

Minimum Planning Data Requirement – Addendum 2016

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I. Introduction

The Minimum Planning Data Requirements is a report published in June 2014 within the Joint Action on Health Workforce Planning and Forecasting. The report covers the following aspects.

- Basic principles on health workforce planning shared among the Joint Action partners;
- A deployment of those principles in three main purposes of health workforce planning recommended as three subsequent stages, namely
 - 1) to recognise the major imbalances of health workforce (supply vs demand);
 - 2) to analyse these imbalances (impact assessment on imbalances of basic actions focus on health production, inflows from education and from abroad; outflows for retirement and to abroad;
 - 3) to identify possible solutions (with regards to future main drivers of health workforce demand).
- Some key planning indicators useful to measure the above stated purpose 1 and purpose 2.
- The related *minimum data set* needed to measure those key planning indicators (see table below).

| Areas | Category | Supply | | | | Demand | | |
|---------------------------------|----------|--------------|----------|------------|---------------------|--------------------|------------|--------------------|
| | | Labour force | Training | Retirement | Migration (outflow) | Migration (inflow) | Population | Health Consumption |
| Profession | | X | X | X | X | X | | |
| Age | | X | X | X | X | X | X | X |
| Head count | | X | X | X | X | X | X | X |
| FTE | | X | | | | | | |
| Geographical area | | X | X | X | X | X | X | X |
| Specialisation (where relevant) | | X | X | X | X | X | | |
| Country of first qualification | | X | X | X | X | X | | |
| Gender | | X | | | | | | |

The report findings are mainly based on three input sources:

- 1) *Feasibility Study: EU level collaboration on Forecasting Health Workforce Needs, Workforce Planning and Health Workforce Trends*, (Matrix Insight Ltd for the European Commission, May 2012);
- 2) *Workshop on the Minimal Data Set* (Milan, 2013), <http://healthworkforce.eu/events/1920092013-milano/>;
- 3) A survey conducted in 2013 among some Joint Action partners (namely Italy, the Netherlands, Belgium, Denmark, Finland, Germany, Greece, Hungary, Iceland, Poland, Portugal, Slovenia, Spain) regarding the data available and used in their national health workforce planning.

The minimal data requirements (MDR) has been proposed as a toolkit for developing a minimal demand & supply based planning process.

But first, the MDR was used and tested in two Joint Action's deliverables, both published in 2016, namely:

- **Report on health workforce planning data**, which provide a gap analysis on 12 EU Member States together with a toolkit (<http://healthworkforce.eu/work-package-4/>);
- **Report on two Pilot Projects and two Feasibility Studies**, which describes and analyses the findings of two planning system implementations in Italy and Portugal and of two Feasibility Studies in Germany and, jointly, in Romania and Moldova, conducted with the general purpose of "testing" the validity and

the usefulness of the “Handbook on Health Workforce Planning Methodology Across EU Countries” (<http://healthworkforce.eu/work-package-5/>).

Which are the main findings of those two deliverable related to the MDS?

The *Report on health workforce planning data* concludes the gap analysis stating that “*there are still significant gaps in national data coverage compared to the MDR. The least available category gaps (Migration-Outflows and Country of first qualification) should gain a focus in discussions and data collections. Additionally, greater availability and coverage of quality data and proper indicators data.*” (page 35)

The same conclusions in terms of **data availability** come from the *Report on the two Pilot Projects and two Feasibility Studies*: both in Italy, in Portugal, in Germany, in Romania and Moldova the greatest lacks are on data useful to measure the mobility flows.

A **first discussion** is whether the mobility information are essential or not to build a first level of health workforce planning system.

The Report on mobility data¹ put forward a norm on page 46: “*if in any year the annual net national HWF gain or loss is above 5% of the annual HWF “production” of the country (the number of health professionals receiving qualifications) due to international mobility, then HWF mobility may be called significant and is to be considered in HWF planning.*”

Moreover, in terms of **data useful** for health workforce planning, the two implementation projects in Italy and Portugal showed the feasibility of planning the health workforce using **less** data than the *Minimum Data Set* define as needed (i.e. *minimum*), even if by means of assumptions.

A **second discussion** is whether lower requirements can still deliver a useful planning process.

In 2016, two years after the Minimum Planning Data Requirements publishing, based on more evidences produced by the Joint Action’s Work Packages, we believe that the MDR remains valid, but that the first steps for setting up planning and forecasting capacity can set lower requirements then the objectives sets for defining the D051 deliverable.

That’s why it is necessary to report in this addendum both the reasons for the Minimum Planning Data Requirements reviewing and a new proposal, evidence-based, of “*a common necessary tool kit to be adopted by the EU Member States for providing basic forecasting and enabling a basic planning process to take place*”.

II. What could be an alternative required data set?

The report on Minimum Planning Data Requirements is established to meet a set of goals. The *Handbook on Planning Methodologies across Europe Countries* (Handbook) describes clearly the importance of setting goals in establishing a planning process. Depending on the goals set, the extend and quality of data behind the definition of minimal moves onwards or backwards.

What are the standard minimum (attainable) goals and what are the data needed?

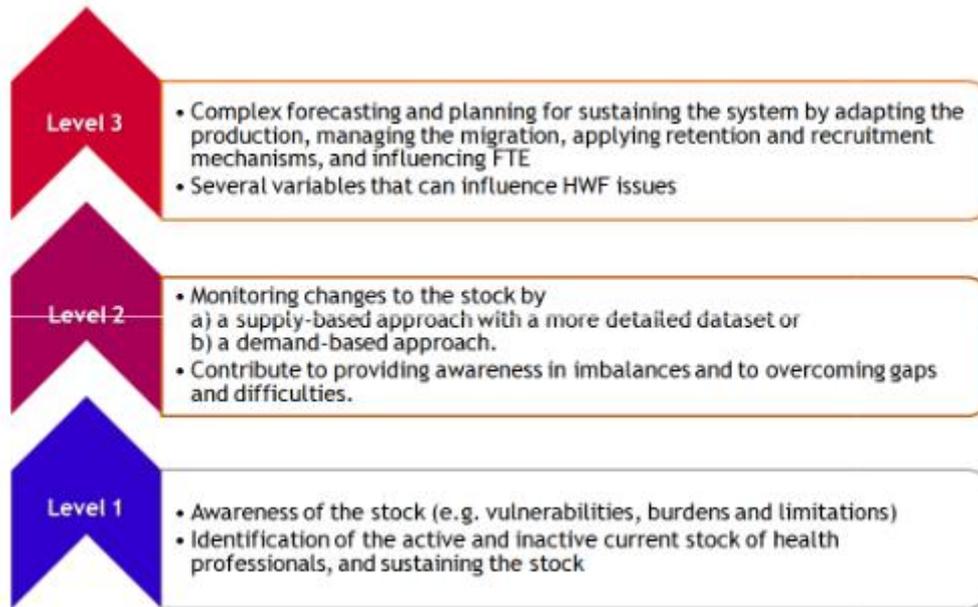
The Handbook proposes the following three steps for an implementation planning process (and as such taken by the two pilot project in Italy and Portugal):

- 1) Knowing about the current stock (inventory of the stock);

¹ “WP4 Report on Mobility Data. Health workforce mobility data serving policy objectives”, Aszalós Z., Kovács R., Eke E., Kovács E., Cserháti Z., Girasek E., Van Hoegaerden M., 2016, http://healthworkforce.eu/wp-content/uploads/2016/03/160127_WP4_D042-Report-on-Mobility-Data-Final.pdf

- 2) Assessing the current situation (inventory of the imbalances);
- 3) Making future forecasts.

Also the toolkit proposed by the Report on Health Workforce Planning Data² suggests on Recommendation 10 / page 66 a gradation of level of Health Workforce Planning:



FIRST STEP OF PLANNING

The **first step** took in the pilot projects – corresponding to the level 1 of “Report on Health Workforce Planning Data” toolkit - was the identification of the active and inactive current stock of health professionals. This is considered also by the Handbook as a mandatory step to start with. With an inventory of the stock, and its monitoring along the years, we already reach a first significant level of planning.

| | |
|-----------------------|--|
| PLANNING GOALS | <ol style="list-style-type: none"> 1) Monitoring of the stock. 2) Policy Dialogue on sustaining the stock. |
| ASSUMPTIONS | <ol style="list-style-type: none"> a) The stock is either closed or the migration gradient is small or not significant toward the linear renewal rate of the stock*. b) Regardless the evolution of the demand, the required stock is solely a function of the available budget. <p><i>*If the stock is not closed and migration gradient is significant, migration data MUST be collected and taken into account in the calculation. See the proposed norm above.</i></p> |

The ratio **stock/budget** is the main measure, and **budget** is the variable parameter. When **budget** is increasing, the **stock** should either increase accordingly or increase with an optimisation factor.

² Report on Health Workforce Planning Data D.043, Kovacs E., Girasek E., Kovács R., Aszalos Z., Eke E., Cserháti Z., Ragány K., Health Services Management Training Centre University, Joint Action Health Workforce Programming & Forecasting, Funded by the Health Programme of the European Union, http://healthworkforce.eu/wp-content/uploads/2016/06/160524_WP4_D043_Report-on-HWF-planning-data.pdf

Which data are needed for achieving this first step?

| Data | Unit of measurement | Standards and variants |
|---------------------------|---|--|
| Profession | Headcount | According to the EU definitions allowing mutual recognition |
| Status of activity | Headcount (basic) or FTE (advanced) | - Active/Inactive; - Licensed to practice, professionally active, practising. |
| Working Geographical Area | Headcount | When budget is distributed per geographic area |
| Specialisation | Headcount | When budget is distributed per specialisation. |
| Budget | HWF overall expenditures or percentage of GDP | |

SECOND STEP OF PLANNING

A **second step** of planning, as suggested by the Handbook and corresponding to the Level 2 of “Report on Health Workforce Planning Data” - toolkit, would be the identification of imbalances between the existing stock of health professionals and the demand of health services. Both the pilot projects in Italy and Portugal tried to identify the imbalances for different health professions but with few results which was considered not satisfactory³.

Defining the demand turned out to be quite challenging. From complex formula’s requesting poorly available or low comparable data, both Italian and Portuguese pilot projects stepped down in first instance to assumptions.

With an inventory of the stock, and a definition of the demand, we may create indicators (ratio). The ratio is considered to be fitting as a baseline on the first measurement year. Monitoring along the years, allow to reach a second significant level of planning by tracking the evolution of the ratio and adopting (reactive) actions to compensate its evolution.

The ratio could also be challenged against similar ratio in other countries, available within OECD and WHO reporting. Policies for influencing the ratio in future years is the second level of planning too.

| | |
|-----------------------|--|
| PLANNING GOALS | <ol style="list-style-type: none"> 1) Monitoring of the indicator Demand/Supply. 2) Policy Dialogue on sustaining the Demand indicator. |
| ASSUMPTIONS | <ol style="list-style-type: none"> a) Migration: same as first step. b) There is a target ratio Consumption / Workforce Unit to be defined – the imbalanced being calculated through the comparison of a target value of the indicator vs. the actual value. |

Which data are needed for achieving this second step?

Data needed on Supply are the same of step 1.

³ For the descriptions of the results achieved and the lessons learned see “Two Pilot Projects and two Feasibility Studies. The overall report. D054”, Joint Action Health Workforce Programming & Forecasting, Funded by the Health Programme of the European Union (<http://healthworkforce.eu>), 2016, p.23.

Data assumption on **demand** are on

- Population, measured in headcount, per year of birth or age group and per geographical area (residence);
- Health Consumption, measured in health consumption expenditures, to combine with population age structure and geographical area (residence).

| Data | Unit of measurement | Standards and variants |
|---------------------------------|-------------------------------------|--|
| Profession | Headcount | According to the EU definitions allowing mutual recognition |
| Status of activity | Headcount (basic) or FTE (advanced) | - Active/Inactive; - Licensed to practice, professionally active, practising. |
| Working Geographical Area | Headcount | When budget is distributed per geographic area |
| Specialisation | Headcount | When budget is distributed per specialisation. |
| Population by Geographical area | Headcount | |

THIRD STEP OF PLANNING

A **third step** of planning being a first level 3 of “Report on Health Workforce Planning Data” -Toolkit would be the projection of stock and demand forecast (and resulting imbalances) in the future.

For the supply, basic assumptions are steady production and outflows mainly through retirement and mortality in the various age categories.

For the demand, the basic assumption is that demography is the main influencing factor, and assuming the health consumption as linear function of demographic evolution.

With a projection of the stock and a forecast of the demand, we may forecast the evolution of the indicators (ratio).

| | |
|-----------------------|--|
| PLANNING GOALS | <ol style="list-style-type: none"> 1) Forecasting of the indicator Demand/Supply. 2) Policy Dialogue on sustaining the system by adapting the production. |
| ASSUMPTIONS | <ol style="list-style-type: none"> a) Migration: same as second step. b) The health consumption is a linear function of the demographic evolution. c) The supply can be adapted a ratio of the demographic evolution and with an additional factor. |

Which data are needed for achieving this third step?

Considering that:

- The ratio health services demand/stock is the main measure, and both health services demand and supply are the variable parameter
- When health services demand is increasing and the supply is reduced by the outflow, the inflow must compensate both demand increase and outflow.

On the supply side, data needed are the same as previous steps, plus data on age of the stock, measured by year of birth or age group, useful to forecast outflows per retirement and mortality.

| Data | Unit of measurement | Standards and variants |
|---|-------------------------------------|---|
| Profession | Headcount | According to the EU definitions allowing mutual recognition |
| Individual age of Stock | Years | - |
| Status of activity | Headcount (basic) or FTE (advanced) | - Active/Inactive; Licensed to practice, professionally active, practising. |
| Working Geographical Area | Headcount | When budget is distributed per geographic area |
| Specialisation | Headcount | When budget is distributed per specialisation. |
| Population by Geographical area | Headcount | |
| Population mortality rate per age category. | | |

FURTHER STEPS OF PLANNING

Further **steps**, - still at level 3 of “Report on Health Workforce Planning Data” toolkit - considered as an advanced step of “making future forecast”, takes into account a full variation of the stock is measured and converted into potential service through the application of real FTE, taking into account the gender gap. Demand calculation remains simplified as in previous level. Within the various real calculation options, this is the minimal setting and is considered as a fourth significant level of planning.

| | |
|-----------------------|--|
| PLANNING GOALS | <ol style="list-style-type: none"> 1) Forecasting of the indicator Demand/Supply. 2) Policy Dialogue on sustaining the system by adapting the production, managing the migration, applying retention and recruitment mechanism influencing the FTE, recognizing gender as a key variable. 3) The consumption is a linear function of the demographic evolution. |
| ASSUMPTIONS | <ol style="list-style-type: none"> a) The consumption is a linear function of the demographic evolution. |

III. What is the data set used? Evidences out of the Pilot Project in Italy.

The pilot project in Italy targeted the first 3 steps mentioned above, so:

- 1) Knowing about the current health workforce stock;
- 2) Assessing the current situation;
- 3) Making future forecasts (basic level).

To reach those three ambitions, the Minimum Data Set (MDS) was partially used. There were indeed, some differences and complements.

About the current **supply** characterisation, data collected and used where:

- Profession (as starting point, to differentiate the five professions in focus);
- Year of birth (useful to calculate the age at the current as well as to project the stock in the future);
- Head count (useful to count the stock at the current and in the future);
- Geographical area, in terms of place of work (useful to count the current stock of the Italian Regions);
- Place of birth instead of Country of first qualification (because the latter was not available for all the stock of all the five professions).

Characterisation on: FTE was not collected (not available); specialisation was not collected because not relevant (medical doctors were planned as a unique profession); gender was collected but partially used.

An important characterisation was added; the “**status of activity**”, in order to distinguish the “professionally active” stock from the “licensed to practice” and thus to project the former in the future years and estimating future flows between the two categories. Moreover, using the data on age, the “not-active” workforce was distinguished in “unemployed” (less than 40 years old) and “out of the labour market” (more than 40 years old).

On the other Supply Data Set categories, data used were:

- Training: only headcount of the current students in training (to estimate future inflows from education); age and gender were collected but not used in the forecasting exercise;
- Retirement: no data collected on past retirement stock; outflow to retirement was estimated considering the age of the current stock;
- Migration (outflow): no data available on past migration outflows.
- Migration (inflow): data available on past migration inflows only considering the “place of birth”. But not used

On the **demand** side a first exercise was conducted calculating the indicator proposed by the Minimum Data Set, which is based on weighted population per health care consumption by age group. To measure the health care consumption, it was used data on “per capita spending by age and sex” and the “overall per capita expenditure”. The results of this first exercise (made on medical doctors) were 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.

In the end, the quantitative indicator used on the demand side was “number of professionals per thousands of inhabitants” related to the “not weighted” population, articulated per geographical area, at the present and in the future (demand forecasts as linear function of demographic changes). The forecasting exercise was done assuming the current equilibrium in the labour market for all the five professions thus not reaching the ambition of measuring the current imbalances

| Planning goals | Results | Data used | Attributes and variations | Assumptions |
|---|--|---|--|---|
| Knowing about the current stock (inventory of the stock). | <u>Characterization for five professions</u> | <i>Labour force - Profession</i> | Data from Professional bodies registers. 30.000 professionals are licensed for both medical doctors and dentist. ⁴ | 10.000 out of the “double licensed” are doctors; 20.000 are dentists. |
| | | <i>Labour force - Status of activity</i> | Licensed to Practice | Professionals enrolled in the registers. |
| | | | Professionally active | Medical doctors, dentists and pharmacists enrolled as “active” in the Social Security Institute. Nurses and midwives enrolled as “active” in the CME training programme. |
| | | <i>Labour force - Working geographical area</i> | Working Region or, where not available, Region of residence. | |
| Assessing the current situation (inventory of the imbalances). | <u>No results</u> | | | Assuming current equilibrium between supply and demand |
| Making future forecasts. | <u>Projection of current stock out of 2040</u> | <i>Labour force - Age</i> | Calculated using year of birth | Combined to retirement parameters and mortality rates, used to estimate retirement outflows and mortality outflows. Combined with “status of activity” to estimate unemployed stock. |
| | | <i>Labour force – place of birth</i> | Country of birth | Used to estimate the migration inflows |
| | | <i>Training force - Year of enrolment</i> | From 2002 to 2015 | Combined with rate of success, used to estimate the inflows from university |
| | <u>Estimation of future demand out of 2040</u> | <i>Population-Gender</i> | | Female population related to midwives’ demand used to estimate future demand |
| | | <i>Population-Age</i> | | Fertility age related to midwives’ demand |
| | | <i>Population-Geographical area</i> | | |

The unit of measurement is for all the variables is the **headcount**.

⁴ The registers are separated or each of the 5 professions so identify 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.

IV. What is the data set used? Evidences out of the Pilot Project in Portugal.

The pilot project in Portugal also targeted the first 3 steps mentioned above, so:

- 1) Knowing about the current health workforce stock;
- 2) Assessing the current situation;
- 3) Making future forecasts (basic level).

Data used were only of public sector, because data on private sector were not available. Taking this as a limit, current stock characterisation used were: profession, including specialisation (where relevant), age, headcount, gender, geographical area, place of birth.

Labour force variables not included in the MDS but calculated in the Pilot Project in Portugal were:

- the status of activity, basically the medical doctors and nurses employed by the NHS;
- the professional practice area (Hospital, general practice and public health for medical doctors; community care or hospital for pharmacists);
- end of job contract (contract termination), recorded between 2010 and 2014, to estimate future dropouts).

Training force variables were:

- number of enrolments in the first year of degree courses (combined with the average success rate) and of post-graduate courses (for doctors);
- number of doctors in post-graduate courses (medical specialisation schools), in order to calculate the replacement rate (number of doctors still in training on total doctors, by medical speciality).

| Planning goals | Results | Data used | Attributes and variations | Assumptions |
|---|--|--|---|--|
| Knowing about the current stock (inventory of the stock). | <u>Characterization for four professions</u> | <i>Labour force - Profession</i> | Nurses, doctors, pharmacists, dentists (midwives are nurses' specialists) | |
| | | <i>Labour force - Status of activity</i> | Licensed to Practice | Aggregated data provided by the Professional Orders. Data available for nurses, doctors, pharmacists and dentists. |
| | | | Professionally active | Data from RHV2 data bases, ACSS' central processing wage information system. It has individual data only on nurses and doctors and covers 100% of NHS institutions. No data on private sector. No data for pharmacists and dentists. |
| | | <i>Labour force - Working geographical area</i> | Working institution. | |
| | | <i>Labour force – professional practice area</i> | Mainly hospital and not-hospital | |
| Assessing the current situation (inventory of the imbalances). | <u>No results</u> | | | Assuming current equilibrium between supply and demand |
| Making future forecasts. | <u>Projection of current stock out of 2030</u> | <i>Labour force - Age</i> | Calculated using year of birth. Only nurses and doctors working in public sector. | Combined to retirement parameters and mortality rates, used to estimate retirement outflows and mortality outflows. |
| | | <i>Labour force – place of birth</i> | Country of birth. Only nurses and doctors working in public sector. | Used to estimate the migration inflows |
| | | <i>Training force – success rate</i> | From 2010 to 2014. Only nurses and doctors working in public sector. | Used to estimate the inflows from university |
| | | <i>Training force – entries in the medical specialties schools</i> | Only doctors | Used to project the medical specialists formed by the postgraduate training system (medical internship), for all the 47 medical specialties |
| | <u>Estimation of future demand out of 2030</u> | <i>Population</i> | | |

- The unit of measurement is for all the variables is the **headcount**.

V. What is the “minimum” data set?

One of the most controversial definition from the start of the Joint Action on Health Workforce Planning and Forecasting is clearly the “minimum” character of the Planning Data Requirements.

In the first version the Minimum character of the MDS was referred to the data “*necessary and sufficient to start a decision-making process to reach a certain goal*” (chapter 2 of the “Minimum Planning Data Requirements”). In this addendum we would like to review the goals of the planning system and the related data considered “*necessary and useful*” on the base of the knowledge gather during the Joint Action and the experiences made in the pilot projects.

So, combining the steps as proposed by the Handbook and here re-formulated in chapter II (as first step, second step, third step - basic and third step - advanced) and the findings of the practical applications of these goals in the two pilot projects we propose here a reviewed version of the MDS.

What are the standard minimum (attainable) goals?

| Planning goals | Feasibility | Recommendations |
|---|---|---|
| Level 1: Knowing about the current stock (inventory of the stock) | The inventory of the stock is attainable, even if the lack of data, in particular on the status of activity and for the private sector, challenges the achievement of this first level. | If some necessary data are not available and if it is not feasible to collect them during the planning timeframe, it's possible and consumes fewer resources to estimate the missing information by means of detailed assumptions based on already existing data. |
| Level 2: Assessing the current situation (inventory of the imbalances) | The pilot projects didn't achieve any robust results on this second step. In both the pilots there was no agreement in using specific indicators on the demand side. So the indicator “workforce to population ratio” was calculated and compared with other EU countries. The international benchmarking exercise have not provided reliable estimates because of the poor quality of international data and because of the great differences among the EU Countries in the health care sector organisation. | To start the evaluation using the indicator “practising workforce to population ratio” combined with the geographical area. To compare, within the national system, the values in the different geographical areas. To identify a range of acceptable values for the different professions. To fine tune the assessment using operational indicators ⁵ |
| Level 3 (basic): Making future forecasts. | The third step is attainable based on – and consistently with – the inventory of the stock. | Parameters and assumptions can replace lack of data collected. For a reliable analysis of the forecasting results, it's necessary to compare different scenario's outputs. |
| Level 3 (advanced): Making future forecasts. | The pilot projects didn't target this advanced step. | We recommend to keep the advanced Level 3 out of the minimum. |

⁵ See “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, p. 297.

What are the data (collected or estimated) necessary and useful?

Based on the aforementioned standard and attainable goals and the related recommendations, here is presented a new version of the MINIMUM DATA REQUIREMENTS.

The proposed MDS has two levels.

- Marked in red, the MINIMUM DATASET to attain the three goals (first column) with a **basic approach** (headcount, no mobility flows, no specialisation of workforce; future demand as linear function of the increase/decrease of the population).
- In the right side of the table, marked in yellow, the MINIMUM DATASET to attain the three goals with a more **advanced approach** (specialisation of the workforce, weighted population; past mobility inflows considered; gender of the workflows considered to forecast changes in FTE; inflows from training forecasted taking into account the actual lengths of training).

| Planning goals | Minimum Data Set (headcount) | | | Minimum Data Set (FTE workforce and weighted population) | | |
|--|---|---------------------------------|-------------------|---|---|--------------------|
| | Supply side | | Demand side | Supply side | | Demand side |
| | <i>Labour force</i> | <i>Training force</i> | <i>Population</i> | <i>Labour force</i> | <i>Training force</i> | <i>Population</i> |
| Knowing about the current stock (inventory of the stock) | Profession | | | Specialisation (where relevant) | | |
| | Status of Activity (active / not active) | | | Status of Activity (LTP / PA/P) | | |
| Assessing the current situation (inventory of the imbalances) | Working geographical area | | Age | | | Health consumption |
| | | | Gender | | | |
| Making future forecasts – basic approach | Age | Entries in the training courses | | Gender | Year of enrolment | |
| | | Success rate | | Country of first qualification | Year of graduation (or post graduation) | |