to identify the “practicing” nurses. Considering that in the public hospitals there is an “not measured” amount of nurses engaged in administrative tasks, it would be useful to estimate the number of “practising” nurses.

- There is no experience of using data on training in CME to identify the “practicing professionals”. In general, experts do not consider CME useful to identify “practicing professionals” because this type of investigation does not bring benefits to the project, in light of the fact that even non-practicing still need to be replaced and therefore should be counted in the calculation of the requirement.

Issue 4: FTE count

The question was if and how to count the FTE instead considering in the forecasting exercise only the headcount.

- A first observation by experts was to take a proper look at the WP4 deliverable D.41, in which several practical examples of FTE estimates and calculations are presented.
- A second general remark is that the scope of FTE estimation, as well as the efforts to calculate it, should be coherent with the HWF denominator chosen, which is to say, whether the model deals with practicing Health workforce or with professionally active ones. Using the latter figures, it might allow for a greater approximation in the FTE estimates as a general ratio of active-to-inactive professionals. On the contrary, if the model distinguishes the practicing from the professionally active ones, a greater accuracy and detail in FTE calculations might be desirable (i.e. by including the distribution by sex and age).
- Experts suggested leaving out of the model aspects with no expected changes in the future. Even in dealing with the issue of the private FTE, they suggested to simplify the model as much as possible. Whatever FTE estimates are chosen, they should be detailed alongside the model assumptions and results.
- The experts, who all agreed on the development of a clear, simple and transparent method, referred no specific cases of sensitivity analysis using different FTE.

Issue 5: Supply forecasting model

The Italian team presented to the experts two supply forecasting model, which might be used: a Monte Carlo Statistical method used by ENPAM (the Social Insurance Institute for Medical doctors and Dentists) and a System Dynamic model developed by two researchers working at Regione Emilia Romagna. The question was “which one is more suitable for the purposes of the Italian pilot project” and “how to develop a new forecasting tool”.

- The two models are different, not alternative ones. They might integrate each other (obtaining attrition rates from the ENPAM for instance) or other techniques could be taken into account for the purpose of the Pilot project (excel, oracle, Sas). As to limit the observations to the two model, the System dynamic (SD) is a stock and flow model, like the model adopted by Finland, Spain, Belgium and Netherland, which make it more suitable for the task than a Monte Carlo model as Magis (Enpam model). Experts refer no objections to the possibility of using different methodologies for different professions (e.g. Magis for doctors and dentists and the other one for nurses and midwives). Some countries started from a heterogeneous situation before harmonizing the forecasting tool and converge to a unique model suite for different professions. Some key aspects should drive the choice of the forecasting model, such as:
 - its flexibility in terms of building and adding up parameters and returning more than one scenario;
 - easy to understand (flow-chart), avoid black-boxes;
 - accessible to stake-holders and society so that they can understand the social impact of the projections;
 - projections should offer a 'range' of possibility where discussion and policy making can

take place.

- To satisfy the issues above, any model should be well presented and its dimensions should be extensively documented in an easy qualitative way.
- A more specific forecasting issue was related to the opportunity of representing an 'ecological' picture of future supply and demand mismatches or whether to model the impact of new entrants and current trainees on supply evolution. Even if simulating current training 'status-quo' hypothesis can interfere with the scope of the policy making, featuring the impact of current training 'quota' might be suitable to have a comprehensive representation of future supply.
- Finally, experts have recommended using a simple model and transparent easy to present to policy makers, whatever the technical tool used to build it.

Issue 6: Demand forecasting model

The question regarded how to develop demand estimations. The Italian team presented the first results of a forecasting exercise using the indicators suggested by the Minimum data set described in the “Minimum planning data requirements”⁶ delivered by the Joint Action and based on the estimations of the future health expenditure for different age groups of the future population. The Italian team collected all the data useful to calculate that indicator and submitted the results to the experts during the workshop.

- On the demand side, experts highlighted some limitations in considering health expenditures as an indicator of demand rather than the use of health services, such as the fact that it depends on budget constraints. Based on their experience, experts advised to make assumptions on the evolution of technological progress or other demand drivers through qualitative surveys.

⁶ “Minimum Planning Data Requirements”, R. Gullstrand, A. Malgieri, P. Michelutti, M. Van Hoegaerden, Slovakia, Joint Action Health Workforce Programming & Forecasting, Funded by the Health Programme of the European Union (<http://healthworkforce.eu>), 2014, pages 23-26

3. The results of the Pilot Project

The pilot project developed in Italy made use of the guidelines contained in the “The Handbook on Planning Methodologies across EU Countries”. As stated in the chapter 2, one of the objective of the pilot project was to test parte of pactices and recommendations contained in "the implementation path". These are the the 7 steps that make up the process of implementation:



Those steps are not conceived as a sequential process but just as necessary elements of a sustainable and robust planning system. It is then up to the potential planner (based on its knowledge and its feeling of the environment) to decide upon the right time and order of the seven points.

Based on the Italian context (see chapter 1) and on the Pilot project scope and objectives (see chapter 2) the Project team together with the Steering Committee decided to **focus the project activities on the steps A, B, C and D**. Steps E and F were considered out of scope (because already contained in the Law and because considered as follow up steps to tackle after the pilot project and on the base of its results). Step G, in the beginning not considered, was part of the pilot project taking advantage from the evaluation tool delivered by the Joint Action (Workpackage 4) in October 2015 (for a detail on the evaluation tool see <http://hwftoolkit.semmelweis.hu>).

Here we report the results achieved during the pilot project on those 5 steps (A, B, C, D, G). In the last part of chapter 3 we also reported some concerns on the current status of step E and F and some suggestions on how to improve them.

3.1. Knowing about the current health workforce inventory

Knowing about the current health workforce is the first step through a robust forecasting exercise. Key questions are: How many health professionals are working now in the Health System? What’s their age? How many health professionals are not working but are “available” to satisfy the current and future demand?

We started considering the data included in the Minimum Data Set on the Supply side (see picture below) as described in the deliverable “Minimum Planning data requirements” (page 17).

Areas Category	Supply				
	Labour force	Training	Retire-ment	Migration (outflow)	Migration (inflow)
Profession	X	X	X	X	X
Age	X	X	X	X	X
Head count	X	X	X	X	X
FTE	X				
Geographical area	X	X	X	X	X
Specialisation (where relevant)	X	X	X	X	X
Country of first qualification	X	X	X	X	X
Gender	X				

We made a data gap analysis based on the Minimum Data Set, for the five professions in focus, both at regional and national level, adding a new category, that is the “activity status” of the professional which we considered necessary for planning⁷ even if not included in the Minimum Data Set.

Here are the results of the Data Gap Analysis on the “Labour Force” category.

Data on the 5 professions were available in the Professional Bodies’ registers on the “licensed to practice” with the following features.

- **Profession:** the registers are separated for each of the 5 professions so identifying the type of profession was not an issue but it was a problem to classify a specific group of professionals which are registered as both “medical doctors and dentists”; they are about 30.000 in Italy licensed for both the professions.
- **Age:** date of birth is available for each professional.
- **Headcount:** each professional is reported in one record, so it’s possible to count the numbers of records.
- **FTE:** information not available. This information is available only for the public sector estimating FTE calculating the part time job contracts.
- **Geographical area:** information available on the place of residence.
- **Specialisation:** not relevant for the pilot project. However this information is not available in the licensed to practice registers.

⁷ See “Report on terminology mapping” (<http://healthworkforce.eu/work-package-4/>) for details on the category “status of activity”.

- **Country of first qualification:** not available (only the place of birth).
- **Gender:** information available.

Here are the results of the Data Gap Analysis for the other categories of the Minimum Data Set

Data on the 5 professions were available with the following features:

- **Training:** We used individual data on Graduates collected, across the Institutions, through a National Register (Anagrafe Nazionale degli Studenti Universitari) established by the Ministry of Education and managed by the Statistical Office. This register contains information concerning the careers of the university students. Main information are on: gender, citizenship, date of birth, place of birth, place of residence about the students; first academic year in the Italian University System and first academic year in the programme for university career of the students. About University - Specialisation post-master programme data available are on Number of enrolments by sex and by citizenship; Number of new entrants by sex and by citizenship; Number of graduates by sex and by citizenship..
- **Retirement:** data on professionals retired were not considered relevant for the pilot project. However there are available aggregated data only on public sector.
- **Migration (outflow):** no data on migration outflow. Only data not feasible to process by Ministry of Health (counting the outstanding certificates).
- **Migration (inflow):** available data only on the new entrants to the professionals registries each year with which it's feasible to estimate past trends considering the place of birth of new entrants.

A great effort was done during the pilot project to split the “licensed to practice” professionals into the following 3 categories:

- A. Professionally active;
- B. Unemployed;
- C. Out of health workforce.

Indeed, it's important to know about the current professionally active stock, to project it in the future and to know how many health professionals are unemployed at the current but willing to be “activated” in the future (based on the demand of the labour market).

So, starting from the licensed to practice databases, and linking them with other data sources, we calculated and estimated the “professionally active” workforce to December 31st, 2014. In particular we used the CME databases managed by COGEAPS as well as the information available for the Labour Force survey by ISTAT, for nurses and midwives as well (see issue 1 at page 15), the Social insurance databases for doctors, dentists and pharmacists (see issue 2 at page 15).

	Licensed To Practice	Professionally Active
<i>Dentists</i>	Individual data on registered Dentists provided by the Professional Order from their registry.	Individual data from the Social Security Institution for dentists and doctors (ENPAM), considering “professionally active” the dentists with at least 10,000 € of annual income.
<i>Medical doctors</i>	Individual data on registered Doctors provided by the Professional Order from their registry.	Individual data from the Social Security Institution for Doctors and Dentists (ENPAM), considering “professionally active” the doctors with at least 10,000 € of annual income.
<i>Midwives</i>	Individual data on registered Midwives provided by the Federation of Professional Colleges from their registry.	Individual data of the National Register of CME credits (COGEAPS), considering “professionally active” professionals with at least 1 part in training event in the last three years. Aggregated data on active labour force by the Labor Force Survey (ISTAT)
<i>Nurses</i>	Individual data on registered Nurses provided by the Federation of Professional Colleges from their registry.	Individual data of the National Register of CME credits (COGEAPS), considering “professionally active” professionals with at least 1 part in training event in the last three years. Aggregated data on active labour force by the Labor Force Survey (ISTAT)
<i>Pharmacists</i>	Individual data on registered Pharmacists provided by the Professional Order from their registry.	Individual data from the Social Security Institution for pharmacists (ENPAF).

Co.Ge.A.P.S. database

The Italian program of Continuing Medical Education (CME) is open to all healthcare professionals and is the process by which the health professional is kept updated to respond to patients' needs, the needs of the health service and their own professional development.

The program began in 2002 and provides that each professional will acquire 150 credits in three years (the current three-year period is from 2014 to 2016) then 50 credits per year (1 credit ~ 1 hour) with participation in training events, teaching, tutoring, self-training.

Co.Ge.A.P.S. (Data Management Health Professions Consortium) is an organization that brings together the National Federation of the Orders and Colleges and Associations of health professionals participating to the program of Continuing Medical Education.

Co.Ge.A.P.S. manages the national database of CME credits (data available from 2002) acquired by health professionals who then includes the personal data available from the Professional Order Register and linked with the Tax Code, the following other information related to each individual participation:

- training event identification code;
- educational national objective of the event (the national targets are 29 divided into three groups (technical and specialist skills, skills system, organization / management and situational

- and role, process skills relational / communicative;
- number credits earned;
- number of training hours;
- participation time period (start date, end date);
- type of participation (learner, teacher, tutor);
- profession and specialization of participation at training.

Labor Force Survey: definition of “active”

The employed include people aged 15 and over who during the reference week:

- they did at least one hour of work in any activity that provides remuneration or in kind;
- they did at least one hour of unpaid work in the company of a family in which work regularly;
- they are absent from work (for example, for holidays or illness). Employees absent from work are considered employed if the absence does not exceed three months, or if during the absence continue to receive at least 50% of pay. Independents absent from work, except for family workers, are considered employed if, during the period of absence, retain activity. The family workers are considered employed if the absence does not exceed three months.

The work on the current stock of health professionals was then supplemented agreeing on some assumptions and hypotheses in order to have information also on **unemployed** stock and “**out of health workforce**” stock:

- All the professionals older than 74 years were considered inactive despite their hypothetical active status;
- All the professionals under the age of 40 years and not active to December 31st 2014 were considered “unemployed” and “willing to be activated”;
- The professional stock is measured as the number of “heads” and “full time equivalent” (or Full Time Equivalent - FTE) for each professional is estimated equal to 1, for both men and women.

Using the data collected as explained above it was then possible to have a reliable picture of the 5 professions in their status of activity to December, 31st, 2014:

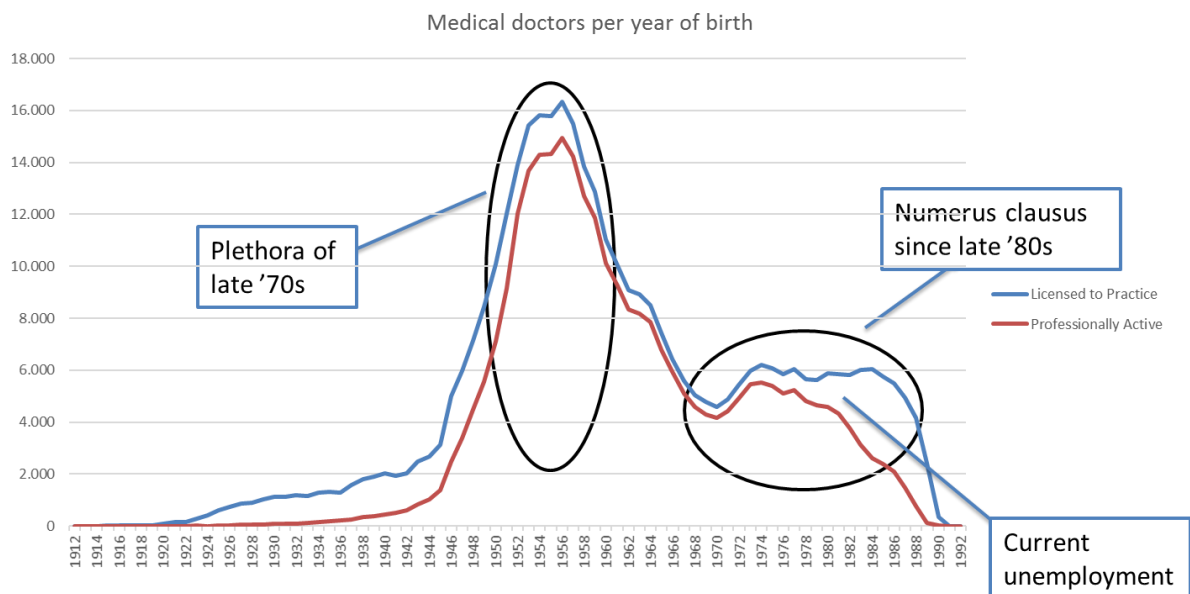
	Licensed to practice	Professionally active	Unemployed	Out of health workforce
Medical doctors	387.478 (100%)	262.421 (68%) + 30.467 ⁸ (8%)	10.397 (3%)	84.193 (22%)
Dentists	59.871 (100%)	49.413 (83%)	0 (0%)	10.458 (17%)
Pharmacists	91.062 (100%)	78.525 (86%)	5.280 (6%)	7.257 (8%)
Nurses	408.074 (100%)	369.706 (91%)	16.198 (4%)	22.170 (22%)
Midwives	18.794 (100%)	15.352 (82%)	1.463 (8%)	1.979 (10%)

⁸ Estimated number of doctors currently in training in the medical schools.

At the same time, using data on gender and on age, linking with the status or category was possible to have the following picture on the current situation:

Medical Doctors in Italy

- *Licensed to Practice: 387.478*
- *Professionally Active: 292.888*

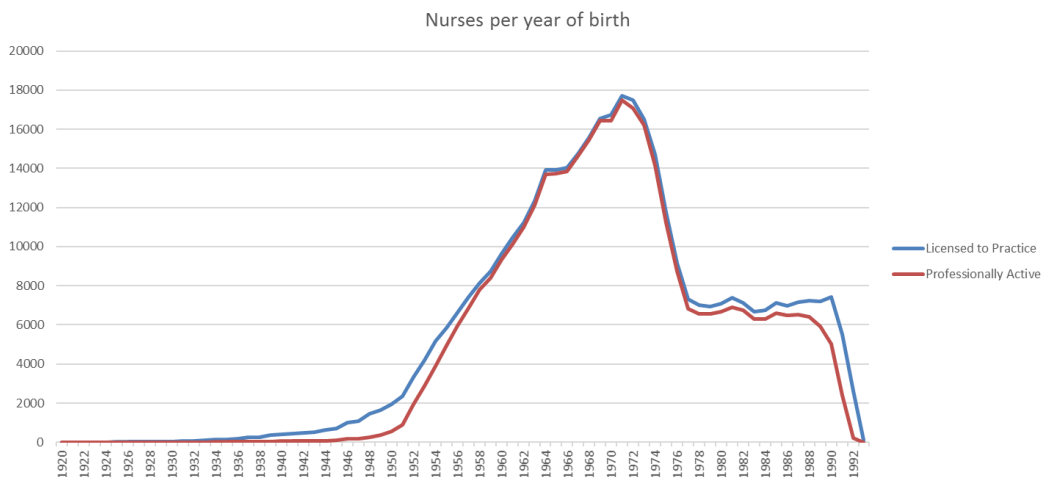


Analysing the current situation in terms of differences between the two stocks (LTP and PA) it's possible to recognise past events (like the plethora in the late seventies - early eighties), current events (unemployment) and also estimate roughly future events (massive losses in the next years for retirement due to the high average age of medical doctors).

We produced then similar picture also for the other 4 professions:

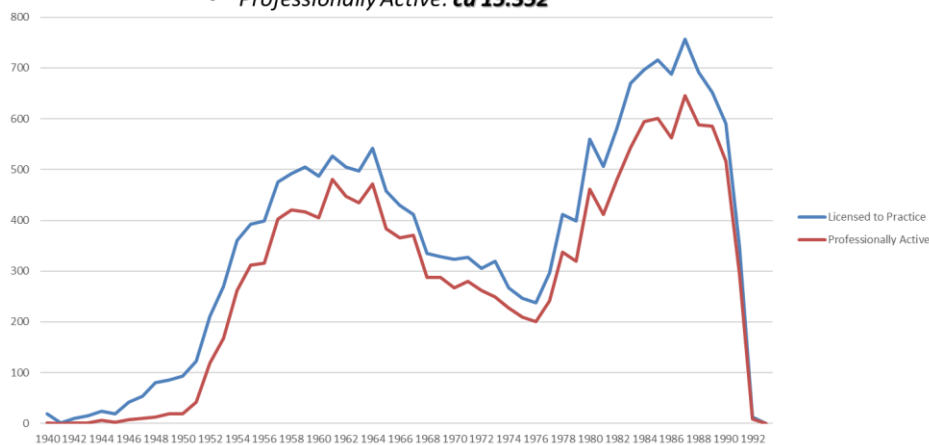
Nurses in Italy

- **Licensed to Practice: 408.074**
- **Professionally Active: 369.706**



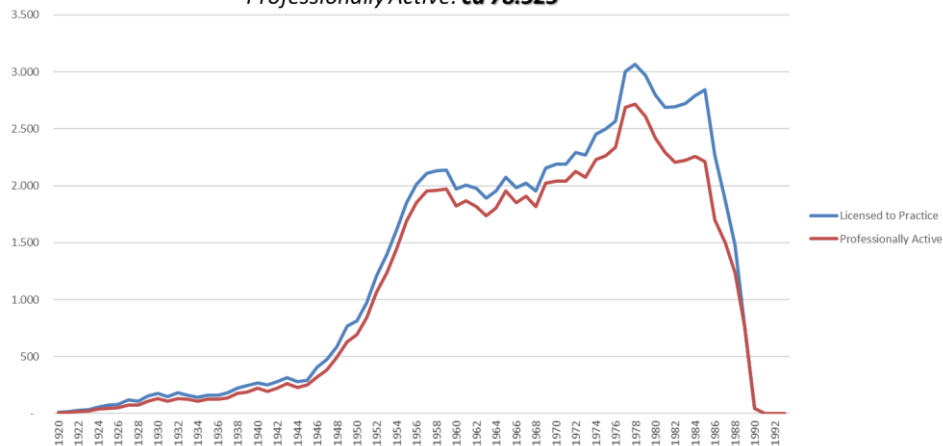
Midwives in Italy

- **Licensed to Practice: 18.794**
- **Professionally Active: ca 15.352**



Pharmacists in Italy

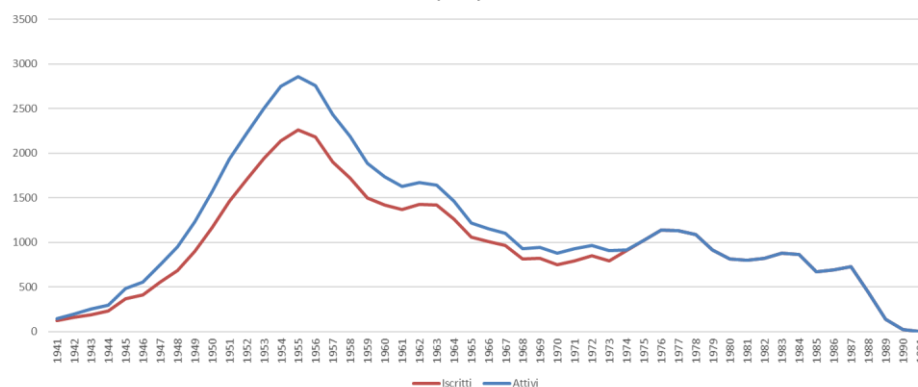
- *Licensed to Practice: 91.062*
- *Professionally Active: ca 78.525*



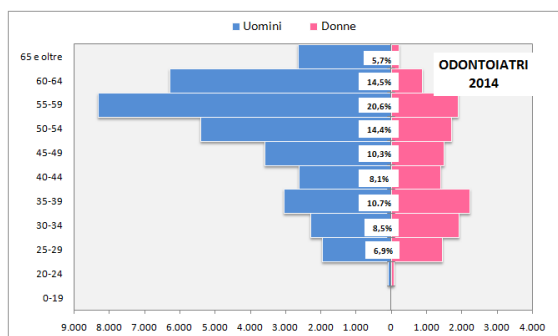
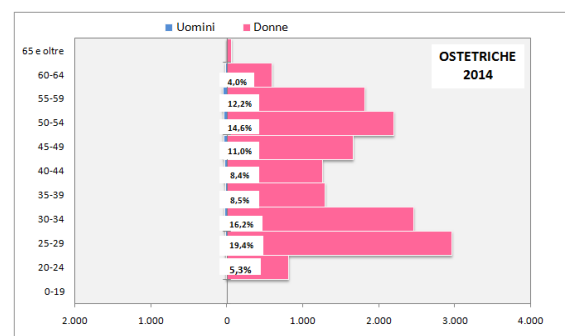
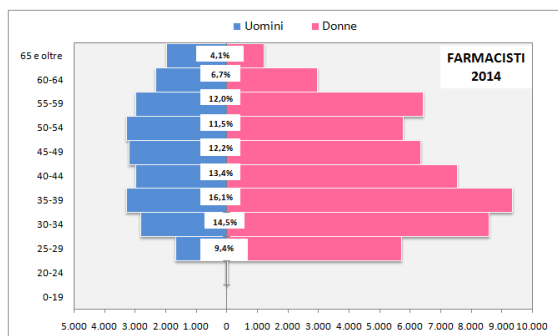
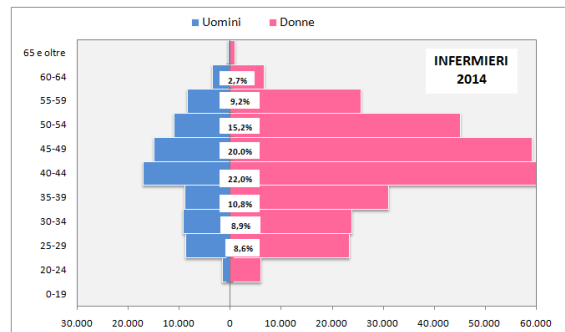
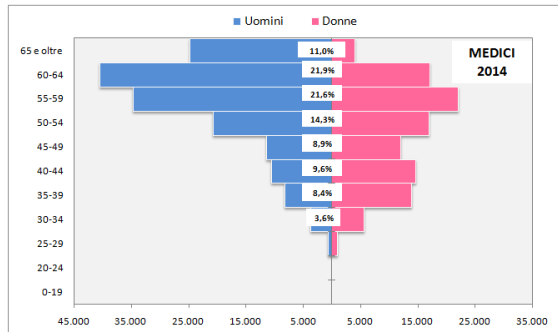
Dentists in Italy

- *Licensed to Practice: 59.845*
- *Professionally Active: 49.413*

Dentists per year of birth



Looking only at the professionally active stock, linking gender information with date age information we produced the following picture useful to have a deeper knowledge of the current active stock.



3.2. Assessing the current situation

The analysis of the supply of current health workforce over demand is important to avoid the perpetuation of imbalances and to recognize the critical issues that potentially could turn into a future imbalance. The use of specific indicators can help promote a dialogue with stakeholders on the assessment of the current situation.

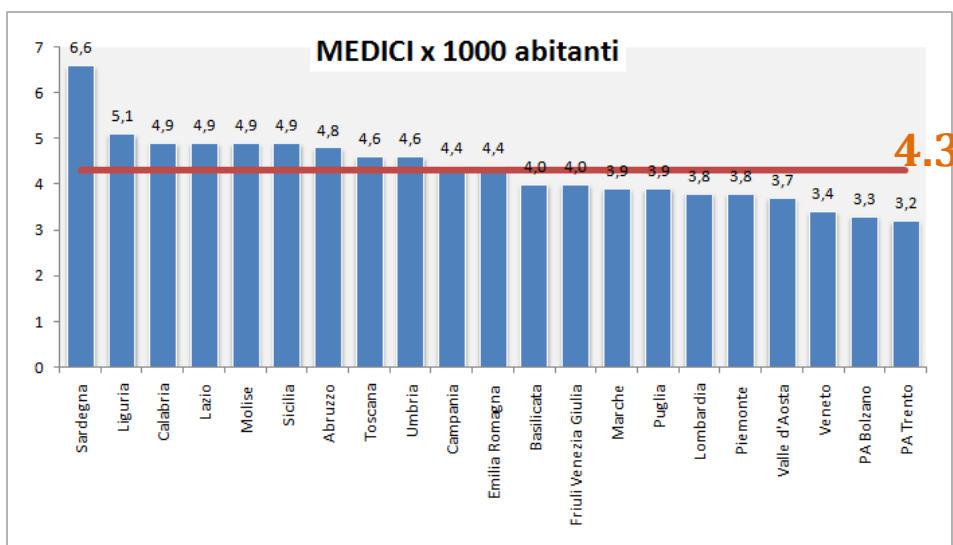
During the pilot project, the results achieved on this front have not been completely satisfactory, and much remains to be done. The specific working group in charge of assessing the current demand, including regional and national stakeholders, tried to make an assessment taking into account of specific indicators. For example: occupational

unemployment rate; growth of the workforce (vs population growth); turnover rate; foreign doctors⁹.

As result of the discussion, all stakeholders agreed to declare the absence of current balance for the health professions in focus while failing to measure the gap. Indeed, it was not reach an agreement on the combination of indicators to use. Moreover, there was confusion between demand of the labour market and needs of the population which led to apparent contradictions. For example: the statement of current shortages of nurses in high unemployment and vacant positions; the declaration of the current oversupply of dentists offered in the presence of full employment and significant flows of foreign trained professionals. For those reasons, it was decided to adopt the basic indicator “**number of active professionals per thousands of inhabitants**”, articulated per geographical area. This articulation, as presented in the below graphs, showed great regional discrepancies, in particular between southern and western Regions.

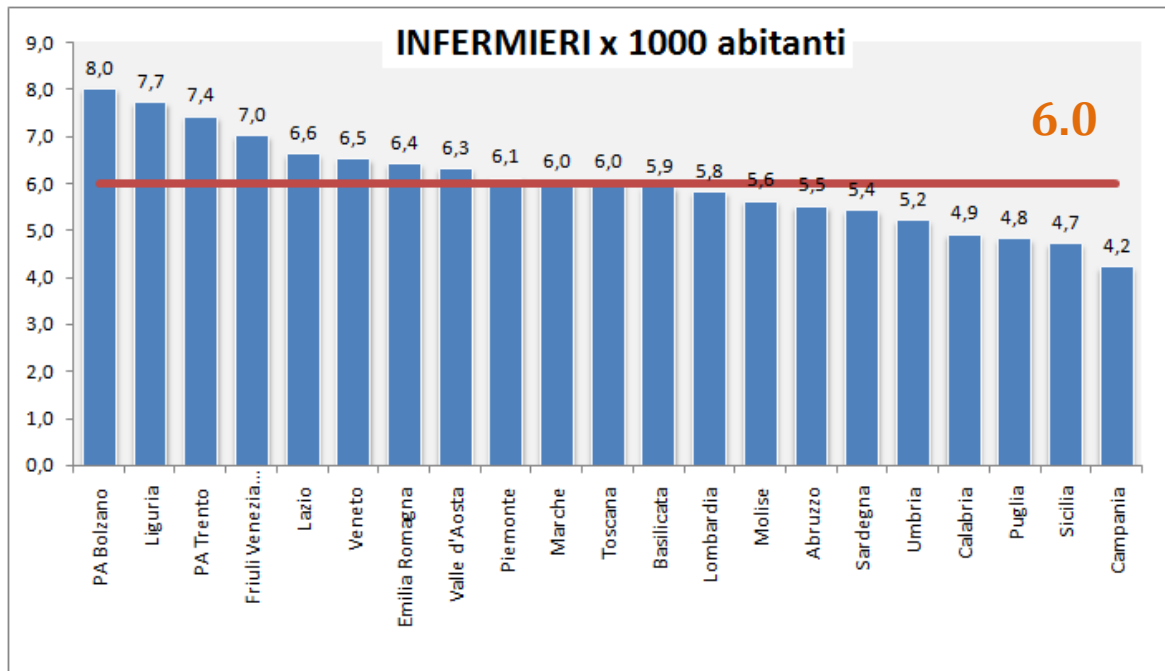
So, in the conclusion of its job, the working group on the assessment of the current demand declared that it was not possible, in the framework of the pilot project, to measure the gap existing at today between supply and demand and suggested to the Project team to start the forecasting exercise with the **assumption of current equilibrium in the labour market** for all the five professions. Anyway, the regional articulation of the indicator “number of active professionals per thousands of inhabitants” was beneficial for the Regions because the benchmark with other Regions as well with the National value gave them useful reference, leading them on the forecasts of the demand, in particular for medical doctors and nurses.

Medical doctors professionally active per 1.000 inhabitants: Regional values and (in red) the National value.

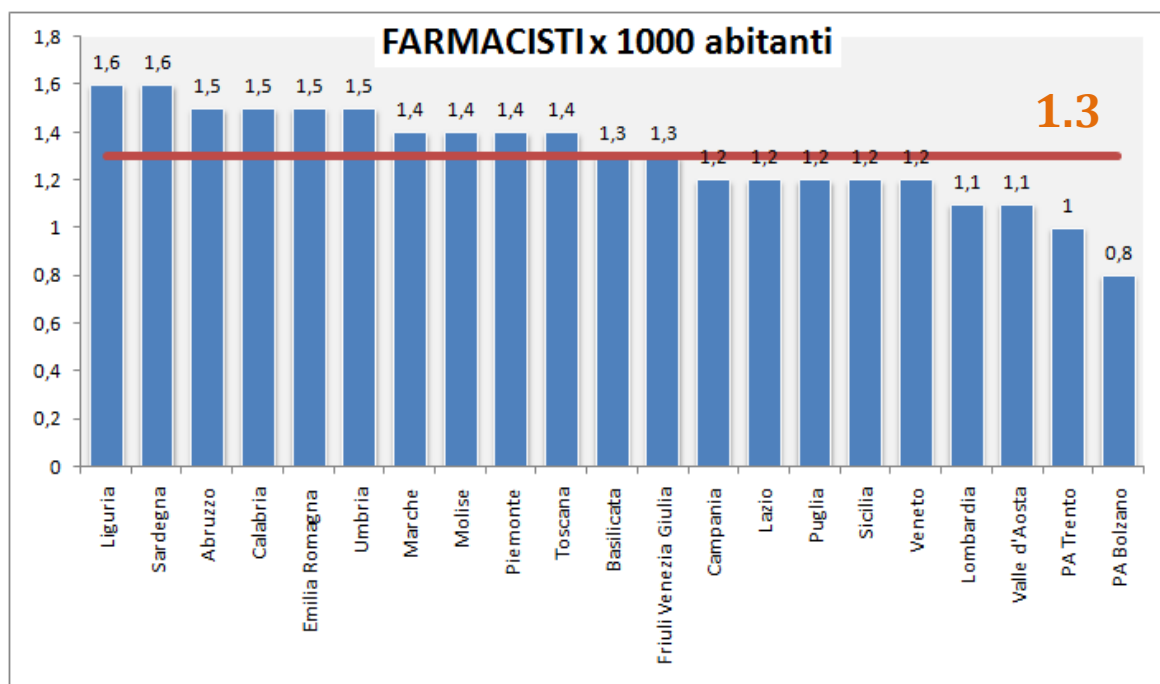


⁹ For more information on which indicators to be used to measure the current gap between supply and demand see “Handbook on Health Workforce Planning Methodologies across EU countries”, pages 304-305.

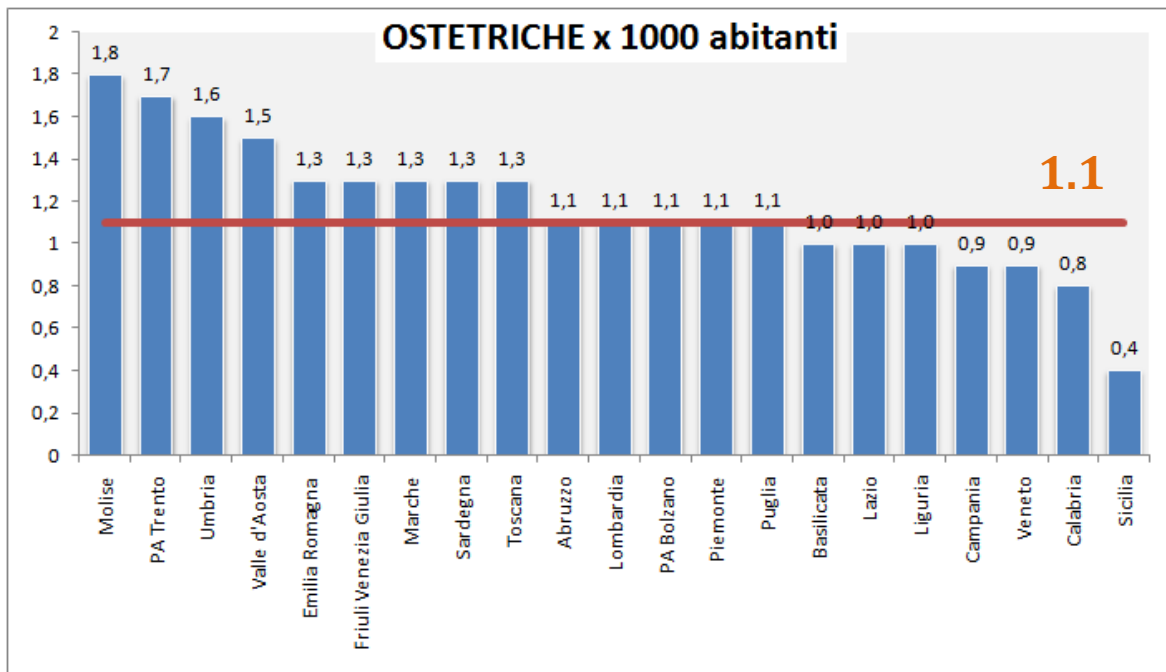
Nurses professionally active per 1.000 inhabitants: Regional values and (in red) the National value



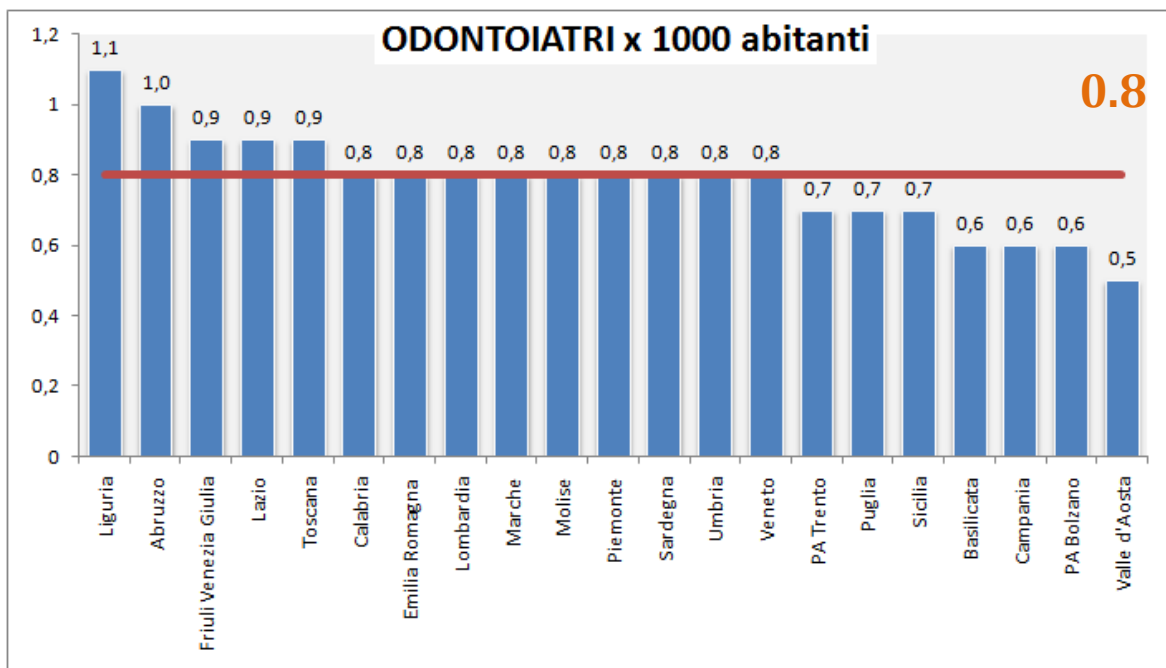
Pharmacists professionally active per 1.000 inhabitants: Regional values and (in red) the National value



Midwives professionally active per 1.000 inhabitants: Regional values and (in red) the National value



Dentists professionally active per 1.000 inhabitants: Regional values and (in red) the National value



The working group tried also to make an assessment comparing the values of the above indicators with the values for the same professions in some EU countries. But the benchmarks were not fruitful for too many difficulties in comparing the values of Italy with the values of other Countries.

Main difficulties regarded:

- 1) The comparison between different categories of “status of activity” (for example, for Italy there are not reliable data on the “practice” professionals);
- 2) The different set of health services organisation among different countries and different rules which make the comparison meaningless;
- 3) The different activities in charge to the professions (for example, pharmacists in Italy are not allowed to prescribe medicines while they are in other countries).

Measuring the gap between current supply and current demand remains a challenge for Italy and further steps are needed.

3.3. Making future forecasts

The workforce planning is described as insuring “the right people with the right skills, in the right place, at the right time”¹⁰ The key questions are therefore: there is a basic approach to estimate “the right people”? What is the “right time”? You can predict the “qualitative” dimensions of health workforce? How to have a reliable and reliable forecasts?

On the supply side, the good practices among EU countries reveal the importance of the models able to formulate different scenarios for the various conditions of health workforce, such as changes in mortality rates, in retirement policy, in the mobility flows, changes in the number of student intakes to the degree courses, etc.

Forecasting demand is undoubtedly more complex, mainly because of increased uncertainty about the estimates of the underlying parameters (epidemiology, demography, organization of health services, technology, etc.). Besides the aspects of the population, it may be important that the models take into account also the budgetary constraints.

In the pilot project it was developed a forecasting model, basically a quantitative stock and flows model, but with the opportunity to use complimentary qualitative elements, in particular related to the demand side.

A specific working group led by Annalisa Malgieri, statistician at the Italian Ministry of Health, developed a mathematical tool for the determination of the future training needs of doctors, dentists, pharmacists, nurses and midwives. The tool was built in Microsoft Excel (version 2007 or later). Contains data on supply and demand of each specific profession and, through a series of formulas and calculations in different worksheets, allows to define, based on certain assumptions and input parameters, the demand for

¹⁰ Taylor S: People Resourcing (People & organisations). Chartered Institute of Personnel & Development; 1998

professionals in the future, expressed in the number of students to be included in the first year of specific degree courses for the profession.

Main features of this forecasting model are:

- the 25-year future horizon in order to observe the demographic evolution of professions and to evaluate systemic impact of training policies;
- adaptable to the five professions in focus (but also to other professions)
- representative of the training and employment dynamics.

3.3.1. Forecasting the demand

In the pilot project the project team committed a specific working group to deepen the issue of the future demand in order to suggest the proper parameters (and the proper values) to include in the forecasting tool.

The working group started from the assumption of current equilibrium between supply and demand (see conclusions of section 3.2) and tried different approaches to estimate future demand.

A **first exercise** was suggested by the Minimum Data Set¹¹: it is the calculation of an algorithm using reliable quantitative data available (stock of professionals, population, health consumption). The key variable of the algorithm is the ratio between the number of the current stock of professionals (assumed as the current demand) and the weighted population (health care consumption by age group). The details and the results of this first exercise (on medical doctors) are presented in the box below.

According to the demand indicator defined in the Minimum Data Set (D051), the working group calculated the future demand on the base of the changes in the population health consumptions.

The formula is the following: $THCx = (HC10*Pop1x + HC20*Pop2x + HC30 *Pop3x)$ where:

- $THCx$: total health consumption in year x .
- $HC10$: per capita consumption of age group 1 in year 0 (basic year)
- $HC20$: per capita consumption of age group 2 in year 0 (basic year)
- $HC30$: per capita consumption of age group 3 in year 0 (basic year)
- $Pop1x$: population of age group 1 in year x .
- $Pop2x$: population of age group 2 in year x .
- $Pop3x$: population of age group 3 in year x .

¹¹ “Minimum Planning Data Requirements”, pages 13-14

We used data provided by the National Institute of Statistics (ISTAT) on the current population and future projections (data available per gender, age and region); the Ageing Working Group of the EC (Italian section - Ministry of Economy and Finance) on the current health care expenditure and their future projections. For more details on the work of the Ageing Working Group of the EC see http://europa.eu/epc/working_groups/ageing_en.htm.

Data available by the Italian section of the Ageing Working Group are only on public expenditure. They also estimate the profile of the health consumption by age, gender and type of service (acute care, pharmaceutical expenditure, hospital care, primary care, long term care, etc.).

In order to weigh the population, we calculated the ratio between the “per capita spending by age and sex” and the “overall per capita expenditure” (“resource absorption coefficient”), divided into 21 age classes.

By comparing the weighted population in 2014 to the number of health workforce stock and applying the same ratio to the weighted population in 2040 you get the estimated number of stock needed in 2040, only if there are no changes in the welfare approaches and, therefore, the only driver is the aging population.

Since the data are available for acute care and long-term care (LTC - Long term care) it was decided to assess two different populations and then compiled into one population according to the following percentages: 12% of the weighted population LTC and 88% of the weighted population for acute care. The choice of these two percentages is motivated by the fact that the same RGS document indicates 12% as a percentage of health spending devoted to LTC.

The result, applied to the medical doctors’ stock, compared with 292.888 medical doctors stock in 2014, raised at 361,424 units needed in 2040.

The above result was discussed during the Experts’ meeting in Brussels on June 24th, 2015 as well in the third Steering Committee’ meeting (July 2nd, 2015) and it was considered as not satisfactory. In particular, the experts considered not correct to weigh the future population on the base of health consumption and suggested to start with an easy indicator as the future quantitative changes of the population and then take into consideration future health services consumption using qualitative methodologies.

Based on those feedbacks, and taking advantage from the knowledge and suggestions delivered by the Joint Action on this topic¹², the working group on the future demand agreed on the following statements which led the work of the group:

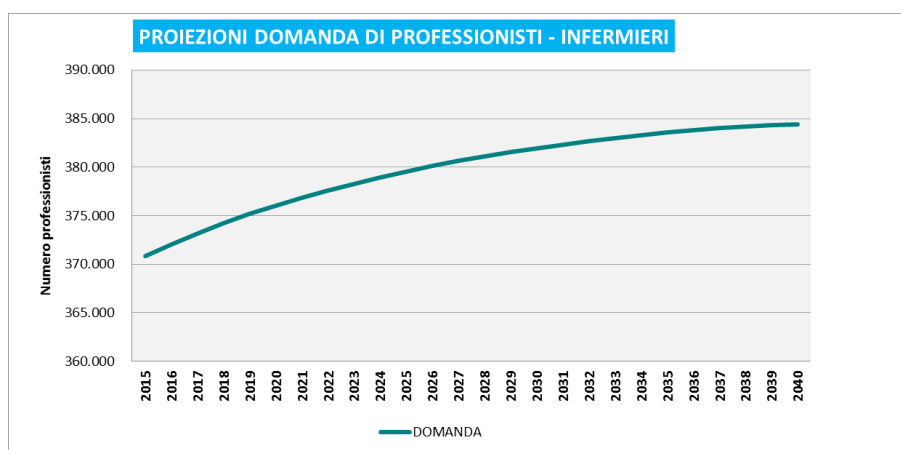
¹² Mainly “Handbook on Health Workforce Planning Methodologies across EU countries” (<http://healthworkforce.eu/work-package-5/>) and “Future skills and competences of the health workforce in Europe” (<http://healthworkforce.eu/work-package-6/>).

- Estimating the demand using precise algorithms is not fruitful;
- The demand for health care is often conditioned by the offer;
- Exogenous factors affect the demand;
- Each forecast is subject to error.
- It's necessary to involve stakeholders in order to share future scenario;
- To forecast future demand requires knowledge of historical trends but also of the different variables involved in the future.

The working group, finally, decide to insert in the forecasting tool the indicator “number of professionals per thousands of inhabitants” related to the estimations of future population (not weighted).

With those available data it was then possible to produce **quantitative estimations of the demand**.

In the below graph, there is the estimation of future demand for nurses, starting from the current stock of professionally active nurses and projected the demand up to 2040 based on changes in the population (61.417.619 people in 2014; 63.889.455 people in 2040) fixing the ratio “professionals/population” at 6,3.



As second stage in the estimation of the future demand, the working group decide to fine-tune those basic projections, using **qualitative methods** in order to include in the projections main drivers as epidemiological changes, technological and diagnostic changes, economic sustainability, changes in the organization of future health services, development of care pathways. The working group organised two workshops and a survey involving a panel of experts (30 people) with expertise in the aforementioned main drivers:

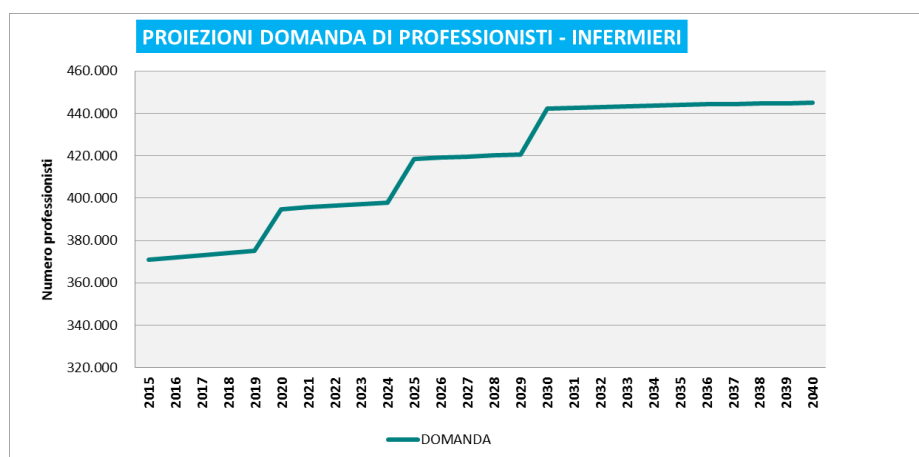
- .1. Objective of the first workshops (November, 27th, 2015) was to identify main factors of possible changes of the demand¹³, in order to validate a survey tool on the impact of those factors on health workforce needs;

¹³ The experts received, as pre-reading material, the draft version of the Joint Action deliverable “Future skills and competences of the health workforce in Europe” (<http://healthworkforce.eu/work-package-6/>).

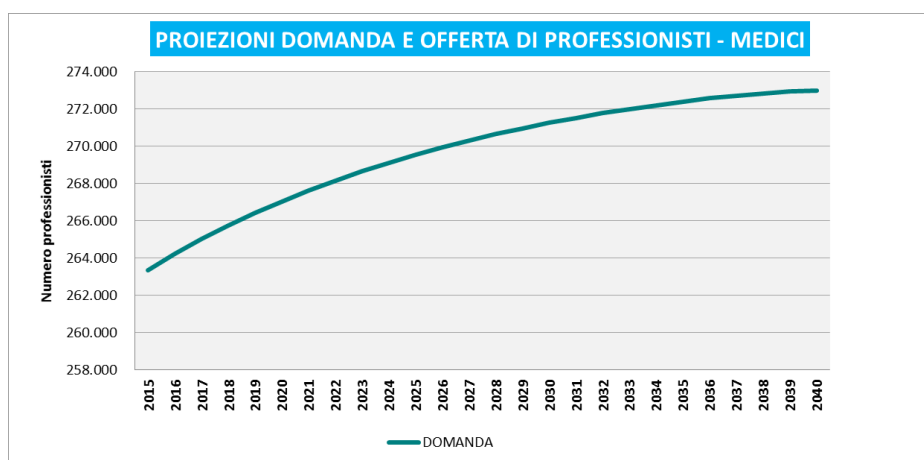
- .2. Then, a survey was done in order to gather deeper information and opinions of the experts (December 2015 - January 2016)
- .3. Data so collected and analysed were resumed in view of a second workshop (held on March 2016), with the aim to define those scenarios most useful to adjust the forecasting model.

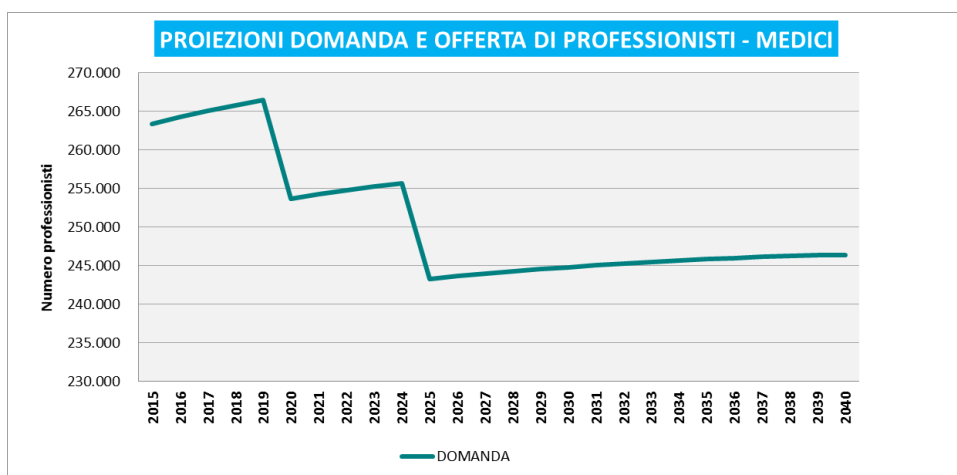
The findings of the above 3 steps were disseminated to the stakeholders which had the opportunity to use them in their decision making process.

The below graph shows how the estimation on future demand for nurses changed after the dissemination of the panel of experts' findings (ratio "nurses/population" gradually increasing from 6,3 in 2014 to 7 in 2030).



In the example below we reported the estimations for medical doctors: the first one is related only to the population changes (ratio "doctors/population" at 4,3), the second one was adopted by the Steering Committee taking into account the future main drivers' changes (ratio "doctors/population" decreasing from 4,3 to 3,9).

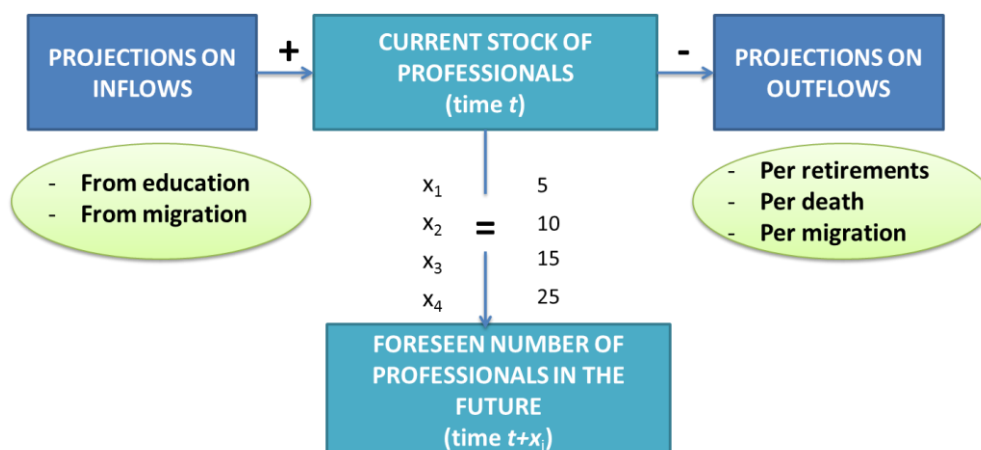




3.3.2. Forecasting the supply

The forecasting tool developed by the working group on “forecasting”, includes also data, assumptions and algorithm to project in the future the current health professional stock in order to represents the training and employment system as a series of connected containers with each other:

- The containers represent the current system consistency;
- The connections between the containers, defined as input / output flows, represent the dynamic evolution of the system over time.



Outflows are estimated for 5 professions in the next 25 years are therefore as follows:

- Survival of the stock: the stock projected (and aged up to 74 years) from 2015 to 2040 decreases every year and every age, applying the survival rate associated with the single age (“survival rates comes from ISTAT and are referred to 2013).
- Retirement of the stock: the stock projected from 2015 to 2040 in the previous step is decreased compared to the estimated retirement age according to retirement assumptions contained in the forecasting tool.

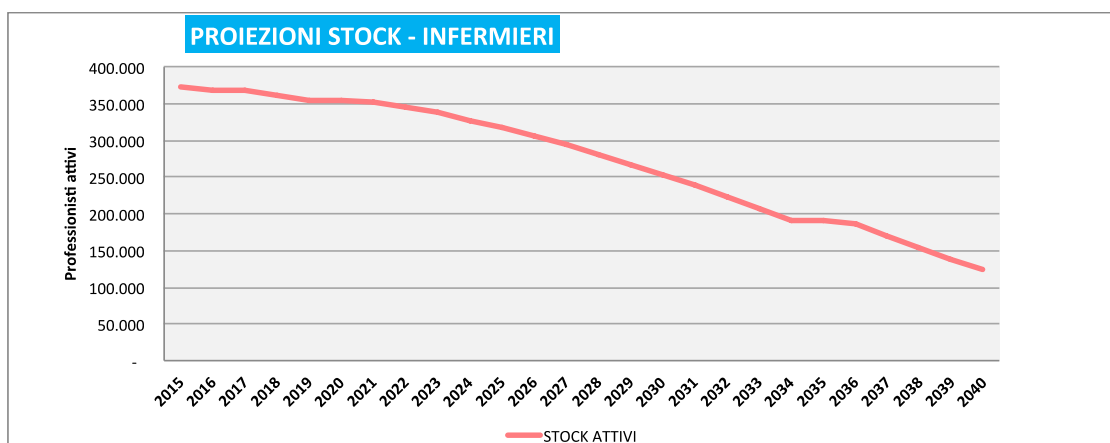
These are the retirement age applied to the different professions in the different years:

Doctors, Dentists, Pharmacists	Retirement age	2015	2016-17	2018-2024	2025-34	2035-40
	Man		66	67	67	68
Women		65	66	67	68	69

Nurses, Midwives	Retirement age	2015-2019	2020-2034	2035-2040
	Man		63	66
Women		63	65	66

Based on the available data, we estimated a **zero percentage of mobility outflows**. The past trends for the 5 professions in focus are not significant and the model aims to target the self-sufficiency of the country’ training capacity.

The results of the stock losses due to the estimated outflows are showed in a specific graph. Below an example for nurses.



The details of the professionally active stock (2014) “survival” rate from 2020 to 2040 is shown in the table below (professionals active in 2014 and “most probably” still active in the future)

	2020	2025	2030	2035	2040
Doctors	79%	59%	42%	31%	23%
Nurses	96%	86%	68%	52%	34%
Dentists	82%	64%	49%	38%	30%
Pharmacists	97%	87%	75%	65%	53%
Midwives	96%	90%	75%	67%	58%

The projection model of the stock is completed by **inflows** of new professionals from the University degree courses. The theoretical “stock and flows” model considered and represented above, provides that the input flows could come from education or immigration.

Regarding the **mobility inflows**, it was not possible to estimate future trends and it will be a next step of improvement of the forecasting model.

Regarding the inflows from education, the model is set to formulate, for each year from 2015 to 2040, any hypotheses on the size of new professionals’ inflows needed to meet the estimated demand, taking account of the existing stock and of the estimated numbers of unemployed professionals in each year.

The estimation of the flows of new professionals from the university degree courses from 2015 to 2040 are calculating according to a double logic.

- Estimations from 2015 until 2025 (2027 for pharmacists, in 2028 for physicians and dentists) are fully or partially determined by the inputs to the degree courses of the years before the academic year 2016/2017, they are independent from the University where the student is enrolled or graduated (the model does not take into account inter-regional mobility of professionals nor of the students) and are calculated starting from the places available in past years at national level (used as a proxy of the actual student intakes).

In the example below, the number of new nurses available in the market in year 2015 is estimated calculating the “success rate” of students in the University degree courses enrolled in different academic years (from 2005/2006 to 2012/2013)

Academic year of enrollment	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Number of students enrolled	12.317	12.656	13.680	13.653	14.242	14.850	14.944	16.336	15.949	16.119
Year of inflows in the labour market	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimation of new professionals										12.600

- The estimations of new professionals in the labour market from 2019 (for nurses and midwives), from 2021 (for pharmacists) and from 2022 (for doctors and dentists), are also influenced (or entirely influenced) on the assumptions about the number of "new professionals" that *the planner* would like to enrol in the academic year 2016/2017 (and later). These values must not depend on the training capacity the universities, but should be defined on the basis of actual health workforce needs, taking account of existing stock and the unemployed professionals.

In synthesis, the calculation of new graduates per year is a function of the number of student intakes in previous years (source: Ministry of Education, 2014).

The flows of new professionals as such estimated are added for each year from 2015 to 2040 to the existing stock to 31/12/2014. The "new stock" is projected in future years until 2040 and is reduced year by year, by applying the mortality rates and the retirement rates.

The results of the projections of the "new stock" are compared with the estimated demand in the years 2015 to 2040 (see previous section of forecasting the demand).

Thus, it's possible to calculate the gaps between the estimated demand and the projected supply (taking into account inflows and outflows). In case of positive gap, the model, the year after, "activates" the number of professionals needed to balance the demand. In case of negative gap, the new professionals coming from education will be considered unemployed the year after (see figure below, for an example).

GAP DEMAND VS SUPPLY							
YEAR	2014	2015	2016	2017	2018	2019	2020
STOCK (professionally active)	262.421	238.245	262.178	256.202	257.697	254.133	253.513
Demand	262.421	263.357	264.218	265.009	265.738	266.411	267.033
Gap	0	-25.112	-2.040	-8.807	-8.041	-12.278	-13.520
Unemployed		10.397	17.313	0	6.239	6.029	6.751
New professionals from Education		6.916	7.553	8.278	8.598	8.763	8.803
Total of "willing to be activated"	10.397	17.313	24.866	8.278	14.837	14.792	15.555
INFLOW		0	24.866	2.040	8.807	8.041	12.278
OUTFLOW		24.176	933	8.016	7.312	11.605	12.898

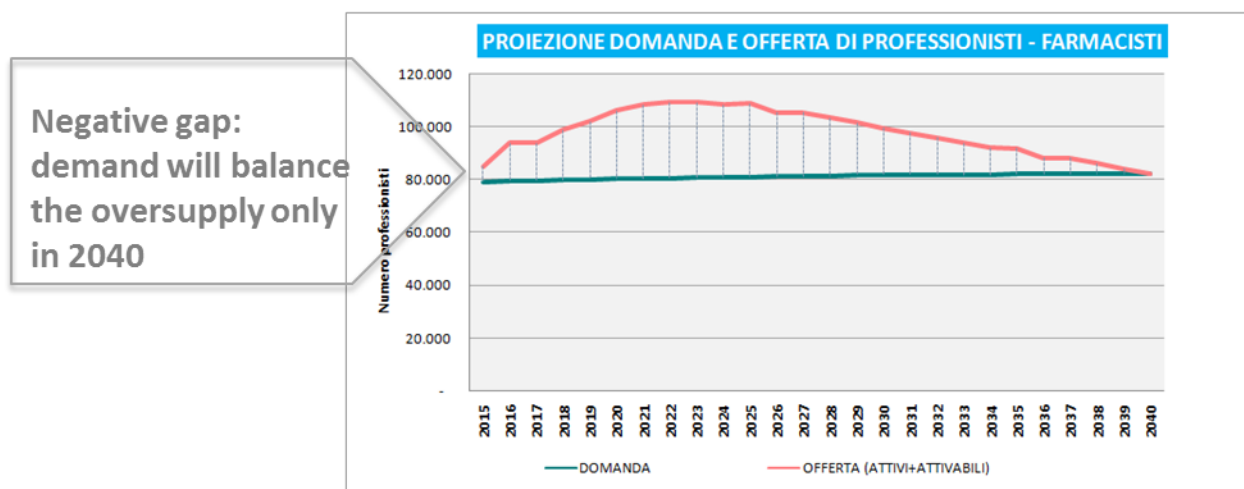
Recent graduates who are not "activated" by the labor market in the "inflow" year, are included in the "container" of unemployed the year after.

The rational is centred around the expected level of demand.

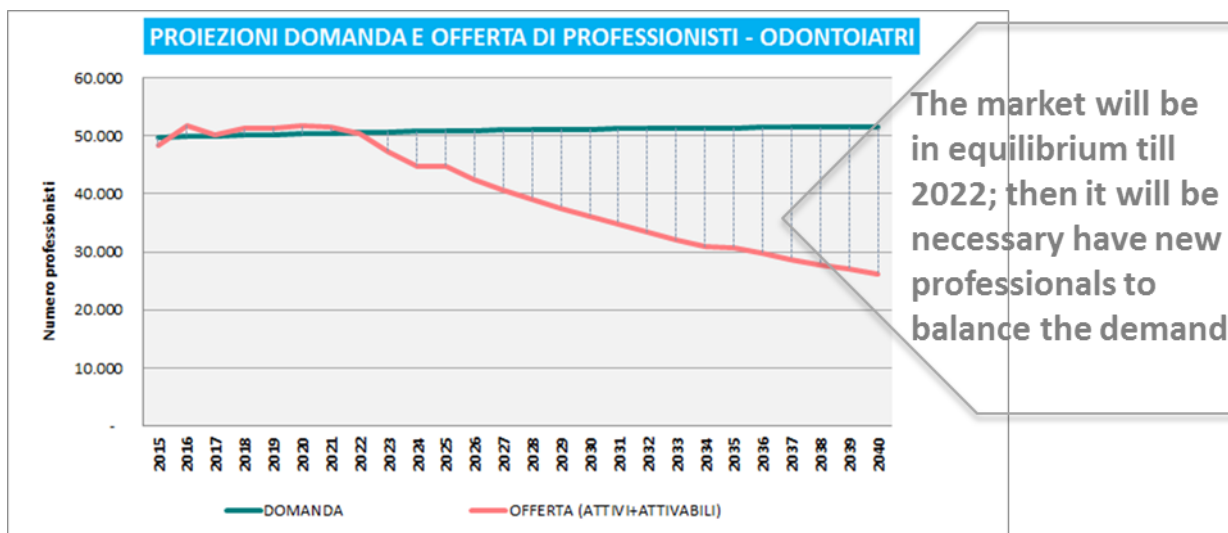
Thus conceived, the forecasting tool permit to match demand and supply forecasts, in a unique graph, representing different scenarios.

Below are some examples of supply and demand projections for the different professions.

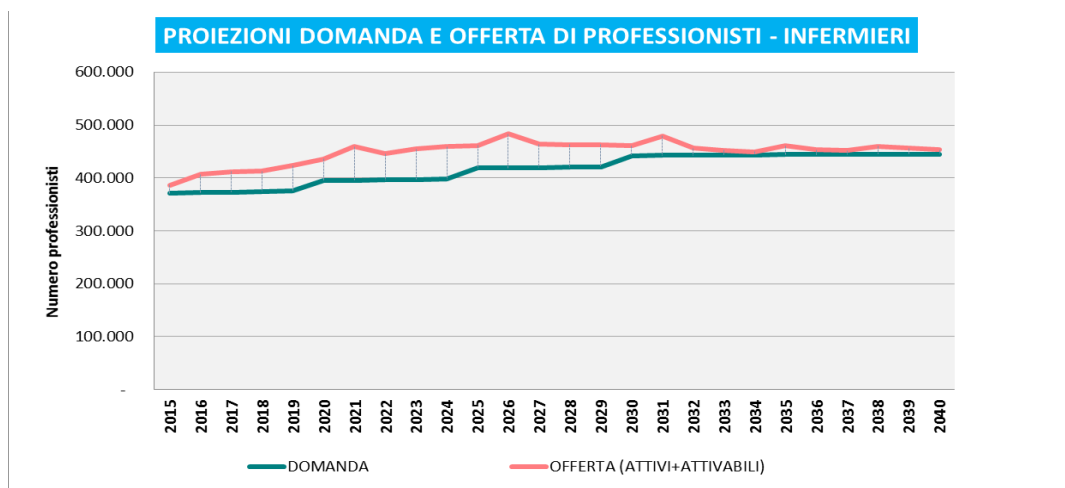
These are projections for pharmacists made in the "no more students intakes" scenario, i.e. assuming no intakes in the degree courses from the academic year 2016/2017 ahead (supply in red, demand in green).



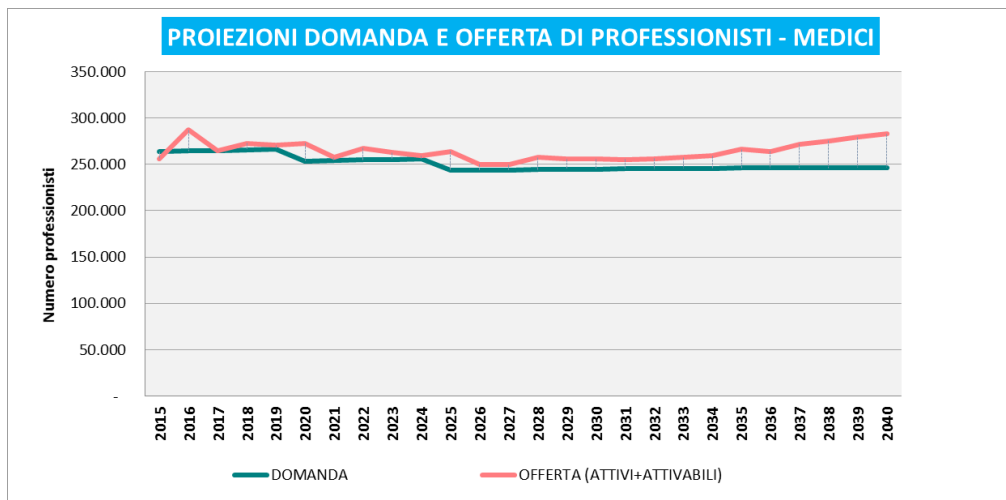
Here are projections for dentists. As the previous example, it is made in the "no more students intakes" scenario, ie assuming no intakes in the degree courses from the academic year 2016/2017 ahead (supply in red, demand in green).



Here instead an example of projection (supply in red, demand in green) of future demand for nurses (growing by 6 nurses per thousand inhabitants to 7 nurses per thousand inhabitants) in a scenario that provides inputs to the degree courses in nursing constant over the years (15.000 enrolments).



Here is another example of doctors with a projection of future demand decreasing (4.3 doctors per thousand inhabitants to 3.9 doctors per thousand inhabitants) in a setting that provides inputs to the degree courses in medicine and surgery constant over the years (approximately 9.000 enrolments).



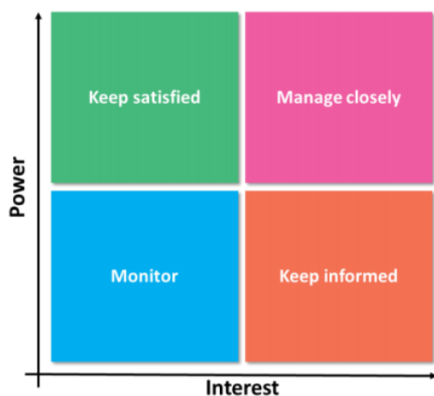
3.4. Organising the stakeholders' involvement

In order to grant a sustainable system and achieve the fixed objectives, all health workforce planning activities need an organized process.

The commitment of all interested parties is strategic in this process, furnishing commitment to the results of the forecasting and supporting the communication to policy makers. The involvement may assume various forms for various types of interested subjects, also depending on the regulatory involvement.

The Pilot Project started with a stakeholders analyse, using a grid in order to organize the different parts involved in various matrixes on the base of their interest and power¹⁴.

Subject interested with great interest and high power on the results of the project, as Regions, Universities, Social Security Institutes, have been directly involved in a Steering Committee and organized in various working groups. Other interested parts have been constantly updated on the progresses of the project. In general, practices developed in EU Countries show the importance to reinforce the partnership with the University and the subject that furnish health services. During the project high efforts have been done in such a way. The involvement of stakeholders representing patients and citizens has been unsuccessful.



In any case, during the pilot project the collaboration among various sectors and interested parties both at a national than at a regional level has substantially improved: in

¹⁴ See "User Guidelines on qualitative methods in health workforce planning" (<http://healthworkforce.eu/wp-content/uploads/2016/05/EU-JA-HWPF-WP6-D061-User-guidelines-on-qualitative-methods.pdf>), page 16.

data collection, data analysis, building of forecasting and in the discussion on the results of the forecasting. About 50 institutions and bodies have been involved in the pilot project (for the details of this involvement, see chapter 2.1).

3.5. Setting the goals

All planning activities ask to define the goals to be reached. If no target is fixed, the risk is to “wander” without reaching useful results, losing time and money. Is it feasible to pursue long term goals connected with health workforce development? Which are basic dimensions to take into account? Is the consent of the interested parties on the goals necessary?

In order to have more possibilities to succeed a goal must be specific (s), measurable (m), time limited (t), achievable (a) and realistic (r). In other words, the goal should be S.M.A.R.T.

Since health workforce planning is a long term process (decision taken today produce their effects not before than 5 -10 years), it is necessary to define long term goals that ask the continuous commitment of policy makers. In order to grant such a commitment, it is essential to build a social support inside and outside health sector, involving professional organizations, Universities and, in general, civil society, even if the research of the consensus among interested parts undermines the efforts of definition of S.M.A.R.T. goals.

Good practices developed in EU Countries suggest to first set strategic principles and goals with a wider timing and then establish, in the strategic framework, operative short time goals.

In Italy, there are no goals connected with health workforce planning and defined as S.M.A.R.T., but:

- There is a legislative decree (see chapter 1) that institutes planning process (art. 6-ter d.lgs. 502/92);
- In the Deal for Health 2014-2016 between Government and Regions is set a general goal on the improvement of managing and planning of human resources at NHS system (art. 22).

The pilot project didn't target the goals system. Legal framework, as well as national health policy, hasn't changed. Different points of improvement have been proposed to the subjects involved in the project. Some of them may be potentially integrated in the future policy on health workforce and so be translated in operational goals (see next section on “Planning Capacity Evaluation). Furthermore, the pilot project has helped in the development of a political engagement and the increasing of the awareness on the importance of the theme, both at a national than at a regional level.

3.6. Linking plans with policy actions

Translating planning in actions is a fundamental step of the whole planning system. So, the key question is: how to reach the goals? For politicians is important to choose the right solutions and the most effective policies. While for planners, it is important to manage action planning with the right approach and the most effective instruments.

In Italy the sole policy lever formally structured is the regulation of entrances to the degree courses (*numerus clausus*). But there are also other possible levers to use, that may affect the dynamics of health labor market:

- Policies on the education: on students' intake and selection (*numerus clausus*), on teaching staff;
- Policies to address professionals' flows: to address immigration and emigration, to attract unemployed labour force, to address health professionals to health care sector;
- Policies to address maldistribution and inefficiencies: to improve productivity and performances, to improve skill mix, to commit health professionals in underserved areas;
- Policies to regulate the demand: to improve quality and quantity of services, in increase services furniture.

The pilot project didn't target to enlarge or change the policy levers, but one of its outputs have been the diffusion of the results of the forecasting for the next 20 years. In consequences of the forecasting results and thus to affect the future dynamics of the health labour market, the five health professional's bodies proposed other policy levers.

1. Pharmacists, to face the massive forecasted future unemployment, proposed to introduce a national regulation on access to degree courses (existing up to know only at local level).
2. Midwives proposed a future vertical substitution with the gynaecologists, considering, on the supply side, the forecasted increasing number of young midwives and the decreasing number of gynaecologists, together with the forecasted decreasing of the demand of midwives (because of the decreasing female population in the fertility age).
3. Dentists proposed a European regulation of the labour market for Dentists, considering the high mobility of dentists and the growing mobility of patients.
4. Nurses proposed incentives to foster generational change to face the current young unemployment and promoted the role of the Community nurse to enlarge the future nurses' demand.
5. Medical Doctors proposed to improve the forecasting demand and link it, on one hand, to the CME programs and, on the other hand, to improve the medical specialities placement.

For a detailed of the five proposals see the reports in annex.

Hereunder the headline of “*La Stampa*” (national newspaper) of March 18th 2016 concerning the proposal of the pharmacists, which aim to bring interested institutions to fix new goals connected to educational training and orienting policy.

Tra 20 anni 63mila farmacisti saranno disoccupati. Gli Ordini: “Serve il numero chiuso all’Università”

Ogni anno si iscrivono all’Ordine dei farmacisti 4.000 neo laureati e il sistema non riesce ad assorbirne più di 1.500

*“In 20 years, 63thousands of pharmacists will be unemployed. Professional Order: “It urges the “*numerus clausus*” at the University. Each year 4.000 new graduates enrol to the Professional Order of Pharmacists and the labour market is unable to absorb more than 1.500. “*

3.7. Planning capacity evaluation

Last step to develop a health workforce planning system is the evaluation of the efficacy of the system to reach its objectives. Key questions are: how to evaluate quality and impact (efficacy) of health workforce planning? In which measure health workforce planning capacity depends on technical factors or political decisions?

In such a sense, the pilot project is to be considered the first step for a continuous improvement of the planning system in Italy.

The efficacy of the pilot project in terms of how it affected the capacity of the planning system was evaluated in two ways. First, a **stakeholder survey** was conducted to assess the “satisfaction” of the involved stakeholders.

Secondly, using an **evaluation tool** developed during the European Joint Action¹⁵, the project team has done an evaluation of Italian system before¹⁶ and after¹⁷ the pilot project. The evaluation kit foresees a score from 0 (minimal planning capacity) to 26 (maximum planning capacity): the project has permitted to pass from 7 to 15 scores, doubling planning capacity.

Here are presented the results of both those initiatives.

¹⁵ [\[insert here the link to the web based tool\]](#)

¹⁶ The evaluation tool was delivered on October 2015. The Project Team made the “ex ante” evaluation in December 2015 considering the planning capacity “as it was” up to January 2015 (date of the pilot project starting).

¹⁷ The Project Team made the “ex post” evaluation in April 2016, taking into account the results reached during the pilot project and the results of the Stakeholders’ Satisfaction survey made in March 2016.

3.7.1. The stakeholders' satisfaction survey' results

The on line survey was done in March 2016. All the Steering Committee members were involved. We received answers from **30 people**. The questionnaire was anonymous. Here are the answers.

QUESTION 1 - USEFULNESS OF THE PILOT PROJECT

Has the participation in the Pilot project been useful for your Organization?	
Not at all	0,0%
Slightly	0,0%
Moderately	28,6%
Very	64,3%
Extremely	7,1%

Comments and suggestions:

- The pilot project highlighted the need and the importance in using a tool for the health workforce planning;
- It represented a valuable opportunity for discussion between the actors involved in the HWF planning process;
- The participation in the project has raised the awareness that the determination of the annual needs of personnel has to be supported by numbers and analysis;
- It allowed to define the actual scenario for the future needs of the 5 professions.

QUESTION 2 - OBJECTIVES ACHIEVED

In your opinion, have the objectives of the project been achieved?	
Not at all	0,0%
Slightly	10,7%
Moderately	39,3%
Very	46,4%
Extremely	3,6%

Comments and suggestions:

- Excellent starting point for a shared HWF planning between Regions and central Government;
- High value add and huge effort in identification of available data sources and information flows ;
- It strengthened the collaboration especially with universities and with Professional Associations;
- In general the objectives of the project have been achieved, but for the future it will important to increase the involvement of the policy makers.

QUESTION 3 - ORGANIZATION

Do you think that the work organization has been effective (videoconferences, working groups, expert meetings etc.)?	
Not at all	0,0%
Slightly	3,6%
Moderately	21,4%
Very	60,7%
Extremely	14,3%

QUESTION 4 - IMPACT ON THE INSTITUTIONAL PROCESS

Have results and activities of the project had a positive impact on the institutional process?	
Not at all	7,4%
Slightly	18,5%
Moderately	29,6%
Very	40,7%
Extremely	3,7%

Comments and suggestions:

- The first impact was surely positive but it's only a preliminary work for a long term activity;
- The dialogue between stakeholders has started and now it's important to carry on the discussion in order to have effective impacts on the institutional process;
- The development of a common methodology allowed to limit interferences from lobbies and to distinguish political inputs from technical analysis;
- It's necessary to be patient because the changes in the institutional process are slow and long to become.

QUESTION 5 -

Would you like to keep on the activities started with the pilot project?	
Yes	96,3%
No	3,7%

3.7.2. The evaluation tool' results

As stated in the chapter 2, one of the object of the Pilot Project was to test the validity and the effectiveness of the “implementation path as proposed and described in the “Handbook of Health workforce planning methodology across EU Countries” (see page 13 of the book). The evaluation tool used by the Project team was useful just to evaluate that validity and effectiveness. Indeed, the evaluation tool is made up of 13 items related to the following steps of the “path”:

- 5 items (in yellow) are related to “setting the goals”, “organising the stakeholders’ involvement”, “linking plans with policy actions”;
- 5 items (in blue) are connected to “knowing about the current inventory”, “assessing the current situation”, “making future forecasts”;
- 3 items (in green) are associated to “planning capacity evaluation”.

Each item can be scored with 3 ratings: 0 (not at all); 1 (somehow); 2 (completely).

Here are the results of the “ex ante” and “ex post” evaluation.

Item 1: Set-up of clear and explicit HWF Planning objectives in national health policy.		Score
Ex ante	In Italy no explicit targets (SMART objectives) are defined but: <ul style="list-style-type: none"> - A national law set up a planning process to decide upon the student intakes at university courses. - In the 2014 Deal for Health among the Government and the Regions set an overall target on the improvement of the HWF management and planning system. 	1
Ex post	The pilot project in Italy was not focused on the goals. The legal framework, as well as the national health policy, remains the same. But several points of improvement were proposed by the stakeholders involved in the project. Some of them can be potentially turn in future HWF policy and goals.	1

Item 2: Achievement of strong political commitment and awareness.		Score
Ex ante	We considered the involvement in the JA as WP leader and the content of the Deal for Health (see point 1) as a moderate political commitment.	1
Ex post	The pilot project helped to arise the political commitment and the awareness, in particular at the local level (involvement of the Regions) and at the cross-sectoral level (involvement of the Education sector, Finance sector, Labour sector).	2

Item 3: Coordinated communication and information flow among national level stakeholders.		Score
Ex ante	Good coordinated communication and information flow between Ministry of Health, Regions and Professionals Associations in the framework of the institutional process.	1
Ex post	Coordinated communication and information flow between Ministry of Health and Professionals Associations were already at good at national level. The Pilot project improved greatly the communication among national and local level.	2
Item 4: Dedicated and established HWF Planning committee at national level - designated responsible entity/specific group.		Score
Ex ante	No HWF standing committee is established. Number of student intakes are decided through the proceeding of a “working committee” made up of representatives from: the Ministry of Health, the Ministry of Education, the Regions, the Universities with medical schools, and the various national orders representing healthcare personnel (multi-level negotiation).	1
Ex post	During the Pilot Project a Steering Committee was established with specific working groups in charge of specific activities and targets. In the follow-up stage of the pilot project several proposals to establish a Standing Committee are in discussion but nothing has been decided yet.	1
Item 5: Multisectoral collaboration in HWF Planning.		Score
Ex ante	In the framework of the institutional planning process, the Ministry of Health established a collaboration for data exchange with Professionals Associations, National Institute of Statistics, Ministry of University and Ministry of Finance.	1
Ex post	During the pilot project the collaboration among different sector and stakeholders at national and local level really improved, both on data collection, on data analysis, on building the forecasting tools and in discussing the forecasting results. About 50 stakeholders were involved in the Pilot Project.	2

Item 6: Established methodology and use of explicit model elements (from simple scenarios to complex mathematical simulations).		Score
Ex ante	No established and shared methodology or scenario.	0
Ex post	The development of a common and explicit model was the goal of the Pilot Project in Italy. As result, a forecasting methodology was developed and used by 19 Regions of 21. Moreover, the same methodology was used, at national level, by the Ministry of Health and the Professional Bodies. However, it's necessary to improve the knowledge of this methodology among the stakeholders.	1

Item 7: Data coverage and completeness on both supply and demand side.		Score
Ex ante	For the Supply side, only data on the Licensed to Practice Stock. No forecasts based on the demand side.	1
Ex post	During the pilot project data coverage improvement was a target, in particular on the supply side: professionally active measurement instead of licensed to practice; geographical distribution based on workplace; age and gender distribution. But a lot of improvements are still needed. The data gap analysis was one of the output of the pilot project.	1

Item 8: Different data sources linked to each other, fostered data exchange - building an integrated interlinked database/warehouse.		Score
Ex ante	No HR interlinked database used for HWF planning. There are some HR database based on the Licensed to Practice Professionals data (from Professional Associations registries) but these databases were not used for planning purpose.	0
Ex post	During the Pilot Project, some experimentations of HR interlinked database were done in order to identify the professionally active stock. The results were really good and appreciate by all the stakeholder, but further improvements are needed (see item 7).	1

Item 9: Support of online platforms, HR information systems.		Score
Ex ante	No support from online HR platform in HWF planning.	0
Ex post	No support from online HR platform in HWF planning. Not developed during the pilot project.	0

Item 10: Utilization of qualitative methods.		Score
Ex ante	No at all.	0
Ex post	During the pilot project the Ministry of Health organised two expert meetings and a survey using qualitative methods to build future scenario on the demand side (main drivers and future skills). This was just an endeavor with very appreciated results. However, the qualitative methods are to be improved and incorporated in the forecasting tool.	1

Item 11: Regular evaluation of HWF Planning System - continuous fine-tuning.		Score
Ex ante	No at all.	0
Ex post	The pilot project itself was the first step for a continuous improvement of the HWF planning system in Italy. The use of this evaluation tool and the stakeholders' satisfaction survey, done after the pilot project, were two experimentations which could be implemented for a regular evaluation.	1

Item 12: Implementation and policy actions based on recommendations of the HWF Planning committee.		Score
Ex ante	No planning committee and no recommendations.	0
Ex post	As follow-up activity of the pilot project, proposals of improvement and recommendations were collected and they are going to be presented and discussed during the Closure Conference of the Italian Pilot Project in Rome on May, 19 th , 2016 (http://healthworkforce.eu/events/19052016-the-final-convene-on-the-pilot-project-italy-dissemination-event/).	1

Item 13: Sustainability ensured by accomplishable/adequate resources.		Score
Ex	At the current in each Region as well as at the Ministry of Health there's at	1

ante	least one person in charge for carrying on the activities related to the HWF needs (institutional process). At the Ministry of Health this person is in charge to collect and systematize the Regional needs (FTE=0,5).	
Ex post	The Pilot Project involved more than 150 people, both national and local representatives. Anyway, it's necessary to increase the staff in the Regions and at National level. There's also need for improving skills and competences of the dedicated staff. A sustainability plan is going to be discussed.	1

The total score of the planning capacity evaluation after the pilot project is 15 compared to a total score of 7 before the pilot project. The evaluation disclosed that the pilot project led to double the planning capacity of the Italian system.

4. Conclusion

The pilot project, here described, had a huge impact on planning capacity for the 5 focused health professions focused.

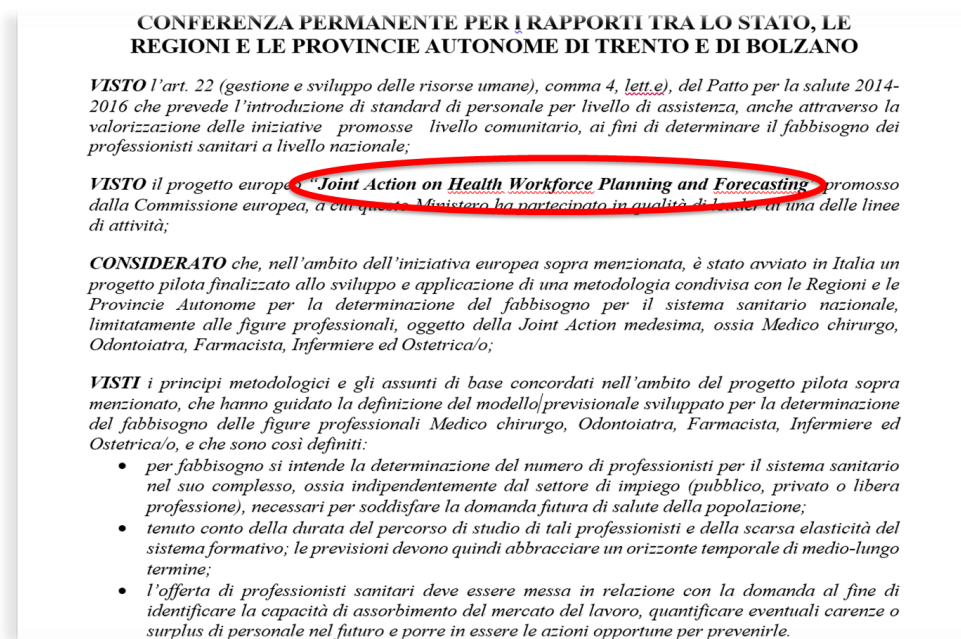
The targets set in the beginning of the project (see chapter 2) were all reached and some improvement' areas were underlined.

Targets	Results	Improvements needed
To build a new forecasting methodology, based on quantitative methods, for the 5 professions in focus (medical doctors, dentists, pharmacists, nurses and midwives) by December 2015 .	A forecasting mathematical tool was developed for all the 5 professions. The tool allows to project the current stock in the next 25 years in comparison with the estimated demand in each future years. The tool is available in a Microsoft Excel file. The Project team sent the tool to all the regional and national stakeholders involved in the project. 110 files were filled with the data needed to forecast demand and supply for the 5 professions, both at regional and national level. The files were sent to the stakeholders in November 2015 .	The interface of the tool is still to be improved in order to have a more user-friendly interface. It's necessary to implement more parameters like FTE count and mobility flows. Connections among the different "containers" of the stock and flows model are to be improved (error's estimation, stochastic variables, etc).
To have at least 5 regions using the common forecasting methodology created during the pilot study to set the HWF needs by January 2016.	19 regions out of 21 used the new forecasting tool. Also the 5 Professionals Bodies used the same tool to forecast their profession at national level.	To have all the 21 regions involved. To make sure that the policy makers (at national and regional level) will use the forecasting tool and the evidences of the planning methodology as decision support system.
To annex to the yearly Government-Regions	The 2016 Agreement ¹⁸ , referencing the Pilot Project	The Agreement contains the needs for all the

¹⁸ [Insert here the link to the Agreement.](#)

<p>Agreement, containing the “needs” of student intakes at the medical universities for all the health professions, a document describing the methodology used to set the health workforce needs (by April 2016).</p>	<p>and the Joint Action (see picture below), explicates the health workforce planning principles agreed with the stakeholders. It also contains in annex the forecasting methodology applied for the 5 professions in focus.</p>	<p>health professions. It’s necessary in the next years to share the forecasting method with the other health professions.</p> <p>The priority is to develop a forecasting tool for the medical specialities.</p>
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The below picture of the first page of the 2016 Agreement between Government and the Regions shows how the Joint Action on Health Workforce Planning and forecasting (and its related issues) has become part of the Italian political action.



The pilot project also gave the opportunity to underline advices and areas of further future development, which will for sure include an opening to other professions (and connected specializations) object of the forecasting.

The Project Team, also on the base of the suggestions received by all the stakeholders involved in the pilot project, agreed on some “lessons learend” and proposed further activities. They are reported in the table below, with reference to the 7 steps of the path proposed by the “The Handbook on Planning Methodologies across EU Countries”.

STEP	Lessons Learnt	Next activities after the pilot project
A. Knowing about the current inventory.	To invest resources in data analysis of the current situation.	To explore potentialities of existing databases.
B. Assessing the current situation.	To agree first on evaluation principles and then on the set of assessment' indicators to be used	To propose a shared methodology to evaluate current situation
C. Organising the stakeholders' involvement.	To involve representatives of civil society (associations of citizens and patients) and of employers.	To update the stakeholders' analysis.
D. Making future forecasts.	To invest in the development of a comprehensive but intelligible forecasting model.	To Improve the interface of the forecasting model and propose a training program for its use.
E. Seeting the goals.	To agree first on principles and strategies and then decline operative goals	To work on the proposal of a strategy of human resources in health (2017-2037).
F. Linking plans with policy actions.	To create a specific working table to analyse and propose alternative and/or complementary policy actions.	To analyse the efficacy of the current political actions and their future potentialities.
G. Planning capacity evaluation.	To use the evaluation planning capacity tool triggering a continuous improvement process.	To implement a regular self-evaluation process.

Annex: The policy actions proposals by the five health professions.

1. The proposal of policy actions by the Nurse Federation (IPASVI)

The analysis developed by the National Federation of the IPASVI Nursing Councils, within the framework of the Joint Action Health Workforce Planning and Forecasting, highlighted the need to increase the number of active nurses from 6.1 per thousand inhabitants to 6.5 per thousand inhabitants.

The timeframe required to achieve the above mentioned ratios is, during this first stage, possible in five years, with a progressive increase of professional workforce reaching 7 nurses per thousand inhabitants within ten years.

Within this scenario – even without achieving the above mentioned required numbers– there are some actions that can be immediately implemented to increase productivity and performance: improve skill mix (i.e. change the mix of professionals required for health care activities as recently defined by SDA Bocconi School of Management, which has stressed the need to develop diagnostic therapeutic healthcare processes based, right from their conception, also on a review of the professional skills and responsibilities to be enacted); and employ more health professionals in the underserved areas.

This process has two fundamental aspects:

The first concerns the workforce traditionally employed mainly in hospitals, which urges for more workforce for two reasons:

1. To restore staffing levels that can ensure patient safety and keep up the provision of quality care, in compliance with international standards of good practice;
2. To meet EU standards on working hours.

Currently, as a result of the many turnover blocks, nurse workforce has progressively aged (the average age has passed from 44.2 years in 2009 to about 47.7 years in 2014), with an average increase of 7 months each year, and an increase in their seniority of 2.3 years between 2009-2014.

To this we must add the result of a survey conducted by Cergas Bocconi on the inability to practice, which accounts for an average of 3% of all the nurses (approximately 11,000 professionals).

Considering the type of activities they do, it is clear that workforce over the age of 50 years is on average exposed to a higher risk and therefore should have differentiated roles from those of younger professionals. It is worthy to note that nurses between 50 and 64 years in 2014, according to the latest report of the National Treasury, were about 150,000.

The proposal to avoid the "generational gap" and promote the inclusion and the follow through of young people into the world of labour refers to the "generational handover."

The idea is to provide incentives to foster generational change:

- the option to voluntarily retire by transforming the employment contract from full time to part time with a 50% reduction of the working hours, but the contributions are kept as if the contract was full-time up to the full maturation of the pension requirements. This type of nurse could also have the role of supervising younger nurses, to ensure that the quality of care is kept up.

The new subdivision of the job roles to optimize work and services, according to the draft of the agreement between the Italian Central Government and its Regional Governments, this would then be determined by the fact that the new specialist competencies will be split into six areas (primary care and community services, intensive care and emergency, general medicine, general surgery, neonatology and paediatrics, mental health and addiction), which the Regional governors have already approved and should therefore be soon approved.

With the money employers save by reducing the working hours of those who will soon retire, the same employer hires, with an open-ended contract, one or more of part-time or full-time workers. When the older workers eventually retire, the part-time employment contracts can then be converted into full-time contracts.

The second area to consider is community care. Today, from the viewpoint of nursing (but not only), this is highly underserved, to the point that a survey conducted by Censis showed that in 2014, citizens requested, paying out of their own pocket about 2.4 billion Euros, more than 8.7 million nursing services.

Among these, there are services that are incidental and related to needs related to post-discharge needs, which could be provided not only by the National Health Service, but also by nurses who work as independent professionals, preferably working in facilities similar to pharmacies.

But there are situations, especially for non-autonomous and chronically-ill individuals, that in addition to the diagnosis and prescription of treatment, require almost constant care and, above all, professionally guaranteed quality. This leads to do-it-yourself solutions (relatives, friends, informal carers, etc., which, moreover, family nurses could educate to perform simple interventions that do not require a specific preparation and routinely improve patients' wellbeing). This increases the number of accesses to the emergency room to avoid further harm to their health.

In these cases, community care can be entrusted to family nurses.

According to the current indices of loss of autonomy and chronicity, Italians requiring in this type of care are about 16 million.

Depending on the type of healthcare needs, we can hypothesize an optimal ratio of one family nurse – who provides care on a continued basis – for every 500 individuals (the number obviously varies depending on the regional epidemiological situation).

In this way, to provide nursing care in the community, approximately 30,000 nurses are needed, as already outlined when describing the demand above.

The specific competencies of family nurses are gained through a specific university course, currently available in 9 universities, leading to the preparation of about 5,400 “specialised” professionals.

We imagine – but these are large numbers that need to be planned – that if each of the 42 universities currently provided a specific course without further changes, we would have about 26,000 nurses specialized in community care quite rapidly.

We must also mention that there is the need to set up community nursing organizations, such as “One Stop Homes for Healthcare” or community hospitals, where nurses can deal directly with people with issues related to frailty, in collaboration with General Practitioners, in small facilities in the community.

2. The proposal of policy actions by the Midwives Federation (FNCO)

In Italy midwifery profession is regulated by Law 42/199 whose art. 1.2, defines its Professional Profile (DM740 / 1994), Ethical Code (FNCO 2010 and the sme.) basic and post-basic Educational Sorting (Decree 270/2004).

Directive 2013/55/ EU, on the recognition of professional qualifications, has introduced many innovations, such as art. 37 of the Legislative Decree 15/2016, stating that pregnancy should no longer be recognized as physiological by a doctor, and so enabling the midwife to recognize its natural character.

Same article also provides changes to the competence profile of the midwife in the management of normal pregnancy, while art. 35 introduces changes to the educational profile, stating that midwife must have:

- “Proper knowledge of those sciences that are the basis of the midwifery” becomes “detailed knowledge of those sciences that are the basis of the midwifery knowledge of those sciences that are the basis of the midwifery. Midwife should be advanced trained and have “detailed” knowledges;
- “In depth knowledge (ex lett. C) of biological functions, anatomy and physiology” becomes “proper knowledge of general medical and pharmacological in midwifery field;
- Proper clinical generically experience, under the control of midwifery qualified personnel has now to be acquired at certified institutions, so the midwife is able in an independent way and under her/his own responsibility, to manage prenatal care, to carry on childbirth and its consequences inside those approved institutions, to control labor and birth, to practice postnatal care and neonatal resuscitation, while waiting for a doctor. In such a way, excluding pathological findings, midwife may operate in an independent way and under her/his own responsibility.

Legislative innovations, requiring detailed and appropriate advanced knowledge, involve the restructuring of midwife’s activities and responsibilities, and then Table B “ Standard practical and apprenticeship training”.

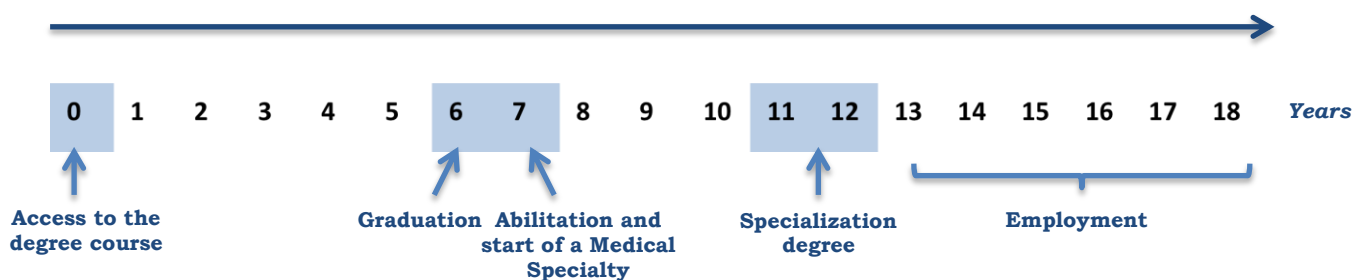
In the future specialized medical area will adopt the numerus clausus for graduate schools, and around 2025 their number will be reduced to approximately 1/6, so some activities will require greater involvement of the midwife who will need for more knowledge, skills and abilities to be able to recognize the disease by allowing specialized work, on advice, on time and in an appropriate manner (TRIAGE OBSTETRICAL GYNECOLOGICAL - NEWBORN)

That's why FNCO (National federation of colleges of midwife) in partnership with the National Commission of Obstetrics Degree Courses (CNCLO) has reviewed midwife training with a run of single-cycle study of five-year duration, leaving intact the professional profile (DM 740/1994). It will be organized in different areas of general health, so there will be specific activities in the prevention, treatment, rehabilitation and palliation.

The current supply and demand of the job market views midwife committed to the promotion and protection of biological Health - Sexual - Reproductive being inevitable that, for the definition of adequate training to meet the needs of general health, their activities must be diversified for different age groups. For example women's health needs in terms of prevention and rehabilitation are greater in the young band and in the third/fourth age, while those nursing characterize the age group ranging from 25 in 45 years given the increasing age of the first child (Cedap 2015).

3. The proposal of policy actions by the Medical Doctors Federation (FNOMCEO)

Nowadays, any student who decides to enrol into the Medicine and Surgery degree course will have to pass through a long academic path before starting his professional experience, as shown in the following scheme.



It is necessary to introduce appropriate regulations or to modify the existing ones as to intervene on the most critical moments of the medical education path, reducing its length and favouring the employability.

Therefore, career advice services in the last years of the High School could be a well-functioning tool as to guide motivated and talented students to this degree course. Moreover, current admission policies seem to be inadequate to identify the more skilful candidates.

Planning policies have a crucial role in defining the number of students that could be admitted to a degree course each year, on the basis of the demand for health care and considering both turnovers and retirements.

The number of graduates is, by far, above current available places in medical specialties (10.000 graduates vs. 7.500 post-degree training contracts) and thus many candidates cannot have access to post-degree educational programs, creating a sort of ‘funnel’ for a lot of young university graduates.

As a result, the correct methodology for determining admissions should be based on the seats available in graduate schools (even considering the Specialty Training in General Practice), then re-establishing the overall number of training contracts and so planning to absorb the excess demand.

The required number of health professionals estimated by the FNOMCeO for the 2016-2017 academic years is approximately 8000.

Going after, it is recommended also to consider the necessity to improve the number of specialists in General Practice as to fill the deficit between inflows and outflows (15.000 vs. 5.000 in the next five years), to promptly react to new local and district set-ups and to upgrade primary healthcare.

It is also necessary to adapt educational programs as to reflect actual and expected changes in healthcare systems and to respond to technological and demographical trends (chronic disease management, develop long-term care skills), creating a workforce concentrated more on future skills and core competencies than on past experiences and already acquired know-how.

Educational and training programs should also increase the amount of time dedicated to practical training relatively to the hours spent on theory, put more emphasis on non-technical skills (global health, medical management, leadership, team working, communication and medical humanities), consider the importance of a training period in non-academic and public structures affiliated to National Health Service (i.e. teaching hospitals, community health centres) and reduce the number of years required by specialist qualifications.

Finally, intervention policies and possible solutions concerning healthcare employability should encompass the introduction of the so-called ‘enabling degree’, the transformation of the actual training contract for interns in a fixed-term one and should enable the possibility for trainees in General Practice to be directly employed by the National Health Service.

4. The proposal of policy actions by the Dentists Federation (CAO)

Primary parameter in health workforce planning is that HWF number has to be able to grant citizens’ health care. Furthermore, also health workforce spatial location impacts on the possibility, for citizens, to find answers to their needs.

However, high costs of education (more than 200.000 € at the expense of the Government), social costs for professionals (underemployment, unemployment and emigration) and healthcare costs for the whole collectivity (overtreatment), should impose to avoid the plethora.

Major of experts in the field, as well as epidemiological indications of the WHO, agree to indicate that the correct relation between dentists and population is estimated in 1 out of 1700.

This relation finds positive reply in the empiric European data: in those countries that have an higher relation (for example Great Britain, with a relation estimated in 1 out of 1927 inhabitants or The Netherlands with a relation estimated in 1 out of 2012) the market tends to ask and absorb new professionals, while where the relation is lower (as in Italy, with a relation estimated in 1 out of 1004), the market is unable to absorb new professionals and so also the employment rate, the medium remuneration and the emigration.

The comparison of employment data one year after the specialist degree underlines a worsening of the 16,1%, going from 79,2% in 2008 to 63,1% in 2013, in parallel with a decrease of 7,1% of the wages, going from 1.139 € per month in 2008 to 1.058 € per month in 2013; also in such a case women have a medium wage lower than men in a percentage of the 34,2% (879 € vs 1.176 €). From an analysis of data it clearly arises that professionals search for outlet work abroad.

All indicators connected with health or economic needs show a market in a situation of disequilibrium caused by an excess of supply compared with the demand which is mainly (90%) satisfied by the private sector, representing the public sector for dentistry the 5% and the remaining 5% being satisfied by insurances supplied by public or private structures.

Being in prevalence an out of pocket market, it is fundamental flank to the relation between dentist and population also the pro-capite GDP parameter (corrected on the basis of the purchasing power) expressed in USD that furnishes for the year 2011 the following values: Swiss pro-capite GDP 43.897 USD and 1 out of 1.895; Austria pro-capite GDP 41.050 USD and 1 out of 1.788; Sweden pro-capite GDP 39.540 USD and 1 out of 1.253; Germany pro-capite GDP 37.728 USD and 1 out of 1.259; Belgium pro-capite GDP 37.236 USD and 1 out of 1.412; United Kingdom pro-capite GDP 36.171 USD and 1 out of 1.927; France pro-capite GDP 34.860 USD and 1 out of 1.499; Spain pro-capite GDP 30.060 and 1 out of 1.653; Italy pro-capite GDP 30.107 USD and 1 out of 1.070). This parameter shows a plethora in an economic difficulties situation.

Italian data in the last 18 years clearly show the inefficacy to face the matter “planning the number of professionals” in a national optic, relaunching, with prepotency, what the CAO (Commission for the register of dentists) is asserting since 2010: in an unique market planning has to be unique, i.e. on an European basis.

The number of places banished for the degree in dentistry and partial denture, from 1997 to 2010, have been 9.578 (in line with the generational replacement, maintaining the parameter of appropriateness in order to satisfy citizens’ needs), while the number of new registered to the register of dentists, from 2002 to 2015, is 15.564, with a difference of +63,2%, if compared with the maximum conceivable number; increasing caused in a relevant way by Italian citizens that, having the economic capacity, in order to bypass the numerus clausus in Italy, have studied abroad at private Universities in EU Countries, where the medium annual tax is of about 20.000 €.

A conservatory vision, often anchored to some situation even if diversified in the realities represented by different universities, has conducted a minority part (even if present in dentistry) to prefer a crony distribution of the places to be assigned to various degree courses up to an organic project, rewarding quality.

On the base of the above mentioned elements it would be possible to speculate, more than a reduction of entrances at Italian Universities, a different use of their training capacity, dividing the reaching of the full training capacity between Government and market, an operation that might grant to the State a saving of about 132mln per year and to the Universities revenues of about 90mln per year.

5. The proposal of policy actions by the Pharmacists Federation (FOFI)

For the Italian Chamber of Pharmacists it was very important to take part to the Pilot Project carried on in the ambit of the Joint Action Health Workforce Planning and Forecasting. It was a very good experience and the outcomes of the project will be essential for the future of the profession.

At the beginning of the project, pharmacists had some data available, especially the exact number of members of the regional chambers. But this data weren't connected to other data, so the Chamber wasn't aware of how many pharmacists were working, where they were working, etc. This data were not easy to find, but finally we achieved to find them, mainly from the pharmacist pension fund.

It was a very important experience to find all this data and the project gave the Chamber possibility to connect them and project them to the next 25 years.

Pharmacists already knew to have some problems with occupation and there was some unemployment among pharmacists, especially the young ones coming from University. For that reason we created a webpage called "Farmalavoro" with the purpose to help pharmacists to find a job. This webpage is now online since a year, giving good results.

Finally the Joint action designed a very bad picture for our profession. In the last years up to about 4700 new pharmacists coming out of Universities, need is just for 1300. This is a huge difference and if this situation goes on for the next 25 year, we will have more than 30% of unemployment for our profession. If the access at University is blocked from this year on, in 25 years we will still have some unemployed pharmacists.

So what can we do to change the situation? First of all it is urges, even if politically not so easy, to introduce an access limitation to University.

It could also be a good idea to organise an information campaign for students at school about the difficult situation after University.

And last, but not least we should find new job opportunities for young pharmacists in hospitals, industry, in the National Health Service, etc. On the other hand community pharmacy will not be able to absorb many pharmacists, because of lower margins and income of the pharmacies.

The problem is that all these initiatives will contribute only partially, because the numbers are so huge and the difference between needs and availability of pharmacists is so big.

In conclusion we have an unemployment emergency for pharmacists in Italy and it will take a long time to solve this problem.

The Pilot Project has helped to discover the real situation in the long period.