

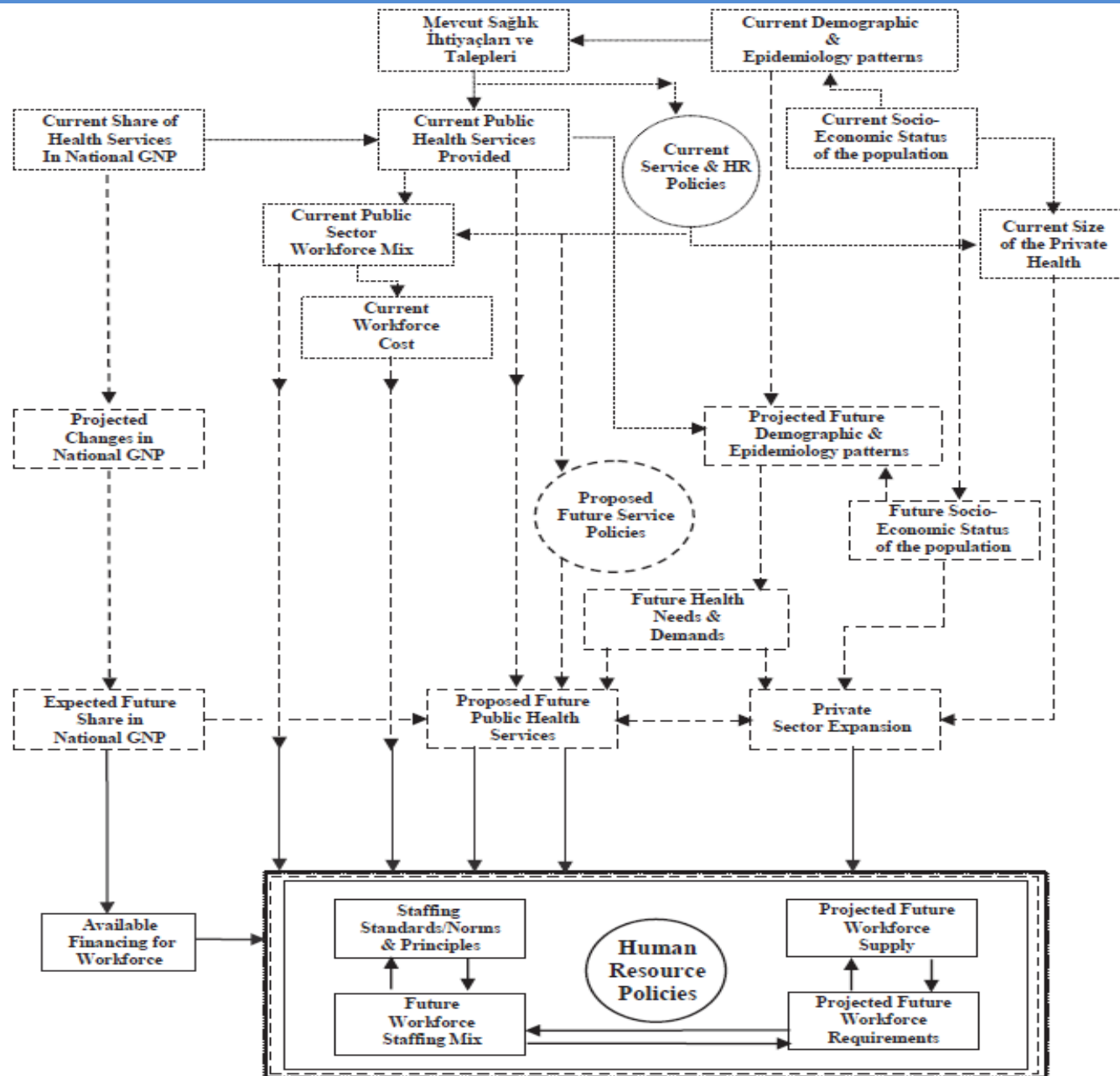
# **HEALTH HUMAN RESOURCES TURKEY**

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Conceptual Diagram of WHO Supply and Requirement Projections Model

Source: P.Hornby, 2003.

### Demographic Estimates and Assumptions 2008-2023

Year ----->	2008	2023	2008	2023
Estimated population =			71,095,000	84,053,000
Average annual % population change during period			1.2	
	---% distribution by age---		---(Projected) population by age---	
<1 years	1.8	1.5	1,273,000	1,245,000
1-4 years	7.0	5.9	4,996,000	4,964,000
5-14 years	17.9	15.0	12,736,000	12,569,000
15-44 years	48.5	45.5	34,513,000	38,286,000
45-64 years	17.9	22.8	12,740,000	19,164,000
65+ years	6.8	9.3	4,837,000	7,825,000
Totals	100.0	100.0	71,095,000	84,053,000
	--- Births per 1000 population ---		--- Projected births in year ---	
	18	15	1,273,000	1,245,000
	--- Urban residents ---		--- Rural residents ---	
Percent	75	80	25%	20%
Totals	53,321,250	67,242,400	17,773,750	16,810,600
Calculated growth rate =		1.6%		-0.4%

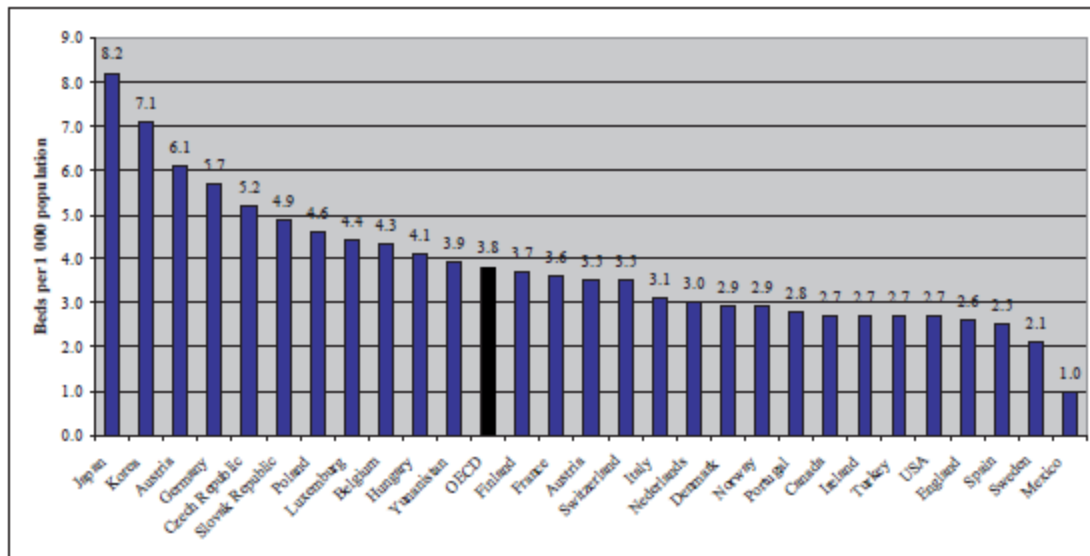
*Source : Turkey Statistics Institute (2008)*

Current Health Care Facilities (Public and Private)

Type of facility	Number	Total Beds	% Occupancy
<b>PUBLIC SECTOR (2008)</b>			
University hospitals	46	28.370	85
Teaching hospitals	33	19.507	74
General hospitals	683	73.418	54
Obs and Gyn and paediatric hospitals	69	13.272	70
Other speciality hospitals	23	4.534	62
Psychiatric hospitals	9	4.160	71
Long-term care/chronic disease hospitals	34	6.424	73
Health centres/family health centres	6.305	-	-
Health posts	5.268	-	-
Maternity and family planning centres	225	-	-
Oral and dental health centres*	123	-	-
Dispensaries**	243	-	-
Public health laboratories	149	-	-
112 emergency stations	1.308	-	-
Public health centres	373	-	-
<b>TOTAL</b>	<b>14.891</b>	<b>149.685</b>	<b>66,0</b>
<b>PRIVATE SECTOR*** (2008)</b>			
General hospitals	387	20.938	51
University hospitals of foundations	13	1.542	74
Doctor's office	11.050	-	-
Dentist's office	10.808	-	-
Private polyclinics and medical centres	1.859	-	-
Laboratories	3.106	-	-
Special diagnose centres	712	-	-
Pharmacies	23.000	-	-
<b>TOTAL</b>	<b>50.935</b>	<b>22.480</b>	<b>53</b>
<b>Health Sector TOTAL</b>	<b>65.826</b>	<b>172.165</b>	<b>68</b>
* = Oral and dental health centres (Self contained)			
**= TB fight dispensaries			
*** Most of the private sector data collected from all the provinces by the provincial health directorates and reported to Hifzushha public health school.			
Note: Teaching hospitals includes on MOH general teaching hospitals. Other speciality teaching hospitals are included each type of speciality hospital group.			

Source: General Directorate of Curative Services (2008) and General Directorate of Primary Health Care Services (2008).

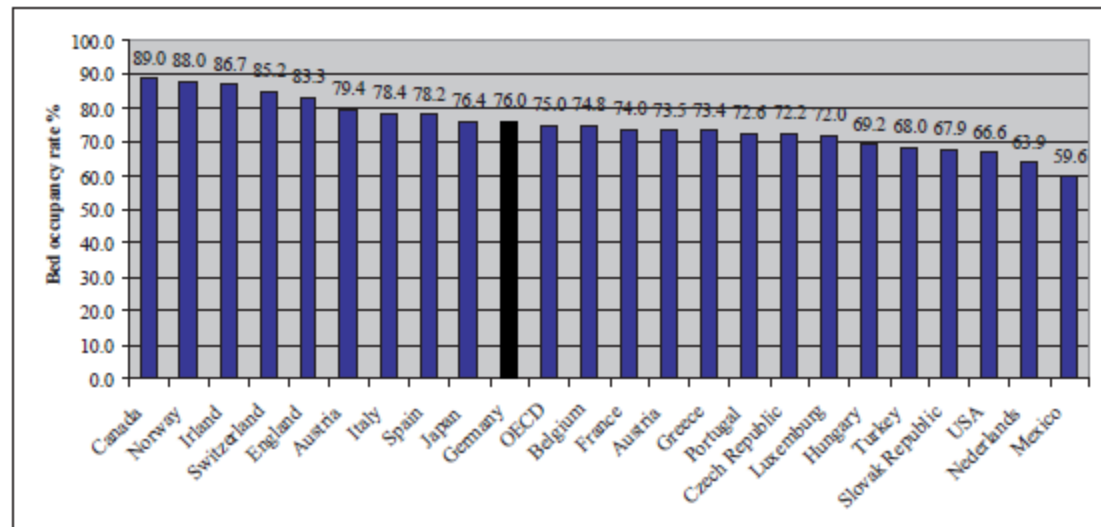
Not: Ministry of Defense hospitals are not included.



Number of Acute Care Beds per 1 000 Population in the OECD Countries

Source: OECD Health at a Glance: OECD Indicators (2009)

Note: 2007 or latest available year. Turkey data is from 2008.



Acute Bed Utilisation Rates in the OECD countries

Source: OECD Health at a Glance: OECD Indicators (2009)

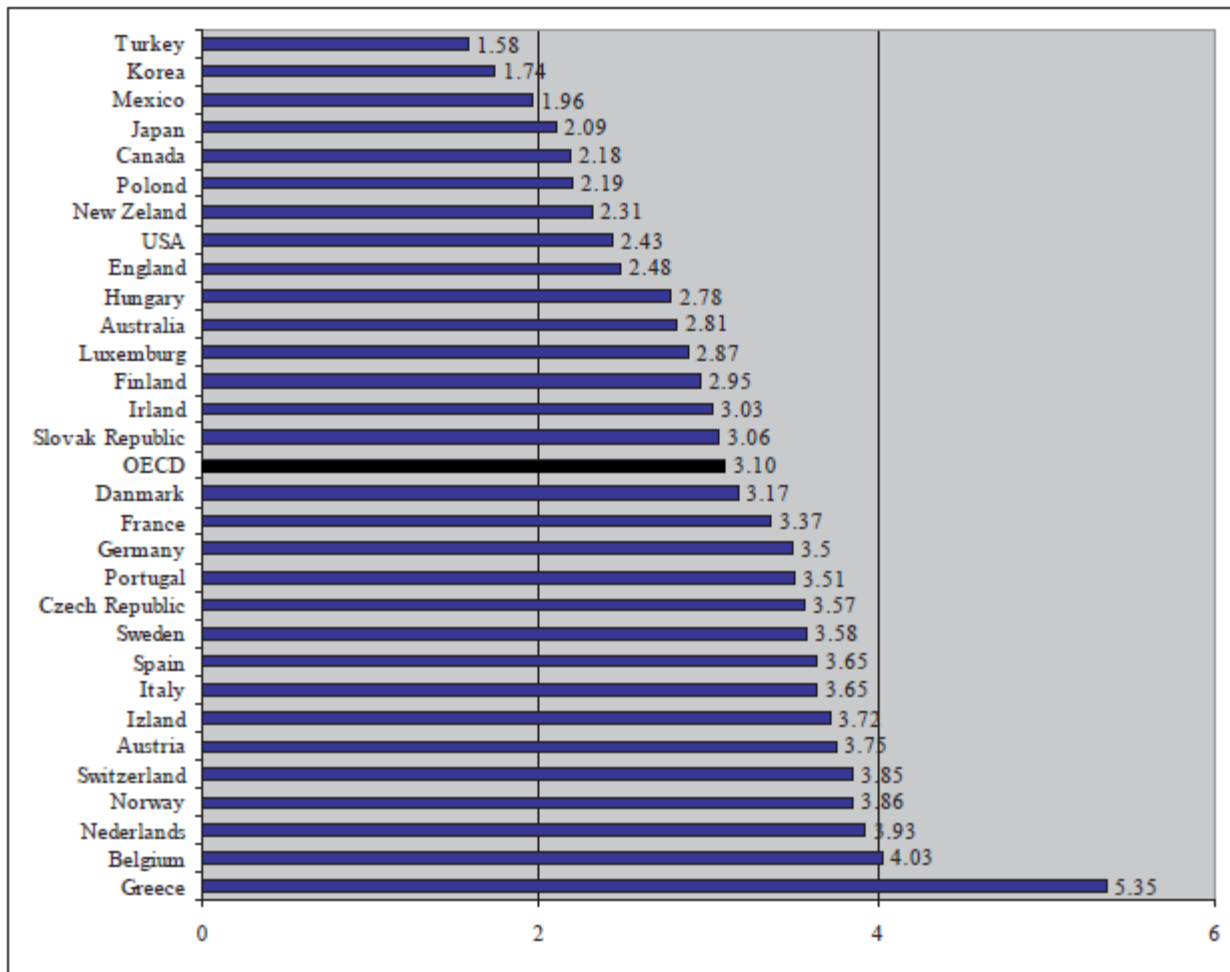
Note: 2007 or latest available year data were used for the countries other than Turkey. The Turkish data are from the year 2008.

Base Year (2008) Health Workforce Supply

OCCUPATIONS	Supply in	% FTE in	---FTE by sector--		Population per worker
	2008	Public	Public	Private	
Specialist	75989	75,6	57423	18566	941
Prctitioner doctor	35763	89,3	31951	3812	2000
Family physician	1399	84,3	1179	220	51120
Dentist	19959	30,1	6002	13957	3583
Pharmacist	24778	5,5	1373	23405	2886
Nurse	99910	84,3	84175	15735	716
Midwife	47673	92,5	44094	3579	1500
Healthofficer/Public Health Technician	14525	92,9	13500	1025	4924
Laboratoy technician	14947	84,7	12654	2293	4785
Radiology technician.	10738	85,2	9153	1585	6660
Anesthesia technician.	4395	80,8	3550	845	16272
Medical secretary	5562	81,3	4522	1040	12858
First and emergency aid technician	15486	66,5	10302	5184	4618
Physiotherapist	1916	55,9	1070	846	37326
Other health personnel	21971	73,3	16102	5869	3255
Managers	2415	87,0	2102	313	29614
Engineers and other technical personnel	1004	92,9	933	71	71232
Other technical personel	4657	85,5	3981	676	15357
General administrative staff	83501	91,7	76531	6970	856
Support staff	77264	92,6	71524	5740	926
<b>Totals -----&gt;</b>	<b>563852</b>	<b>80%</b>	<b>452121</b>	<b>111731</b>	<b>127</b>

Source: Ministry of Health, General Directorate of Personnel (2008)

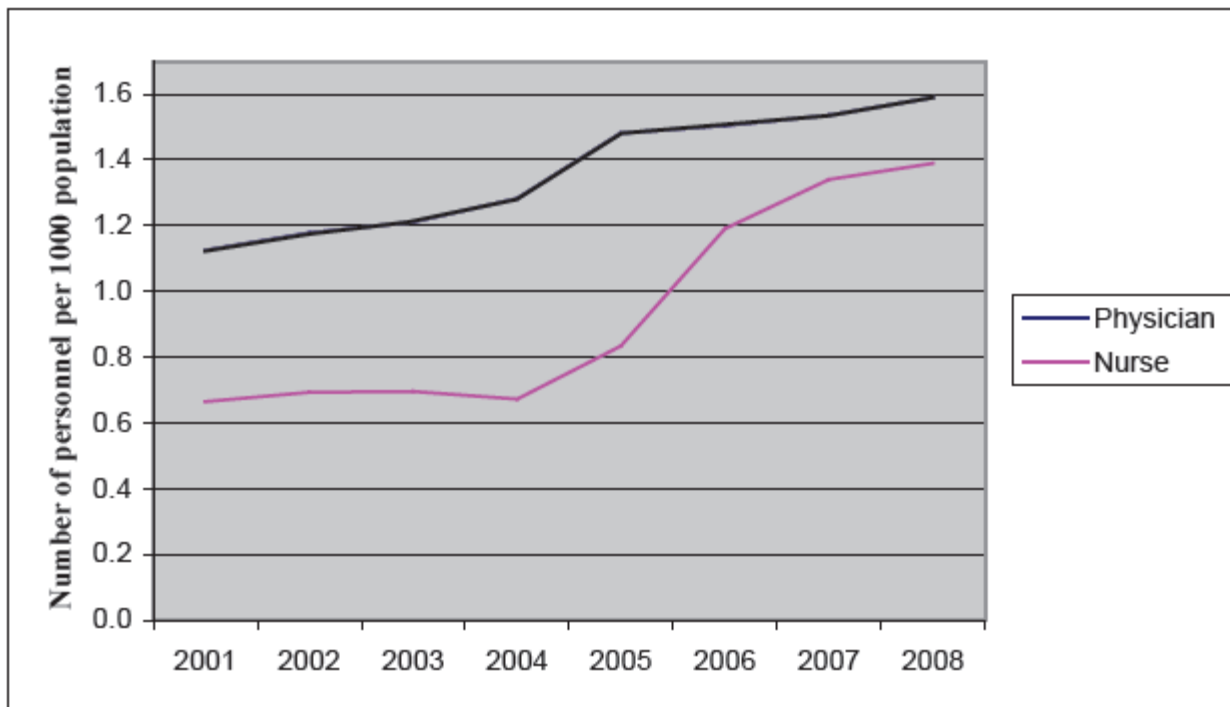
Note: Staff recruited through service agreement method included.



**Number of Physicians per 1000 Population in the OECD Countries**

*Source: OECD Health at a Glance: OECD Indicators (2009) and the Ministry of Health General Directorate of Personnel (2009)*

*Note: 2007 or latest available year data were used for the countries other than Turkey. The Turkish data are from the year 2008.*

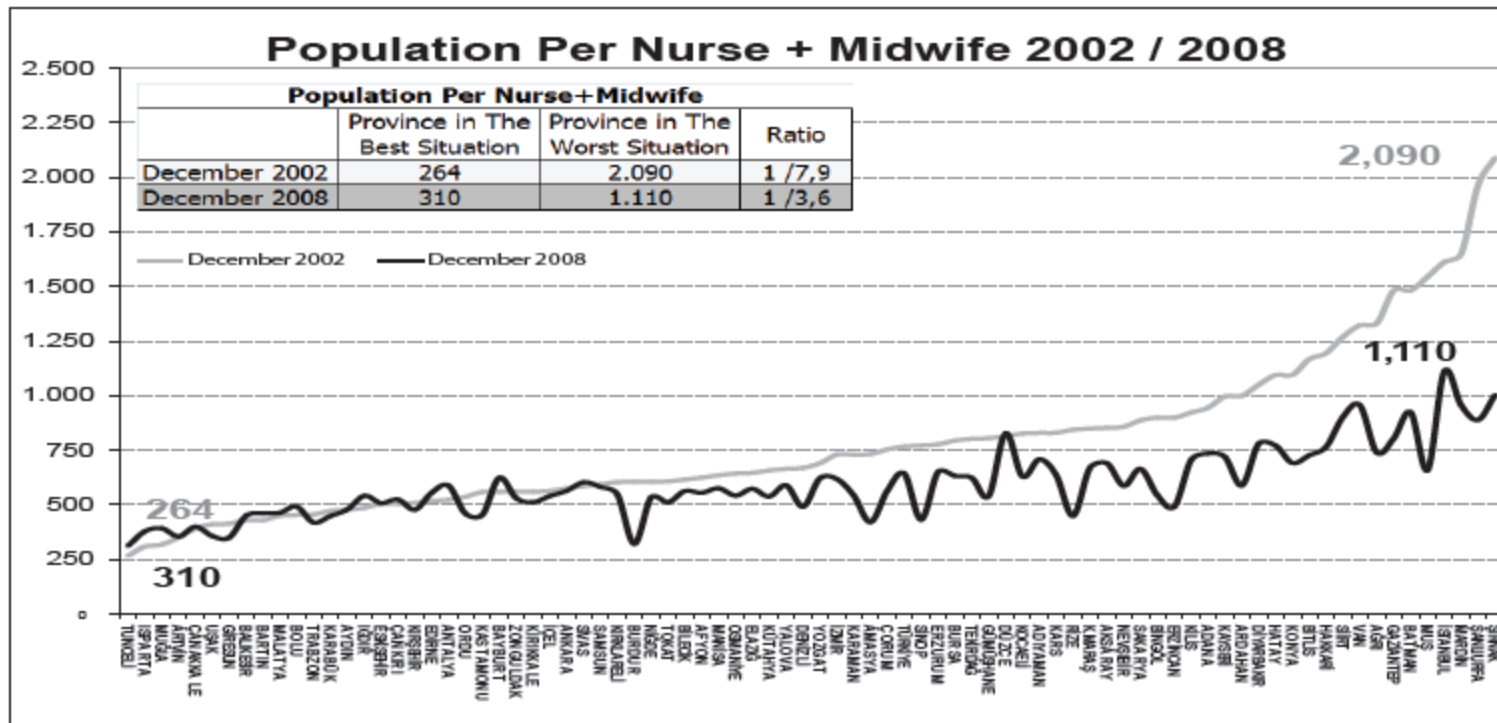


Number of Physicians and Nurses per 1000 population in Turkey (2001-2008)

Source: Ministry of Health, General Directorate of Personnel (2009)







Development of Geographic Distribution of Nurses-Midwives in Turkey (2002-2008)

Source: MoH General Directorate of Personnel Active Personnel Study, 2008; Mollahaliloğlu (2008)

Total Staff in Training in 2008

	Study Years Required	Total Programs	Total New Students 2008	Total Students
Specialist	4.5*	99	4644	17744
Practitioner doctor	6	49	5253	30372
Family physician	3	34	170	419
Dentist	5	20	1131	5458
Pharmacist	5	14	1020	5005
Nurse	4	167	13573	35466
Midwife	4	64	1488	7634
Health officer/Public health technician	4	24	851	3178
Laboratory technician	4	72	952	2562
Radiology technician	4	24	412	1526
Anesthesia technician	4	27	688	2372
Medical secretary	3	132	2725	7031
First and emergency aid technician	3	204	4336	9645
Physiotherapist	4	10	653	2370
Other health personnel	3.5*	-	-	
Managers	4	-	-	
Engineers and other technical personnel	4	-	-	
Other technical personnel	-	-	-	
General administrative staff	-	-	-	
Support staff	-	-	-	
<b>Totals</b>	<b>xxx</b>	<b>940</b>	<b>37.896</b>	<b>130.780</b>

Source: Higher Education Council (2008) and Ministry of Education (2008)

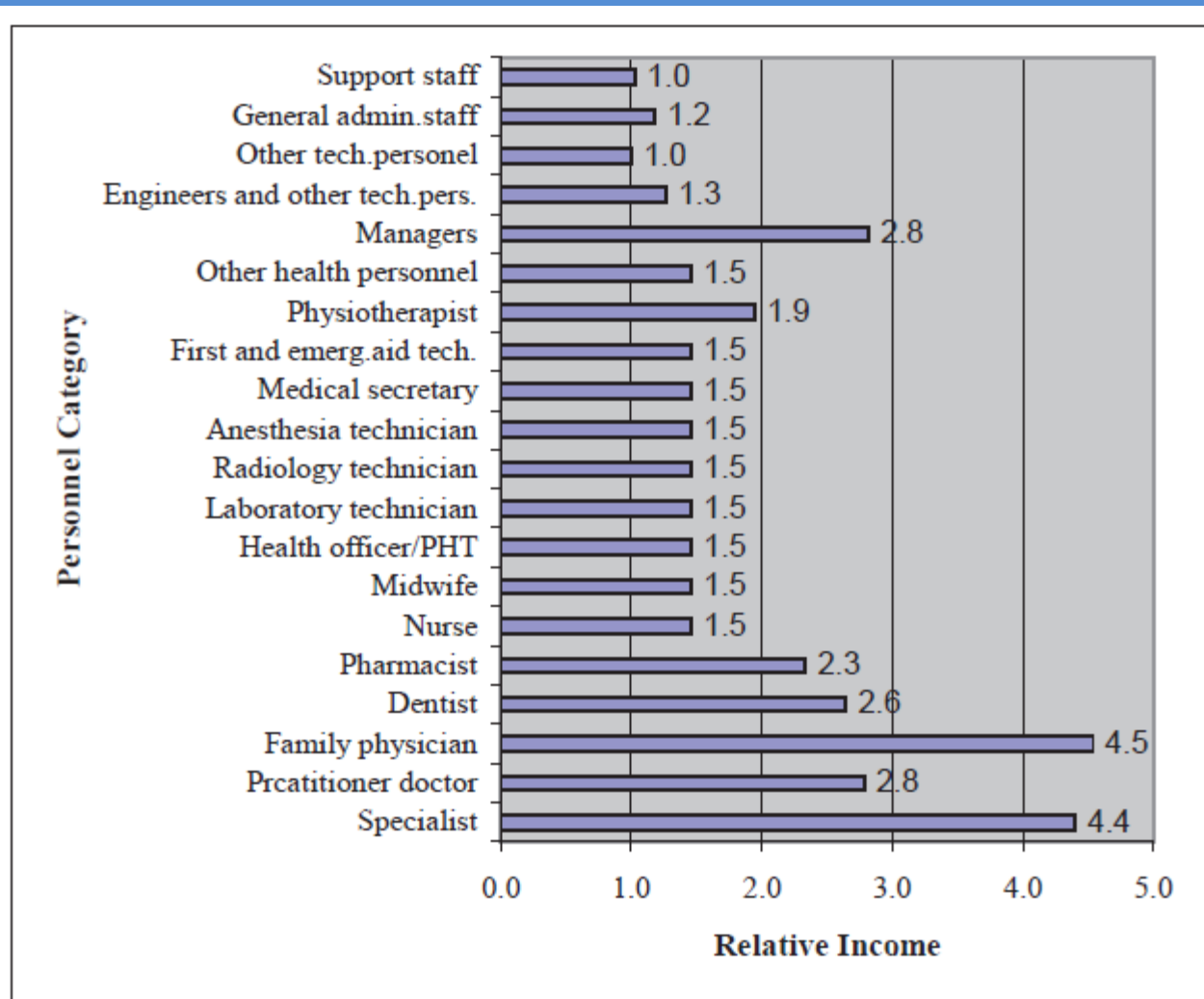
\* Average

## Public Sector Health Personnel Average Annual Incomes (2008)

<b>INCOMES</b>	<b>Year 2008 average annual income</b>	<b>Relative income Year 2008</b>
Specialist	67944	<b>4,4</b>
Practitioner doctor	42900	2,8
Family physician	70000	<b>4,5</b>
Dentist	40800	2,6
Pharmacist	36000	2,3
Nurse	22500	<b>1,5</b>
Midwife	22500	1,5
Health officer/Public health technician	22500	1,5
Laboratory technician	22500	1,5
Radiology technician	22500	1,5
Anesthesia technician	22500	1,5
Medical secretary	22500	1,5
First and emergency aid technician	22500	1,5
Physiotherapist	30000	<b>1,9</b>
Other health personnel	22500	1,5
Managers	43452	<b>2,8</b>
Engineers and other technical personnel	19500	1,3
Other technical personnel	15420	1,0
General administrative staff	18240	1,2
Support staff	15840	<b>1,0</b>

*Source: Ministry of Health, School of Public Health (2009)*

*\*Income might vary on service area, facility type and the legislation amended over the time.*



Public Sector Health Personnel Relative Incomes (2008)

## Planning Assumptions

**Dominant morbidity and mortality patterns** → Major causes will be cancer, heart disease, chronic disease (diabetes, obesity etc.) and psychiatric disease. Life time will be increased, with aging population demand for geriatric health services and home care will increase. Death and birth rates will be close to each other.

**Relative emphasis given to public sector vs. private sector** → Private for profit sector will continue to grow whereas the public sector will still be dominant service provider.

**Growth rate in public health expenditures** → Public expenditures in health will continue to grow, its share from GDP will increase.

**Growth rate in private health expenditures** → Private expenditures in health will continue to grow.

**Relative emphasis given to personnel vs. non-personnel expenditures** → More emphasis on personnel salaries and benefits will be given.

**Relative emphasis given to preventive vs. curative care** → By introduction of family physician system at the primary level more emphasis will be given to preventive care and the services will be more efficient at this level.

**Relative emphasis given to primary care vs. higher-level care** → Primary care prioritised over tertiary in line with family physician system.

**Relative emphasis given to urban population vs. rural population** → The emphasis will be on strengthening services provided to rural population and on increases in urban.

**Relative emphasis given to high, medium and support level personnel** → The current policy is emphasising on medium level staff. But high-level staff have also to be emphasised by increasing medical staff in training institutions and increasing the number of trained managers.

## Projected Funding for the Public Sector

### **GROSS DOMESTIC (or REGIONAL) PRODUCT**

950.098                      Base year Gross Domestic Product (GDP) (000,000 in YTL)

4,1                              Assumed average annual % change (0.0) in GDP

### **BASE YEAR PUBLIC SECTOR EXPENDITURE ESTIMATES (000,000.0 in YTL)**

199.944,0                    Total recurrent expenditures (entire public sector)

13.984,0                    Recurrent PUBLIC HEALTH sector expenditures on personnel

21.464,0                    Public funds for recurrent non-personnel health expenditures in the public & private sector

### **2008                              2023                      Index ESTIMATES AND PROJECTIONS**

21,0%                        24,5                      116 Total recurrent public sector as % of GDP

17,7%                        21,5                      121 Recurrent health expenditures as % of public sector

39,4%                        43,1                      109 Personnel expenditures as % of public health sector

### **TOTAL FUNDS (000,000, except Gross Domestic Product per capita)**

950.098                      1.738.422                    183 Gross domestic product

13.285                        21.125                        159 Gross domestic product per capita

199.944                      425.913                      213 Funds for recurrent expenditures, total public sector

35.448                        91.571                        258 Public funds for recurrent expenditures, health sector

13.984                        39.467                        282 Funds for recurrent expenditures, public health personnel

**7,2%**                        = sustainable average annual % change in personnel expends, B-Yr-->T-Yr

*Source: Ministry of Finance ( 2009), State Planning Organisation ( 2009), Ministry of Health (2009)*

*Note: Target year total personnel costs include bonus payments added to staff salaries.*

### Projected Change of Public Sector Health Service Facilities

Type of Facility	Number in 2008	Proposed for 2023	% Change	Total beds in 2008	Proposed beds for 2023	% Change
University hospitals	46	65	41%	28.370	34.304	21%
Teaching hospitals	33	43	30%	19.507	21.703	11%
General hospitals	683	698	2%	73.418	74.729	2%
Obs and Gyn and peadiatric hospitals	69	81	17%	13.272	15.383	16%
Other speciality hospitals	23	57	148%	4.534	7.134	57%
Psychiatric hospitals	9	34	278%	4.160	7.635	84%
Long-term care/chronic disease hospitals	34	41	21%	6.424	8.137	27%
Health centres/family health centres	6.305	13.925	121%	-	-	-
Health posts	5.268	5.268	0%	-	-	-
Maternity and family planning centres	225	225	0%	-	-	-
Oral and dental health centres*	123	135		-	-	-
Dispensaries**	243	243	0%	-	-	-
Public health laboratories	149	100	-33%	-	-	-
112 emergency stations	1.308	1.646	26%	-	-	-
Public health centres	373	1.012	171%	-	-	-
<b>TOTAL</b>	<b>14891</b>	<b>23573</b>	<b>58%</b>	<b>149685</b>	<b>169025</b>	<b>13%</b>

\* Independent Oral and Dental Health Centres

\*\* Includes TB and Malaria fight dispensaries

\*\*\* The number of targeted Community Health Centres is reached in 2010 and it is planned to keep the same numbers in the same level 2023.

Note: Targets set for hospitals are prepared by using hospital bed planning study of General Directorate of Curative Services.



Projected Change of Private Sector Health Service Facilities

Type of Facility	Number in 2008	Proposed for 2023	% Change	Total beds in 2008	Proposed beds for 2023	% Change
General hospitals	400	334	-17%	20.938	33.413	60%
University hospitals of foundations	11	15	36%	1.542	2.698	75%
Doctor's office	11050	6000	-46%	-	-	-
Dentist's office	10898	12652	16%	-	-	-
Private polyclinics and medical centres	1859	1859	0%	-	-	-
Laboratories	3106	3606	16%	-	-	-
Special diagnose centres	712	958	35%	-	-	-
Pharmacies	23000	26702	16%	-	-	-
<b>TOTAL</b>	<b>51036</b>	<b>52126</b>	<b>2%</b>	<b>22480</b>	<b>36111</b>	<b>61%</b>

*Note: 1. Targets set for hospitals are prepared by using hospital bed planning study of General Directorate of Curative Services.*

*2. Number of general hospitals planned is decreased although there is an increase in the total number of beds for general hospitals due to the change in average bed size from 50 beds to 100 beds (see Table 11).*

Average Bed Numbers by Type of Facility (Public)

	Average Number of Beds		% Change
	Current Average Beds in 2008	Proposed Average Beds in 2023	
<b>Hospitals</b>			
<b>Public Hospitals</b>			
University hospitals	525	525	0,00
Teaching hospitals	571	500	-0,12
General hospitals	107	107	0,57
Obs & Gyn and peadiatric hospitals	190	190	0,13
Other speciality hospitals	117	125	0,12
Psychiatric hospitals	472	225	-0,54
Long-term care/chronic disease hospitals	196	200	0,04

Average Bed Numbers by Type of Facility (Private)

	Average Number of Beds		% Change
	Current Average Beds in 2008	Proposed Average Beds in 2023	
<b>Hospitals</b>			
<b>Private Hospitals</b>			
General hospitals	50	100	1,00
University hospitals of foundations	130	175	0,35

### Staffing Proposals by Type of Public Sector Hospital

Year	—FTE STAFF BY TYPE OF PUBLIC SECTOR HOSPITAL—															
	Teaching Hosp.		University Hosp.		General Hosp.		Obs&Gyn & Pead. F		Other Spec. Hosp.		Mental Hosp.		Chr. & ltc Hosp		Total FTE pers. Public Hospitals	
	2008	2023	2008	2023	2008	2023	2008	2023	2008	2023	2008	2023	2008	2023	2008	2023
Average bed size -->	500		525		107		190		125		225		200			
Specialist	381	354,0	434,6	359,0	24,1	38,0	39,5	69,0	39,3	47,0	56,0	45,0	39,7	55,0	61.067	77.396
Practitioner doctor	32,5	8,0	26,8	8,0	10,6	6,0	8,0	4,0	7,2	2,0	3,4	5,0	4,7	1,0	10.874	5.709
Family physician	3,8	4,5	0,8	4,5	0,4	0,0	0,1	0,0	0,4	0,0	0,1	0,0	0,1	0,0	469	489
Dentist	9,4	6,0	3,6	7,0	5,1	6,0	0,7	0,0	10,2	0,0	0,7	23,0	0,7	0,0	4.282	5.689
Pharmacist	5,4	7,5	3,6	6,0	0,9	3,0	1,6	3,0	1,3	3,0	0,4	3,0	1,3	4,0	1.219	3.491
Nurse	257	1.190,0	243,2	1.220,0	48,8	64,9	45,4	130,0	44,9	90,0	39,8	200,0	58,6	160,0	63.344	205.654
Midwife	56,0	80,0	4,6	40,0	15,6	25,0	57,7	90,0	10,3	85,0	8,3	1,0	6,4	0,0	17.555	35.718
Health Officer/Public Health Technician	20,1	35,0	0,0	45,0	7,3	13,0	10,0	7,0	5,1	8,0	2,7	10,0	5,0	15,0	6.728	15.512
Lab. Technician	43,7	18,0	21,6	18,0	9,2	12,0	15,2	15,0	10,1	15,0	3,3	10,0	10,9	3,0	10.827	12.870
Radiology tech.	35,8	33,0	11,3	15,0	7,7	8,0	8,2	8,0	9,4	8,0	2,1	9,0	8,6	2,0	8.325	9.491
Anesthesia tech.	12,8	15,0	6,3	15,0	4,7	8,0	6,8	8,0	4,1	8,0	0,2	7,0	1,8	2,0	4.663	8.642
Medical secretary	8,1	35,0	0,0	45,0	1,9	5,0	1,5	9,0	0,5	6,5	1,0	5,0	2,1	10,0	1.814	9.628
First and emergency aid tech.	1,7	8,0	0,0	8,0	1,4	3,0	0,2	2,0	0,2	2,0	0,2	2,0	0,0	2,0	1.006	3.390
Physiotherapist	5,8	25,0	6,0	30,0	0,6	2,0	0,2	4,0	0,1	3,0	0,1	3,0	3,5	15,0	1.103	5.649
Other health personnel	26,1	30,0	80,1	75,0	4,3	5,0	5,5	15,0	10,5	10,0	5,5	20,0	5,5	10,0	9.290	12.565
Managers	5,3	8,0	3,6	10,0	1,6	3,0	2,4	3,0	2,5	3,0	1,1	3,0	3,1	3,0	1.840	3.734
Engineers and other technical personnel	2,9	11,0	1,9	20,0	0,3	3,5	0,3	2,5	1,3	2,5	0,0	4,0	0,3	2,0	447	4.791
Other technical personnel	11,6	15,0	19,9	20,0	2,2	3,0	3,6	7,0	2,0	5,0	2,0	5,0	3,3	6,0	3.526	5.319
General administrative staff	53,7	40,0	42,8	40,0	15,2	13,0	19,6	19,0	11,9	11,0	8,1	4,0	15,9	15,0	17.083	16.341
Support staff	133,8	130,0	258,8	200,0	24,0	20,0	31,5	35,0	17,6	17,0	21,4	15,0	31,4	20,0	40.025	37.806
Total per hospital	1.107	2.053	1.170	2.186	186	241	258	431	189	326	156	374	203	325	xxxxx	xxxxx
FTE staff per bed	1,9	4,1	2,2	4,2	1,7	2,3	1,4	2,3	1,6	2,6	0,3	1,7	1,0	1,6	xxxxx	xxxxx
Total, this location type	42.056	89.113	66.665	142.804	126.963	168.595	18.054	34.855	2.832	18.605	1.408	12.691	7.506	13.223	256.571	453.971
% of public sector clinical staff	xxxxx	13%	xxxxx	21%	xxxxx	24%	xxxxx	5%	xxxxx	3%	xxxxx	2%	xxxxx	2%	xxxxx	65%

(Note: Staff levels shown as fractions indicate individual hospital staff numbers will vary (e.g. 0.5 family physicians in general hospitals means that only 1 in 2 general hospitals will have a family physician .)

Staffing Proposals by Type of Public Ambulatory Care Units

	----- FTE STAFF BY TYPE OF PUBLIC SECTOR CLINIC -----															
	HC/FHC		Health Post		MCH&FPC/OHC		Dispensary		Pub. H. Lab.		112 Emerg.		CHC		Total public sector clinical staff	
	2008	2023	2008	2023	2008	2023	2008	2023	2008	2023	2008	2023	2008	2023	2008	2023
Specialist	0,00	0,00	0,00	0,00	0,67	0,67	0,26	0,30	0,10	0,10	0,00	0,00	0,00	1,25	312	1572
Practitioner doctor	2,60	0,00	0,00	0,00	2,13	2,00	2,96	3,00	0,10	1,00	4,00	2,00	3,50	4,29	24129	8934
Family physician	0,00	3,20	0,00	0,00	0,70	0,70	0,01	0,00	0,00	0,00	0,00	0,00	0,00	0,00	254	43311
Dentist	0,10	0,00	0,00	0,00	6,60	10,00	0,08	0,10	0,00	0,00	0,00	0,00	2,30	1,25	3796	5030
Pharmacist	0,00	0,00	0,00	0,00	0,30	0,40	0,18	0,20	0,04	0,00	0,00	0,00	0,00	0,50	157	686
Nurse	1,80	1,20	0,00	0,00	5,20	9,00	3,70	4,00	0,30	2,00	4,00	0,00	4,50	6,46	20675	26856
Midwife	3,10	2,40	0,26	1,00	3,66	3,66	1,40	1,40	0,05	0,00	0,00	0,00	3,70	6,88	23775	46101
Health Officer/Public Health Technician	0,90	0,40	0,00	0,00	0,13	0,60	1,87	1,90	0,20	0,20	0,00	0,00	4,50	3,29	7709	9240
Lab. Technician	0,20	0,00	0,00	0,00	0,33	0,33	0,78	0,80	2,70	2,70	0,00	0,00	2,30	5,75	2754	6334
Radiology tech.	0,03	0,00	0,00	0,00	0,01	0,10	0,78	0,80	0,01	0,00	0,00	0,00	2,30	3,83	1155	4033
Anesthesia tech.	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	8	0
Medical secretary	0,10	0,00	0,00	0,00	0,58	0,58	0,09	0,10	0,01	0,00	0,00	0,00	2,10	3,83	1630	4108
First and emergency aid tech.	0,01	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	12,00	0,00	0,00	32	19755
Physiotherapist	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0	0
Other health personnel	0,30	0,00	0,00	0,00	2,87	7,00	2,04	2,00	1,30	1,30	0,00	0,00	0,00	12,38	3389	15584
Managers	0,00	0,00	0,00	0,00	0,30	0,30	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	104	113
Engineers and other technical personnel	0,00	0,00	0,00	0,00	0,00	0,00	0,01	0,00	2,00	2,00	0,00	0,00	0,00	0,25	300	454
Other technical personnel	0,00	0,00	0,00	0,00	0,01	0,20	0,02	0,00	0,30	0,30	0,00	0,00	0,00	0,00	52	105
General administrative staff	0,40	0,00	0,00	0,00	2,13	2,13	2,97	3,00	1,60	1,60	0,00	0,00	1,00	10,29	4320	11822
Support staff	0,90	0,00	0,00	0,00	1,95	1,95	1,18	1,20	1,60	1,60	3,00	3,00	4,30	4,29	12297	10352
<b>Total per clinic</b>	<b>10,4</b>	<b>7,2</b>	<b>0,3</b>	<b>1,0</b>	<b>27,6</b>	<b>39,6</b>	<b>18,3</b>	<b>18,8</b>	<b>10,3</b>	<b>12,8</b>	<b>11,0</b>	<b>17,0</b>	<b>30,5</b>	<b>64,5</b>	xxxxx	xxxxx
Total, this location type	65840	96859	1364	5268	9596	14862	2750	2820	1535	1285	14388	27986	11377	65311	106848	214390
% of public sector clinical staff in this.....																
....type of facility -->	xxxxx	14,0%	xxxxx	0,8%	xxxxx	2,1%	xxxxx	0,4%	xxxxx	0,2%	xxxxx	4,0%	xxxxx	9,4%	xxxxx	30,9%

*\*The increase in the number of personnel employed in these facilities are due to the O&DHCs. No increase is projected for the number of personnel employed in the MCH-FPCs.*

### Projected Changes in Staffing Requirement

Staff Type	Public Sector Requirement 2023	Private Sector Requirement 2023	Health Sector			% Change
			Supply 2008	Requirement 2023	Additional staff required	
Year						
Specialist	103.010	33.867	75.989	136.877	60.888	80,1%
Practitioner doctor	15.612	3.194	35.763	18.805	-16.958	-47,4%
Family physician	43.831	549	1.399	44.380	42.981	3072,3%
Dentist	11.662	16.364	19.959	28.026	8.067	40,4%
Pharmacist	5.085	27.802	24.778	32.886	8.108	32,7%
Nurse	238.018	45.271	99.910	283.289	183.379	183,5%
Midwife	83.633	1.444	47.673	85.077	37.404	78,5%
Health officer/Public health technician	26.654	4.984	14.525	31.637	17.112	117,8%
Laboratory technician	19.274	2.877	14.947	22.150	7.203	48,2%
Radiology technician	13.533	2.096	10.738	15.629	4.891	45,5%
Anesthesia technician	8.645	1.724	4.395	10.369	5.974	135,9%
Medical secretary	13.830	1.734	5.562	15.564	10.002	179,8%
First and emergency aid tech.	23.183	2.129	15.486	25.312	9.826	63,4%
Physiotherapist	5.732	1.256	1.916	6.989	5.073	264,8%
Other health personnel	29.958	6.299	21.971	36.258	14.287	65,0%
Managers	4.365	774	2.415	5.139	2.724	112,8%
Engineers and other technical personnel	5.769	164	1.004	5.932	4.928	490,9%
Other technical personnel	6.521	1.396	4.657	7.917	3.260	70,0%
General administrative staff	100.338	9.391	83.501	109.729	26.228	31,4%
Support staff	127.143	18.462	77.264	145.605	68.341	88,5%
<b>Total</b>	<b>885.795</b>	<b>181.776</b>	<b>563.852</b>	<b>1.067.572</b>	<b>503.720</b>	<b>xxx</b>
<b>% Change</b>	<b>95,92%</b>	<b>62,69%</b>	<b>xxx</b>	<b>89,34%</b>	<b>xxx</b>	<b>89,34%</b>

*Note: General practitioner numbers include public health and medical emergency specialists, as well.*

Comparison of the Distribution of Staff by Cadre and Category

% DISTRIBUTION		CADRE	Category	Year 2008	Year 2023
Year 2008	Year 2023				
13,5%	12,8%	Specialist	<b>High Level</b>	28,6%	29,5%
6,3%	1,8%	Prctitioner doctor			
0,2%	4,2%	Family physician			
3,5%	2,6%	Dentist			
4,4%	3,1%	Pharmacist			
0,4%	0,5%	Managers			
0,2%	0,6%	Engineers and other tech. pers.			
0,0%	4,0%	Nurse*			
17,7%	22,5%	Nurse	<b>Mid Level</b>	43%	46,6%
8,5%	8,0%	Midwife			
2,6%	3,0%	Health officer/Public health tech.			
2,7%	2,1%	Laboratory technician			
1,9%	1,5%	Radiology technician			
0,8%	1,0%	Anesthesia technician			
1,0%	1,5%	Medical secretary			
2,7%	2,4%	First and emergency aid technician			
0,3%	0,7%	Physiotherapist			
3,9%	3,4%	Other health personnel			
0,8%	0,7%	Other technical personel			
14,8%	10,3%	General administrative staff	<b>Support Level</b>	28,5%	23,9%
13,7%	13,6%	Support staff			
100%	100%	<b>Totals</b>		100%	100%

\* High level nurse

## Projected Requirements for New Recruits

Staff Type	Public Sec. Staff in 2008	Estimated Leavers in 15 years	Transfer to Private Sec. 2%/year	Estimated Loss to H.Sector	Private Sec. Staff in 2008	Estimated Leavers 2%/year	Estimated Total Loss to H.Sector	Additional Staff Req. (Table 14)	Total Recruits Required
	(a)	(b)	(c)	(d)=(b-c)	(e)	(f)	(g)=(d+f)	(h)	(i)=(g+h)
Specialist	57.423	21.533	17.227	4.307	18.566	5.570	9.877	60.888	70.764
Practitioner doctor	31.951	11.981	9.585	2.396	3.812	1.144	3.540	-16.958	-13.418
Family physician	1.179	442	354	88	220	66	154	42.981	43.136
Dentist	6.002	2.251	1.801	450	13.957	4.187	4.637	8.067	12.705
Pharmacist	1.373	515	412	103	23.405	7.022	7.125	8.108	15.233
Nurse	84.175	31.566	25.253	6.313	15.735	4.720	11.034	183.379	194.413
Midwife	44.094	16.535	13.228	3.307	3.579	1.074	4.381	37.404	41.785
Health officer/Public health technician	13.500	5.063	4.050	1.013	1.025	307	1.320	17.112	18.432
Laboratory technician	12.654	4.745	3.796	949	2.293	688	1.637	7.203	8.840
Radiology technician	9.153	3.432	2.746	686	1.585	476	1.162	4.891	6.053
Anesthesia technician	3.550	1.331	1.065	266	845	253	520	5.974	6.494
Medical secretary	4.522	1.696	1.357	339	1.040	312	651	10.002	10.653
First and emergency aid tech.	10.302	3.863	3.091	773	5.184	1.555	2.328	9.826	12.154
Physiotherapist	1.070	401	321	80	846	254	334	5.073	5.407
Other health personnel	16.102	6.038	4.831	1.208	5.869	1.761	2.968	14.287	17.255
Managers	2.102	788	631	158	313	94	252	2.724	2.976
Engineers and other technical personnel	933	350	280	70	71	21	91	4.928	5.020
Other technical personnel	3.981	1.493	1.194	299	676	203	501	3.260	3.761
General administrative staff	76.531	28.699	22.959	5.740	6.970	2.091	7.831	26.228	34.059
Support staff	71.524	26.822	21.457	10.729	5.740	1.722	12.451	68.341	80.792
<b>Total</b>	<b>452.121</b>	<b>169.545</b>	<b>135.636</b>	<b>39.273</b>	<b>111.731</b>	<b>33.519</b>	<b>72.793</b>	<b>503.720</b>	<b>576.512</b>

*Note: Minus sign in "total recruits required" means excess staff*

## Projected Training Needs to Meet Staffing Objectives

Staff type	Total Recruits Required 2008- 2023	Year 2008 intake already in Training	Total already in Training	Expected Losses in Training 2008- 2023	Intake required in period 2008-2023	Total intake to meet 2008-2023 requirements
Specialist	70.764	4.644	17.744	976	53.997	58.641
Practitioner doctor	0	5.253	30.372	3.037	69.388	74.641
Family physician	43.136	170	419	8	42.726	42.896
Dentist	12.705	1.131	5.458	546	7.793	8.924
Pharmacist	15.233	1.020	5.005	300	10.528	11.548
Nurse	194.413	13.573	35.466	3.901	162.848	176.421
Midwife	41.785	1.488	7.634	1.298	35.448	36.936
Health officer/Public health technician	18.432	851	3.178	636	15.890	16.741
Laboratory technician	8.840	952	2.562	512	6.791	7.743
Radiology technician	6.053	412	1.526	305	4.832	5.244
Anesthesia technician	6.494	688	2.372	474	4.596	5.284
Medical secretary	10.653	2.725	7.031	1.406	5.028	7.753
First and emergency aid tech.	12.154	4.336	9.645	1.929	4.438	8.774
Physiotherapist	5.407	653	2.370	284	3.321	3.974
Other health personnel	17255	-	-	-	-	-
Managers	2976	-	-	-	-	-
Engineers and other technical personnel	5020	-	-	-	-	-
Other technical personnel	3761	-	-	-	-	-
General administrative staff	34059	-	-	-	-	-
Support staff	80792	-	-	-	-	-
<b>Total</b>	<b>589.930</b>	<b>37.896</b>	<b>130.780</b>	<b>15.614</b>	<b>427.624</b>	<b>465.520</b>



Key Indicators of Change

<b>YEAR</b>	<b>YEAR</b>	
<b>2008</b>	<b>2023</b>	<b>Projection period= 15</b>
71,095,000	84,053,000	Total population
126	79	Population per health worker
% 4,0	%5,4	Public health expenditure as % of GDP
563,852	1,067,572	Total health personnel included in scenario
793	1270	Health workers per 100,000 population
159	238	Physicians per 100,000 population
228	476	Nurses*per 100,000 population
242	244	Total public and private beds per 100,000 population
172,165	205,136	Total number of hospital beds
87	82	% of beds in public sector
64	81	Average bed occupancy rate
9,482,071	15,233,382	Total hospital discharges
133	181	Hospital discharges per 1000 population

\* Nurses, Midwives and Community Health Technicians are included

Focus of the Improved Health Sector Performance					
Efficiency		Fairness		Appropriateness	
	Effectiveness		Accessibility		Acceptability



Implications for Changes in Human Resource Development						
Quality of staff	Mix of staff cadres	Number of staff	Staff distribution	Staff productivity	Education & training	Human resources management

Performance and Human Resource for Health Development

**HRD Resources:**

Budget  
HRD Staff and Staff skills

**HRD Planning:**

Mission and Goal Setting  
HRD Planning & Policy  
Development

**Personnel Policy and Practice:**

Job Classification System  
Compensation and Benefits System  
Career System  
Recruitment, Hiring, Transfer and  
Promotion  
Personnel Policies  
Discipline, Termination  
Grievance Procedures  
Other Incentive Systems  
Union Relationships  
Labour Law Compliance

**HRD Data:**

Employee Data  
Computerisation of Data  
Personnel Files  
Health Sector Workforce  
Information

**Performance Management**

Job Descriptions  
Supervision  
Performance Planning and  
Evaluation  
Accreditation

**Training:**

Staff Training  
Management/Leadership  
Development  
Links to External Pre-Service  
Training