

CANCER INCIDENCE IN TURKEY

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Estimations of cancer cases in Turkey will be presented in three chapters. In the first chapter, data on İzmir province obtained by evaluation of the 1996-2000 series and 1993-96 series for childhood cancers (*ACCIS pass - Automate Childhood Cancer Incidence, Steliarova-Foucher E, 2002*) of the İzmir Cancer Registration Center, which is a population-based cancer registration center established in 1992, are presented. In the second chapter, data of the newly-established Cancer Registration Centers are presented as preliminary drafts which might provide a rough idea about the cancer incidence in Turkey, in spite of the fact that, as depicted in the previous chapter (Cancer Registry and Cancer Registration Centers) in detail, these centers have not been fully matured yet and the validity of their data is quite low. In the third chapter, estimations on Turkey included in the Globocan 2002 (*Ferlay J et al, 2004*) prepared by IARC (International Agency for Research on Cancer) are discussed. How these estimations were made will be explained in detail in the relevant chapter.

I. Cancer Incidence in İzmir Province

As mentioned in the previous chapter, efforts to establish a population-based cancer registration center in İzmir started in 1991. The reference date of the İzmir Cancer Registration Center is May 1992. In other words, İzmir Cancer Registration Center compiles the data of cancer cases with diagnosis dates in May 1992 and afterwards. The first results including the incidence rates of years 1993-94 have been published in European Journal of Cancer (*Fidaner et al, 2001*).

Here, as İzmir province incidences, the results of the 1996-2000 series will be presented. The data on childhood cancers are the 1993-96 series included in ACCIS pass.

In İzmir, the rough rate of all cancers in males is 173 per 100 thousand and YSH(age standardized rate) is 191.5 (per hundred thousand, world standard population). Most frequently seen cancers are listed as lung, urinary bladder, colorectal, larynx, stomach, prostate cancers (YSH 71.4; 14.3; 12.1; 10.8; 9.9; 10.2, respectively) (Table 1, 3; Graphic 1, 2).

In females, the total rough rate is 108.8 per hundred thousand while YSH is 110.3. The first six types of cancer are breast, colorectal, corpus uteri, cervix uteri, lung and ovary cancers (YSH 31.1; 8.0; 6.0; 5.5; 5.5; 4.9, respectively) (Table 2, 4; Graphic 1, 3).

Table 1: Cancer incidences in İzmir province, 1996-2000, male

| Location | Rough rate (per hundred thousand) | YSH* (per hundred thousand) | Number of cases |
|----------------------------------------|------------------------------------------|------------------------------------|------------------------|
| Oral cavity | 3.3 | 3.7 | 274 |
| Nasopharynx | 1.1 | 1.1 | 85 |
| Other pharynx | 0.7 | 0.7 | 56 |
| Esophagus | 1.7 | 1.9 | 140 |
| Stomach | 9.1 | 9.9 | 734 |
| Colon and rectum | 10.9 | 12.1 | 880 |
| Liver | 2.6 | 2.8 | 211 |
| Gall bladder | 1.2 | 1.4 | 100 |
| Pancreas | 3.2 | 3.6 | 259 |
| Larynx | 10 | 10.8 | 806 |
| Trachea, bronchus, lung | 64.4 | 71.4 | 5197 |
| Melanoma | 1 | 1 | 77 |
| Prostate | 8.5 | 10.2 | 685 |
| Testis | 2.4 | 2 | 191 |
| Kidney | 2.6 | 2.9 | 212 |
| Urinary bladder | 12.4 | 14.3 | 1003 |
| Brain, neural system | 4.5 | 4.7 | 364 |
| Thyroid | 0.9 | 0.9 | 73 |
| Non-Hodgkin lymphoma | 4.4 | 4.6 | 358 |
| Hodgkin lymphoma | 1.2 | 1.1 | 97 |
| Multiple myeloma | 1.5 | 1.6 | 120 |
| Leukemia | 4.1 | 4.6 | 336 |
| Other | 24.4 | 28.2 | 1698 |
| All locations (except for skin) | 164.5 | 181.5 | 13277 |
| All locations | 173 | 191.5 | 13966 |

*YSH: age standardized rate, world standard population

Table 2: Cancer incidences in İzmir province, 1996-2000, female

| Location | Rough rate (per hundred thousand) | YSH* (per hundred thousand) | Number of cases |
|----------------------------------------|------------------------------------------|------------------------------------|------------------------|
| Oral cavity | 1.7 | 1.7 | 128 |
| Nasopharynx | 0.4 | 0.4 | 33 |
| Other pharynx | 0.2 | 0.2 | 19 |
| Esophagus | 1 | 1 | 81 |
| Stomach | 4.5 | 4.6 | 359 |
| Colon and rectum | 7.7 | 8 | 615 |
| Liver | 1.1 | 1.2 | 90 |
| Gall bladder | 1.7 | 1.8 | 134 |
| Pancreas | 2.1 | 2.2 | 168 |
| Larynx | 0.5 | 0.5 | 39 |
| Trachea, bronchus, lung | 5.3 | 5.5 | 422 |
| Melanoma | 1 | 1 | 76 |
| Breast | 31.6 | 31.1 | 2525 |
| Cervix uteri | 5.5 | 5.5 | 440 |
| Corpus uteri | 5.8 | 6 | 462 |
| Ovary | 4.9 | 4.9 | 388 |
| Kidney | 1.4 | 1.5 | 111 |
| Urinary bladder | 1.2 | 1.3 | 97 |
| Brain, neural system | 2.9 | 3 | 234 |
| Thyroid | 3.4 | 3.2 | 271 |
| Hodgkin lymphoma | 0.8 | 0.7 | 60 |
| Non-Hodgkin lymphoma | 3.8 | 3.9 | 306 |
| Multiple myeloma | 1.1 | 1.1 | 88 |
| Leukemia | 3.3 | 3.6 | 263 |
| Other | 16.1 | 16.6 | 1276 |
| All locations (except for skin) | 101.8 | 102.9 | 8126 |
| All locations | 108.8 | 110.3 | 8688 |

* YSH: age standardized rate, world standard population

Graphic 1: Age standardized incidence rates, 1996-2000 İzmir

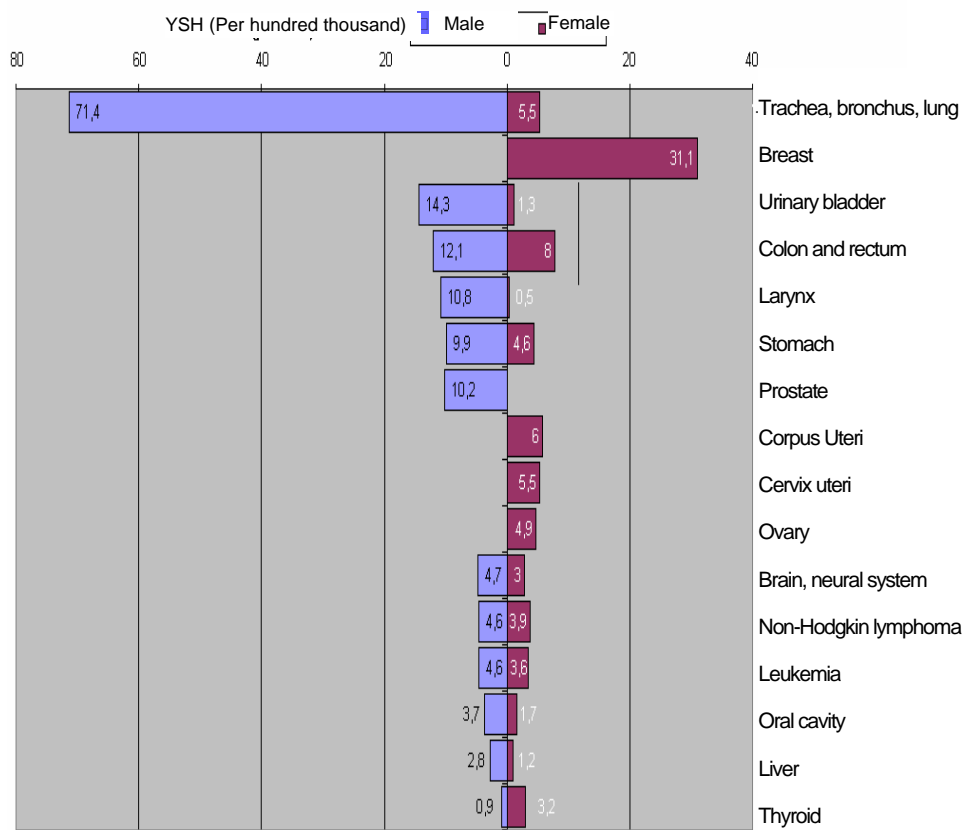


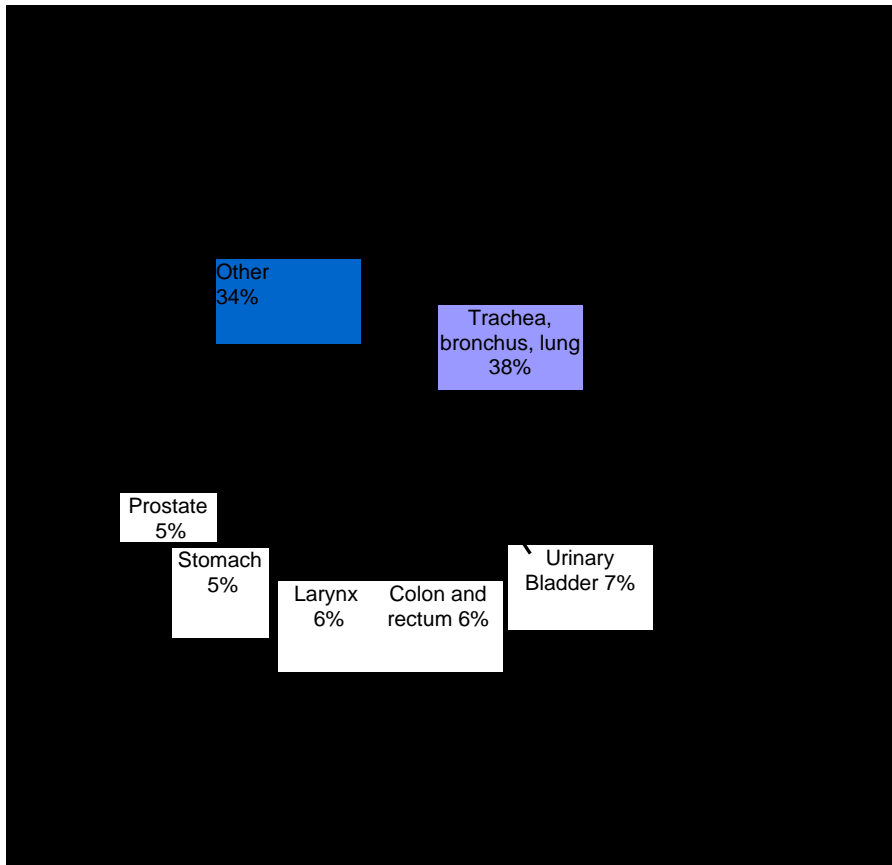
Table 3: Cancers most frequently seen in İzmir, male, 1996-2000

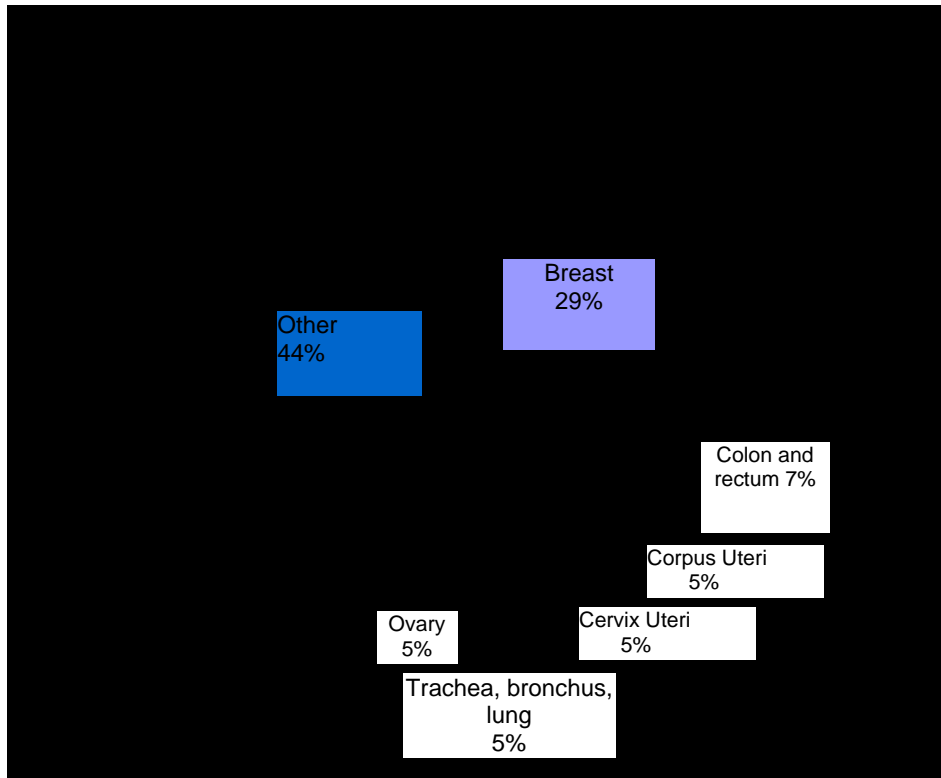
| Location | Rough rate (per hundred thousand) | YSH | Number of cases |
|-------------------------|-----------------------------------|------|-----------------|
| Trachea, bronchus, lung | 64.4 | 71.4 | 5197 |
| Urinary bladder | 12.4 | 14.3 | 1003 |
| Colon and rectum | 10.9 | 12.1 | 880 |
| Larynx | 10 | 10.8 | 806 |
| Stomach | 9.1 | 9.9 | 734 |
| Prostate | 8.5 | 10.2 | 685 |

Table 4: Cancers most frequently seen in İzmir, female, 1996-2000

| Location | Rough rate (per hundred thousand) | YSH | Number of cases |
|------------------|-----------------------------------|------|-----------------|
| Breast | 31.6 | 31.1 | 2525 |
| Colon and rectum | 7.7 | 8 | 615 |
| Corpus uteri | 5.8 | 6 | 462 |
| Cervix uteri | 5.5 | 5.5 | 440 |
| Lung | 5.3 | 5.5 | 422 |
| Ovary | 4.9 | 4.9 | 388 |

Graphic 2: Cancers by their locations, İzmir, male, 1996-2000





As can be seen, in males in İzmir, cancers associated with smoking addiction such as lung, urinary bladder and larynx cancers are in the first ranks with high rates. In females, on the other hand, the most frequently observed cancer is breast cancer as is the case in many regions of the world. Colorectal cancers are in the first ranks and have tendency to increase in both males and females.

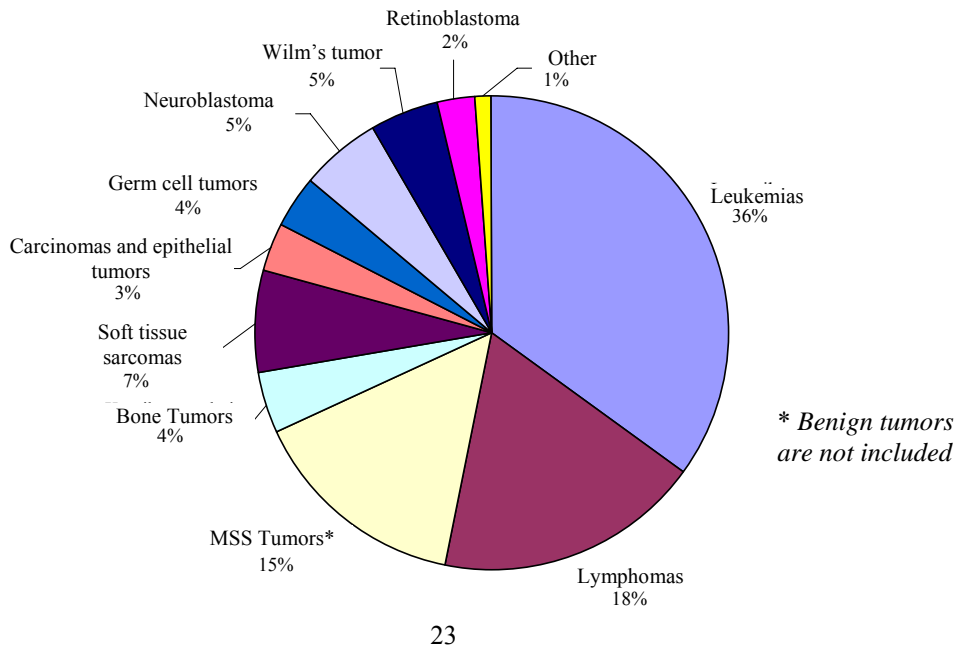
In childhood (age 0-14) cancers, the most frequently observed cancer in 1993-1996 series is leukemia (36 %); lymphomas are the second (18 %) and central nervous system (MSS) malignity (15 %) is the third (Table 5, Graphic 4, 5). As in other underdeveloped countries, lymphomas are the second most common cancers. However, it is remarkable that lymphoma and MSS malignity rates are very close to each other.

Table 5: Childhood cancers (age 0-14), İzmir 1993-1996

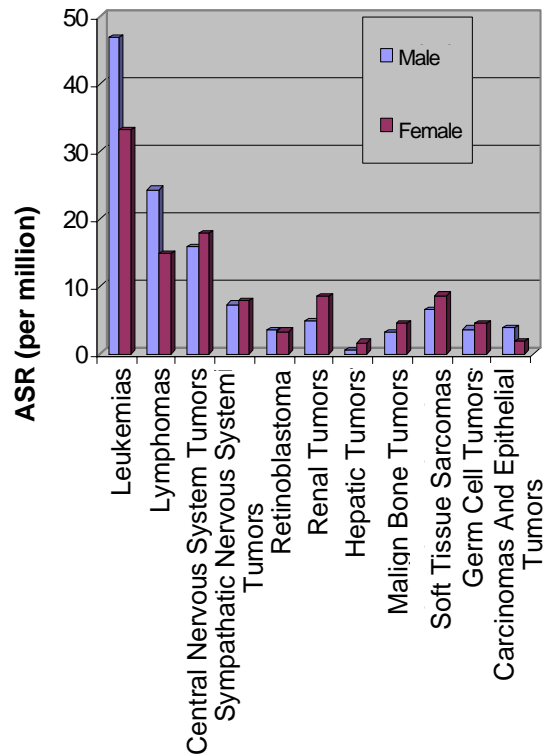
| ICCC category | Number of cases | Rough rate (per million) | YSH* (per million) |
|----------------------------------|-----------------|--------------------------|--------------------|
| All tumors | 332 | 113.3 | 115.6 |
| Leukemias | 116 | 39.6 | 41.4 |
| Lymphomas | 60 | 20.5 | 19.6 |
| MSS tumors | 50 | 17.1 | 16.8 |
| Bone tumors | 14 | 4.8 | 3.9 |
| Soft tissue sarcomas | 23 | 7.8 | 7.6 |
| Carcinomas and epithelial tumors | 11 | 3.8 | 3.1 |
| Germ cell tumors | 12 | 4.1 | 4.1 |
| Neuroblastoma | 18 | 6.1 | 7.6 |
| Wilm's tumor | 16 | 5.5 | 6.7 |
| Retinoblastoma | 8 | 2.7 | 3.3 |

* YSH: age standardized rate, world standard population

Graphic 4: Childhood cancers (age 0-14) , İzmir 1993-1996



Graphic 5: Age standardized incidence rates, age 0-14, İzmir, 1993-1996



II. Cancer incidence in provinces where new population-based centers are established:

In 2006 audits of Antalya, Trabzon, Samsun, Eskişehir, Edirne and Erzurum Registration Centers, which are deemed to have achieved a certain level of maturity among population-based registration centers. These audits included the following studies: a) Detailed analysis of the data base and preparation of control tables, b) Analysis of the methods of study, workflow, opportunities, communication in the centers and in data resources, c) Execution of studies to find out new data for certain periods identified in data resources (data integrity) d) Summarization and coding anew of a certain number of files randomly selected from cases already studied on (data accuracy).

At the end of these audits, the data on Antalya, Trabzon, Eskişehir and Samsun were processed and their incidence rates were calculated, since these might give idea about cancer frequency to a certain extent. Below, together with the tables, integrity and inconsistency rates identified are also given. In analysis of this chapter, integrity and inconsistency rates should also be taken into consideration and the results given should only be evaluated as a preliminary draft. On the other hand, it should be taken into consideration that the runaway rates of the data given do not include the cases that have left the province and that some of the runaways identified might belong to the years before the diagnosis year. As there is no other reliable set of population data, the results of the 2005 ETF (Household Registry Forms) obtained from the relevant provincial directorate were used. It should be kept in mind that the data quality of ETFs changes from province to province and is questionable in most provinces.

Table 6 : Cancer incidences in Antalya province, male, 2005

| Location* | Number of cases | Relative frequency (%) | Rough rate (per hundred thousand) | YSH** (World) |
|-------------------------|------------------------|-------------------------------|------------------------------------------|----------------------|
| Lips | 17 | 1.2 | 2.1 | 2.2 |
| Tongue | 4 | 0.3 | 0.5 | 0.5 |
| Mouth | 4 | 0.3 | 0.5 | 0.7 |
| Salivary glands | 2 | 0.1 | 0.2 | 0.3 |
| Nasopharynx | 10 | 0.7 | 1.2 | 1.3 |
| Hypopharynx | 3 | 0.2 | 0.4 | 0.3 |
| Esophagus | 7 | 0.5 | 0.9 | 0.8 |
| Stomach | 78 | 5.6 | 9.6 | 10.9 |
| Small intestines | 5 | 0.4 | 0.6 | 0.6 |
| Colon | 57 | 4.1 | 7.0 | 7.9 |
| Rectum | 50 | 3.6 | 6.2 | 6.4 |
| Anus | 2 | 0.1 | 0.2 | 0.3 |
| Liver | 20 | 1.4 | 2.5 | 2.8 |
| Gall bladder etc | 4 | 0.3 | 0.5 | 0.5 |
| Pancreas | 19 | 1.4 | 2.3 | 2.6 |
| Nose, sinuses etc | 1 | 0.1 | 0.1 | 0.2 |
| Larynx | 40 | 2.9 | 4.9 | 5.2 |
| Trachea, bronchus, lung | 284 | 20.5 | 35.0 | 38.0 |
| Other thoracic organs | 7 | 0.5 | 0.9 | 1.0 |
| Bone | 6 | 0.4 | 0.7 | 0.8 |
| Skin melanoma | 10 | 0.7 | 1.2 | 1.3 |
| Other skin | 144 | 10.4 | 17.7 | 20.2 |

| | | | | |
|----------------------------------------|-------------|--------------|--------------|--------------|
| Mesothelioma | 10 | 0.7 | 1.2 | 1.3 |
| Kaposi's sarcoma | 2 | 0.1 | 0.2 | 0.3 |
| Connective, soft tissue | 14 | 1.0 | 1.7 | 1.6 |
| Breast | 6 | 0.4 | 0.7 | 0.7 |
| Prostate | 216 | 15.6 | 26.6 | 30.3 |
| Testis | 24 | 1.7 | 3.0 | 2.8 |
| Kidney | 26 | 1.9 | 3.2 | 3.5 |
| Renal pelvis | 1 | 0.1 | 0.1 | 0.1 |
| Ureter | 1 | 0.1 | 0.1 | 0.1 |
| Urinary bladder | 133 | 9.6 | 16.4 | 18.3 |
| Other urinary organs | 1 | 0.1 | 0.1 | 0.2 |
| Eye | 2 | 0.1 | 0.2 | 0.3 |
| Brain, neural system | 38 | 2.7 | 4.7 | 4.7 |
| Thyroid | 11 | 0.8 | 1.4 | 1.4 |
| Adrenal gland | 2 | 0.1 | 0.2 | 0.4 |
| Hodgkin disease | 12 | 0.9 | 1.5 | 1.4 |
| Non-Hodgkin lymphoma | 28 | 2.0 | 3.4 | 3.5 |
| Multiple myeloma | 9 | 0.7 | 1.1 | 1.2 |
| Lymphoid leukemia | 7 | 0.5 | 0.9 | 0.9 |
| Myeloid leukemia | 16 | 1.2 | 2.0 | 1.8 |
| Leukemia, undefined | 1 | 0.1 | 0.1 | 0.2 |
| Other & undefined | 50 | 3.6 | 6.2 | 6.4 |
| All locations | 1384 | 100.0 | 170.4 | 186.1 |
| All locations (except for skin) | 1240 | 89.6 | 152.6 | 165.9 |

* cancers whose number of cases is 0 are not included in the list

** per hundred thousand

Table 7: Cancer incidences in Antalya province, female, 2005

| Location* | Number of cases | Relative frequency (%) | Rough rate (per hundred thousand) | YSH** (World) |
|------------------|------------------------|-------------------------------|------------------------------------------|----------------------|
| Lips | 4 | 0.4 | 0.5 | 0.5 |
| Tongue | 3 | 0.3 | 0.4 | 0.3 |
| Mouth | 7 | 0.7 | 0.9 | 0.8 |
| Salivary glands | 3 | 0.3 | 0.4 | 0.3 |
| Nasopharynx | 4 | 0.4 | 0.5 | 0.5 |
| Hypopharynx | 1 | 0.1 | 0.1 | 0.2 |

| | | | | |
|-------------------------|-----|------|------|------|
| Esophagus | 2 | 0.2 | 0.2 | 0.3 |
| Stomach | 38 | 3.7 | 4.7 | 4.5 |
| Small intestines | 3 | 0.3 | 0.4 | 0.4 |
| Colon | 41 | 4.0 | 5.1 | 5.3 |
| Rectum | 30 | 2.9 | 3.7 | 3.8 |
| Anus | 4 | 0.4 | 0.5 | 0.6 |
| Liver | 17 | 1.7 | 2.1 | 2.4 |
| Gall bladder etc | 18 | 1.8 | 2.2 | 2.3 |
| Pancreas | 16 | 1.6 | 2.0 | 2.2 |
| Larynx | 4 | 0.4 | 0.5 | 0.6 |
| Trachea, bronchus, lung | 37 | 3.6 | 4.6 | 4.7 |
| Other thoracic organs | 4 | 0.4 | 0.5 | 0.5 |
| Bone | 5 | 0.5 | 0.6 | 0.7 |
| Skin melanoma | 9 | 0.9 | 1.1 | 1.2 |
| Other skin | 143 | 14.0 | 17.9 | 18.7 |
| Mesothelioma | 5 | 0.5 | 0.6 | 0.6 |
| Kaposi's sarcoma | 3 | 0.3 | 0.4 | 0.4 |
| Connective, soft tissue | 9 | 0.9 | 1.1 | 1.3 |
| Breast | 229 | 22.5 | 28.6 | 28.1 |
| Vulva | 5 | 0.5 | 0.6 | 0.7 |
| Vagina | 2 | 0.2 | 0.2 | 0.2 |
| Cervix uteri | 49 | 4.8 | 6.1 | 5.8 |
| Corpus uteri | 51 | 5.0 | 6.4 | 6.5 |
| Uterus, undefined | 3 | 0.3 | 0.4 | 0.3 |
| Ovary | 42 | 4.1 | 5.2 | 5.1 |
| Other female genital | 3 | 0.3 | 0.4 | 0.4 |
| Kidney | 12 | 1.2 | 1.5 | 1.7 |
| Urinary bladder | 22 | 2.2 | 2.7 | 2.8 |
| Brain, neural system | 28 | 2.7 | 3.5 | 3.5 |
| Thyroid | 62 | 6.1 | 7.7 | 7.4 |
| Adrenal gland | 1 | 0.1 | 0.1 | 0.1 |
| Hodgkin disease | 9 | 0.9 | 1.1 | 1.1 |
| Non-Hodgkin lymphoma | 35 | 3.4 | 4.4 | 4.5 |
| Multiple myeloma | 8 | 0.8 | 1.0 | 1.1 |
| Lymphoid leukemia | 8 | 0.8 | 1.0 | 1.2 |
| Myeloid leukemia | 10 | 1.0 | 1.2 | 1.2 |

| | | | | |
|----------------------------------------|-------------|--------------|--------------|--------------|
| Leukemia, undefined | 1 | 0.1 | 0.1 | 0.1 |
| Other & undefined | 28 | 2.7 | 3.5 | 3.7 |
| All locations | 1019 | 100.0 | 127.4 | 128.7 |
| All locations (except for skin) | 876 | 86.0 | 109.5 | 110.0 |

* cancers whose number of cases is 0 are not included in the list

** per hundred thousand

B. Trabzon

Table 8: Cancer incidence rates in Trabzon province, male, 2005

| Location* | Number of cases | Relative frequency (%) | Rough rate (per hundred thousand) | YSH** (World) |
|-------------------------|-----------------|------------------------|-----------------------------------|---------------|
| Lips | 3 | 0.50 | 0.9 | 0.6 |
| Tonsil | 2 | 0.30 | 0.6 | 0.5 |
| Other oropharynx | 0 | 0.00 | 0 | 0 |
| Nasopharynx | 7 | 1.10 | 2 | 1.7 |
| Esophagus | 7 | 1.10 | 2 | 1.8 |
| Stomach | 64 | 10.10 | 18.3 | 16 |
| Small intestines | 2 | 0.30 | 0.6 | 0.6 |
| Colon | 26 | 4.10 | 7.5 | 6.3 |
| Rectum | 20 | 3.10 | 5.7 | 4.9 |
| Liver | 6 | 0.90 | 1.7 | 1.5 |
| Pancreas | 9 | 1.40 | 2.6 | 2 |
| Larynx | 28 | 4.40 | 8 | 6.9 |
| Trachea, bronchus, lung | 137 | 21.50 | 39.3 | 34 |
| Skin melanoma | 4 | 0.60 | 1.1 | 1 |
| Other skin | 88 | 13.80 | 25.2 | 21.9 |
| Kaposi's sarcoma | 3 | 0.50 | 0.9 | 0.7 |
| Connective, soft tissue | 5 | 0.80 | 1.4 | 1.2 |
| Breast | 2 | 0.30 | 0.6 | 0.5 |
| Prostate | 45 | 7.10 | 12.9 | 11.1 |
| Testis | 10 | 1.60 | 2.9 | 2.3 |

| | | | | |
|----------------------------------------|------------|---------------|--------------|--------------|
| Kidney | 10 | 1.60 | 2.9 | 2.5 |
| Urinary bladder | 73 | 11.50 | 20.9 | 17.7 |
| Brain, neural system | 12 | 1.90 | 3.4 | 2.9 |
| Thyroid | 10 | 1.60 | 2.9 | 2.5 |
| Hodgkin disease | 4 | 0.60 | 1.1 | 1 |
| Non-Hodgkin lymphoma | 17 | 2.70 | 4.9 | 3.9 |
| Multiple myeloma | 8 | 1.30 | 2.3 | 1.8 |
| Lymphoid leukemia | 11 | 1.70 | 3.2 | 9.3 |
| Myeloid leukemia | 9 | 1.40 | 2.6 | 2.1 |
| Other & undefined | 8 | 1.30 | 2.3 | 4.2 |
| All locations | 636 | 100.00 | 182.3 | 164.7 |
| All locations (except for skin) | 548 | 86.20 | 157.1 | 142.8 |

* cancers whose number of cases is 0 are not included in the list

** per hundred thousand

Table 9: Cancer incidence rates in Trabzon province, female, 2005

| Location* | Number of cases | Relative frequency (%) | Rough rate (per hundred thousand) | YSH** (World) |
|-------------------------|-----------------|------------------------|-----------------------------------|---------------|
| Tongue | 1 | 0.20 | 0.3 | 0.1 |
| Esophagus | 2 | 0.50 | 0.6 | 0.4 |
| Stomach | 52 | 11.80 | 14.8 | 11 |
| Small intestine | 3 | 0.70 | 0.9 | 0.7 |
| Colon | 21 | 4.80 | 6 | 4.6 |
| Rectum | 9 | 2.10 | 2.6 | 1.6 |
| Liver | 6 | 1.40 | 1.7 | 1.5 |
| Gall bladder etc | 3 | 0.70 | 0.9 | 0.6 |
| Pancreas | 8 | 1.80 | 2.3 | 1.7 |
| Nose, sinuses vb | 1 | 0.20 | 0.3 | 0.2 |
| Larynx | 1 | 0.20 | 0.3 | 0.3 |
| Trachea, bronchus, lung | 19 | 4.30 | 5.4 | 4.1 |

| | | | | |
|----------------------------------------|------------|---------------|--------------|-------------|
| Other thoracic organs | 1 | 0.20 | 0.3 | 0.2 |
| Bone | 6 | 1.40 | 1.7 | 1.5 |
| Skin melanoma | 5 | 1.10 | 1.4 | 1.1 |
| Other skin | 60 | 13.70 | 17 | 12.3 |
| Breast | 81 | 18.50 | 23 | 18.2 |
| Vulva | 2 | 0.50 | 0.6 | 0.4 |
| Cervix uteri | 11 | 2.50 | 3.1 | 2.4 |
| Corpus uteri | 9 | 2.10 | 2.6 | 2 |
| Uterus, undefined | 6 | 1.40 | 1.7 | 1.4 |
| Ovary | 12 | 2.70 | 3.4 | 2.9 |
| Kidney | 4 | 0.90 | 1.1 | 0.9 |
| Urinary bladder | 6 | 1.40 | 1.7 | 1.1 |
| Brain, neural system | 12 | 2.70 | 3.4 | 2.9 |
| Thyroid | 43 | 9.80 | 12.2 | 9.9 |
| Hodgkin disease | 8 | 1.80 | 2.3 | 2 |
| Non-Hodgkin lymphoma | 15 | 3.40 | 4.3 | 3.2 |
| Multiple myeloma | 7 | 1.60 | 2 | 1.4 |
| Lymphoid leukemia | 5 | 1.10 | 1.4 | 1.3 |
| Myeloid leukemia | 5 | 1.10 | 1.4 | 1.1 |
| Other & undefined | 9 | 2.10 | 2.6 | 1.7 |
| All locations | 439 | 100.00 | 124.6 | 96.3 |
| All locations (except for skin) | 379 | 86.30 | 107.6 | 84 |

* cancers whose number of cases is 0 are not included in the list

** per hundred thousand

C. Eskişehir

Table 10 : Cancer incidence rates in Eskişehir province, male, 2004

| Location* | Number of cases | Relative frequency (%) | Rough rate (per hundred thousand) | YSH** (World) |
|-------------------------|------------------------|-------------------------------|------------------------------------------|----------------------|
| Trachea, bronchus, lung | 179 | 23.49 | 52 | 47.7 |
| Urinary bladder | 76 | 9.97 | 22.1 | 19.6 |
| Prostate | 67 | 8.79 | 19.5 | 17.8 |
| Colorectal | 66 | 8.66 | 19.2 | 17.2 |
| Other skin | 64 | 8.40 | 18.6 | 17.2 |
| Stomach | 51 | 6.69 | 14.8 | 13.8 |
| Larynx | 40 | 5.25 | 11.6 | 10.6 |
| Lips | 23 | 3.02 | 6.7 | 5.9 |
| Pancreas | 21 | 2.76 | 6.1 | 6.1 |

| | | | | |
|----------------------------------------|------------|---------------|--------------|------------|
| Non-Hodgkin lymphoma | 20 | 2.62 | 5.8 | 5.2 |
| Other & undefined | 18 | 2.36 | 5.2 | 5 |
| Brain, neural system | 17 | 2.23 | 4.9 | 4.9 |
| Liver | 16 | 2.10 | 4.6 | 4.2 |
| Kidney | 15 | 1.97 | 4.4 | 3.9 |
| Esophagus | 12 | 1.57 | 3.5 | 3.2 |
| Lymphoid leukemia | 12 | 1.57 | 3.5 | 3.7 |
| Myeloid leukemia | 10 | 1.31 | 2.9 | 2.6 |
| Skin melanoma | 8 | 1.05 | 2.3 | 2 |
| Connective, soft tissue | 6 | 0.79 | 1.7 | 2.3 |
| Testis | 6 | 0.79 | 1.7 | 1.5 |
| Gall bladder etc, | 4 | 0.52 | 1.2 | 1 |
| Thyroid | 4 | 0.52 | 1.2 | 1 |
| Hodgkin disease | 4 | 0.52 | 1.2 | 1 |
| Multiple myeloma | 4 | 0.52 | 1.2 | 1.1 |
| Mesothelioma | 3 | 0.39 | 0.9 | 0.8 |
| Mouth | 2 | 0.26 | 0.6 | 0.6 |
| Salivary glands | 2 | 0.26 | 0.6 | 0.5 |
| Hypopharynx | 2 | 0.26 | 0.6 | 0.5 |
| Bone | 2 | 0.26 | 0.6 | 0.6 |
| Breast | 2 | 0.26 | 0.6 | 0.6 |
| All locations | 762 | 100.00 | 221.4 | 204 |
| All locations (except for skin) | 698 | 91.60 | 202.8 | 187 |

* cancers whose number of cases is 0 are not included in the list

** per hundred thousand

Table 11 : Cancer incidence rates in Eskişehir province, female, 2004

| Location* | Number of cases | Relative frequency (%) | Rough rate (per hundred thousand) | YSH** (World) |
|-------------------------|-----------------|------------------------|-----------------------------------|---------------|
| Breast | 116 | 21.32 | 33.3 | 28.3 |
| Colorectal | 55 | 10.11 | 15.7 | 13.1 |
| Other skin | 45 | 8.27 | 12.9 | 10.1 |
| Corpus uteri | 36 | 6.62 | 10.3 | 8.7 |
| Ovary | 29 | 5.33 | 8.3 | 7.4 |
| Brain, neural system | 23 | 4.23 | 6.6 | 5.8 |
| Stomach | 20 | 3.68 | 5.7 | 4.6 |
| Trachea, bronchus, lung | 20 | 3.68 | 5.7 | 4.7 |
| Non-Hodgkin lymphoma | 18 | 3.31 | 5.2 | 4.3 |

| | | | | |
|----------------------------------------|------------|---------------|--------------|------------|
| Cervix uteri | 16 | 2.94 | 4.6 | 3.9 |
| Thyroid | 13 | 2.39 | 3.7 | 3.1 |
| Liver | 12 | 2.21 | 3.4 | 2.9 |
| Pancreas | 12 | 2.21 | 3.4 | 3.1 |
| Uterus undefined | 12 | 2.21 | 3.4 | 2.9 |
| Other & undefined | 12 | 2.21 | 3.4 | 3.1 |
| Gall bladder etc | 11 | 2.02 | 3.2 | 2.3 |
| Esophagus | 9 | 1.65 | 2.6 | 1.9 |
| Mesothelioma | 9 | 1.65 | 2.6 | 2.1 |
| Kidney | 8 | 1.47 | 2.3 | 2 |
| Urinary bladder | 8 | 1.47 | 2.3 | 1.8 |
| Myeloid leukemia | 8 | 1.47 | 2.3 | 2 |
| Lymphoid leukemia | 6 | 1.10 | 1.7 | 1.7 |
| Lips | 5 | 0.92 | 1.4 | 1.1 |
| Bone | 5 | 0.92 | 1.4 | 1.6 |
| Multiple myeloma | 5 | 0.92 | 1.4 | 1.1 |
| Skin melanoma | 4 | 0.74 | 1.1 | 0.8 |
| Connective, soft tissue | 4 | 0.74 | 1.1 | 1.2 |
| Vulva | 4 | 0.74 | 1.1 | 1.2 |
| Small intestines | 3 | 0.55 | 0.9 | 0.8 |
| Other endocrine | 3 | 0.55 | 0.9 | 0.7 |
| Other thoracic organs | 2 | 0.37 | 0.6 | 0.5 |
| Hodgkin disease | 2 | 0.37 | 0.6 | 0.5 |
| All locations | 544 | 100.00 | 156.1 | 131 |
| All locations (except for skin) | 499 | 91.73 | 143.2 | 121 |

* cancers whose number of cases is 0 are not included in the list

** per hundred thousand

D. Samsun

Table 12 : Cancer incidence rates in Samsun province, male, 2005

| Location* | Number of cases | Relative frequency (%) | Rough rate (per hundred thousand) | YSH** (World) |
|------------------|-----------------|------------------------|-----------------------------------|---------------|
| Lips | 9 | 1.00 | 1.5 | 1.4 |
| Mouth | 3 | 0.30 | 0.5 | 0.5 |
| Salivary glands | 2 | 0.20 | 0.3 | 0.3 |
| Tonsil | 1 | 0.10 | 0.2 | 0.2 |
| Other oropharynx | 1 | 0.10 | 0.2 | 0.2 |

| | | | | |
|----------------------------------------|------------|---------------|--------------|--------------|
| Nasopharynx | 7 | 0.80 | 1.1 | 1.1 |
| Hypopharynx | 1 | 0.10 | 0.2 | 0.2 |
| Esophagus | 8 | 0.90 | 1.3 | 1.3 |
| Stomach | 48 | 5.30 | 7.9 | 8.3 |
| Small intestine | 1 | 0.10 | 0.2 | 0.2 |
| Colorectal | 45 | 4.90 | 7.3 | 7.6 |
| Anus | 1 | 0.10 | 0.2 | 0.2 |
| Liver | 12 | 1.30 | 2 | 2.1 |
| Gall bladder etc | 3 | 0.30 | 0.5 | 0.6 |
| Pancreas | 15 | 1.60 | 2.5 | 2.5 |
| Larynx | 37 | 4.10 | 6.1 | 6.3 |
| Trachea, bronchus, lung | 234 | 25.70 | 38.4 | 38.8 |
| Other thoracic organs | 1 | 0.10 | 0.2 | 0.2 |
| Bone | 5 | 0.50 | 0.8 | 0.8 |
| Skin melanoma | 3 | 0.30 | 0.5 | 0.5 |
| Other skin | 98 | 10.70 | 16.1 | 16.7 |
| Connective, soft tissue | 6 | 0.70 | 1 | 1.1 |
| Breast | 3 | 0.30 | 0.5 | 0.5 |
| Prostate | 144 | 15.80 | 23.6 | 24.7 |
| Testis | 8 | 0.90 | 1.3 | 1.1 |
| Kidney | 15 | 1.60 | 2.5 | 2.4 |
| Urinary bladder | 80 | 8.80 | 13.1 | 13.5 |
| Brain, neural system | 26 | 2.90 | 4.3 | 4.4 |
| Thyroid | 5 | 0.50 | 0.8 | 0.7 |
| Other endocrine | 1 | 0.10 | 0.2 | 0.2 |
| Hodgkin disease | 10 | 1.10 | 1.6 | 1.7 |
| Non-Hodgkin lymphoma | 31 | 3.40 | 5.1 | 5.2 |
| Multiple myeloma | 7 | 0.80 | 1.1 | 1.2 |
| Lymphoid leukemia | 17 | 1.90 | 2.8 | 3.2 |
| Myeloid leukemia | 4 | 0.40 | 0.7 | 0.6 |
| Leukemia, undefined | 1 | 0.10 | 0.2 | 0.2 |
| Other & undefined | 19 | 2.10 | 3.1 | 3.2 |
| All locations | 912 | 100.00 | 149.5 | 153.6 |
| All locations (except for skin) | 814 | 89.30 | 133.5 | 137 |

* cancers whose number of cases is 0 are not included in the list

** per hundred thousand

Table 13 : Cancer incidence rates in Samsun province, female, 2005

| Location* | Number of cases | Relative frequency (%) | Rough rate (per hundred thousand) | YSH** (World) |
|-------------------------|------------------------|-------------------------------|------------------------------------------|----------------------|
| Lips | 1 | 0.20 | 0.2 | 0.2 |
| Tongue | 2 | 0.40 | 0.3 | 0.3 |
| Mouth | 3 | 0.50 | 0.5 | 0.4 |
| Salivary glands | 1 | 0.20 | 0.2 | 0.1 |
| Other oropharynx | 1 | 0.20 | 0.2 | 0.1 |
| Nasopharynx | 1 | 0.20 | 0.2 | 0.2 |
| Esophagus | 4 | 0.70 | 0.6 | 0.6 |
| Stomach | 27 | 4.80 | 4.4 | 4.2 |
| Small intestine | 1 | 0.20 | 0.2 | 0.1 |
| Colorectal | 41 | 7.40 | 6.6 | 5.9 |
| Anus | 2 | 0.40 | 0.3 | 0.3 |
| Liver | 3 | 0.50 | 0.5 | 0.5 |
| Gall bladder etc | 3 | 0.50 | 0.5 | 0.5 |
| Pancreas | 8 | 1.40 | 1.3 | 1.1 |
| Larynx | 3 | 0.50 | 0.5 | 0.4 |
| Trachea, bronchus, lung | 20 | 3.60 | 3.2 | 3.1 |
| Bone | 4 | 0.70 | 0.6 | 0.6 |
| Skin melanoma | 6 | 1.10 | 1 | 0.9 |
| Other skin | 66 | 11.80 | 10.7 | 9.8 |
| Mesothelioma | 1 | 0.20 | 0.2 | 0.2 |
| Connective, soft tissue | 12 | 2.10 | 1.9 | 1.7 |
| Breast | 149 | 26.70 | 24.1 | 22.4 |
| Vulva | 2 | 0.40 | 0.3 | 0.3 |
| Vagina | 1 | 0.20 | 0.2 | 0.1 |
| Cervix uteri | 10 | 1.80 | 1.6 | 1.5 |
| Corpus uteri | 36 | 6.40 | 5.8 | 5.6 |
| Ovary | 24 | 4.30 | 3.9 | 3.7 |
| Kidney | 13 | 2.30 | 2.1 | 2 |
| Urinary bladder | 12 | 2.10 | 1.9 | 1.8 |
| Brain, neural system | 24 | 4.30 | 3.9 | 3.8 |
| Thyroid | 26 | 4.70 | 4.2 | 4 |
| Hodgkin disease | 5 | 0.90 | 0.8 | 0.8 |
| Non-Hodgkin lymphoma | 12 | 2.10 | 1.9 | 1.8 |
| Multiple myeloma | 3 | 0.50 | 0.5 | 0.5 |

| | | | | |
|----------------------------------------|-----|--------|------|------|
| Lymphoid leukemia | 11 | 2.00 | 1.8 | 2 |
| Myeloid leukemia | 15 | 2.70 | 2.4 | 2.2 |
| Leukemia, undefined | 1 | 0.20 | 0.2 | 0.2 |
| Other & undefined | 5 | 0.90 | 0.8 | 0.8 |
| All locations | 559 | 100.00 | 90.3 | 84.9 |
| All locations (except for skin) | 493 | 88.20 | 79.6 | 75.1 |

* cancers whose number of cases is 0 are not included in the list

** per hundred thousand

III. Estimations for Turkey

As discussed in detail in the previous chapter, it is unfortunately impossible at the moment to identify the scientific cancer incidence rates for the provinces other than İzmir in Turkey. Only after the institutionalization of cancer registry is accomplished in Turkey and the cancer registration centers established in project provinces where active data are collected are provided with a structure similar to the structure of the İzmir Cancer Registration Center, rendered real population-based cancer registration centers operating at international standards and obtain their first results, we are going to be able to discuss the scientific data on cancer incidence in Turkey.

Here, estimations for Turkey, included in Globocan 2002 (*Ferlay J et al., 2004*) are presented. Globocan 2002 is a data base which is produced by the IARC (International Agency for Research on Cancer) and which includes estimations on cancer incidences in all over the world. This data base includes cancer incidence and mortality rates of all countries and regions.

These estimations were made by the following methods:

1) The data of years **1997-1999** collected by passive notification in Turkey were grouped on the basis of seven geographical regions by sex, cancer, and age. Afterwards, the appropriate populations (regional populations, age-specific and sex-specific populations) were used to establish a data pool. The relative frequencies of cancers (age and sex-stratified) were identified by using such data in the pool.

2) An “all-cancer incidence rate except for skin cancer” estimation was made for Turkey: The average of the all-cancer incidence rate except for skin cancer obtained from the **1993-1998** data of İzmir Cancer Registration Center and the all-cancer incidence rate except for skin cancer obtained from the **1996-1999** data (*Sadjadi et al , 2003*) of Ardabil, Iran, was calculated and accepted as the all-cancer incidence rate except for skin cancer in Turkey. The data on Ardabil were used in order

to decrease the influence of the very high rate of lung cancer risk associated with smoking, observed especially in males in İzmir, on the basis of the fact that the İzmir rates cannot represent all Turkey. It is thought that the cancer pattern in Ardabil might reflect the pattern in the eastern region (Table 16, 17) (high rates of stomach/esophagus cancer risks).

Table 14 : Most frequently seen cancers, Iran-Ardabil, 1996-1999, male

| Location | YSH (World)* |
|-------------------------|--------------|
| Stomach | 49.1 |
| Esophagus | 15.4 |
| Trachea, bronchus, lung | 7.9 |
| Colorectal | 7.9 |
| Urinary bladder | 7.6 |
| All locations | 132 |

*YSH: per hundred thousand, age standardized rate, world standard population

Table 15 : Most frequently seen cancers, Iran-Ardabil, 1996-1999, female

| Location | YSH (World)* |
|---------------|--------------|
| Stomach | 25.4 |
| Esophagus | 14.4 |
| Breast | 7.6 |
| Colorectal | 5.9 |
| Lung | 3.6 |
| All locations | 96.3 |

* YSH: per hundred thousand, age standardized rate, world standard population

3) Other estimations were made on the basis of the relative frequencies obtained in the first stage and the all-cancer incidence rate.

4) And in estimation of the mortality rates, the estimations of incidence rates and survival rates observed in underdeveloped countries were used.

The estimations for Turkey included in GLOBOCAN 2002 are as follows: In males, the rough incidence rate of all cancers except for skin cancer is 110 per hundred thousand and YSH (age standardized rate, world standard population) is 137.3 per hundred thousand. In males, the most frequently seen cancers are estimated as lung, stomach, urinary bladder, colorectal, larynx, prostate (YSH 47.7; 12.2; 11.0; 9.1; 8.0; 8.0, respectively) (Table 17, 21; Graphic 6,7). In females, the rough incidence

rate of all cancers except for skin cancer is 82 per hundred thousand and YSH is 91.2 per hundred thousand. The most frequently seen six cancers are breast, colorectal, stomach, ovary, lung cancers and leukemia (YSH 22.0; 8.5; 6.4; 5.4; 5.3; 4.7, respectively) (Table 18, 22; Graphic 6, 8). In males, the rough mortality rate of all cancers except for skin cancer is estimated as 85.7 per hundred thousand and YSH as 107.8 per hundred thousand (Table 19, Graphic 6); in females, the rough mortality rate of all cancers except for skin cancer is estimated as 82 per hundred thousand and YSH as 91.2 per hundred thousand (Table 20, Graphic 6).

Table 16: Cancer incidence in Turkey, male

| Location | Rough rate (per hundred thousand) | YSH* (World) | Number of cases |
|----------------------------------------|------------------------------------------|---------------------|------------------------|
| Oral cavity | 2.6 | 3.2 | 887 |
| Nasopharynx | 0.8 | 0.9 | 281 |
| Other pharynx | 0.4 | 0.5 | 126 |
| Esophagus | 1.7 | 2.1 | 578 |
| Stomach | 9.6 | 12.2 | 3320 |
| Colon and rectum | 7.4 | 9.1 | 2545 |
| Liver | 2.1 | 2.6 | 713 |
| Pancreas | 2 | 2.6 | 702 |
| Larynx | 6.4 | 8 | 2206 |
| Trachea, bronchus, lung | 37.3 | 47.7 | 12862 |
| Melanoma | 0.8 | 0.9 | 271 |
| Prostate | 6.1 | 8 | 2099 |
| Testis | 1.4 | 1.3 | 484 |
| Kidney | 1.7 | 2 | 570 |
| Urinary bladder | 8.6 | 11 | 2952 |
| Brain, neural system | 3.9 | 4.5 | 1354 |
| Thyroid | 0.6 | 0.7 | 211 |
| Non-Hodgkin lymphoma | 3.3 | 3.8 | 1154 |
| Hodgkin lymphoma | 1.2 | 1.2 | 419 |
| Multiple myeloma | 0.6 | 0.8 | 224 |
| Leukemia | 5.1 | 5.8 | 1747 |
| All locations (except for skin) | 110.3 | 137.3 | 38041 |

* YSH: per hundred thousand, age standardized rate, world standard population

Table 17: Cancer incidence in Turkey, female

| Location | Rough rate (per hundred thousand) | YSH* (World) | Number of cases |
|--------------------------------------------|--------------------------------------------------|-------------------------|----------------------------|
| Oral cavity | 1.5 | 1.7 | 512 |
| Nasopharynx | 0.4 | 0.5 | 150 |
| Other pharynx | 0.2 | 0.2 | 72 |
| Esophagus | 1.3 | 1.5 | 448 |
| Stomach | 5.7 | 6.4 | 1915 |
| Colon and rectum | 7.6 | 8.5 | 2571 |
| Liver | 1.3 | 1.5 | 455 |
| Pancreas | 1.6 | 1.8 | 526 |
| Larynx | 0.5 | 0.6 | 168 |
| Trachea, bronchus, lung | 4.6 | 5.3 | 1572 |
| Melanoma | 0.7 | 0.8 | 236 |
| Breast | 19.9 | 22 | 6729 |
| Cervix uteri | 4 | 4.5 | 1364 |
| Corpus uteri | 4.1 | 4.8 | 1391 |
| Ovary | 4.8 | 5.4 | 1628 |
| Kidney | 1.2 | 1.3 | 396 |
| Urinary bladder | 1.5 | 1.7 | 518 |
| Brain, neural system | 3.5 | 3.8 | 1194 |
| Thyroid | 2.1 | 2.2 | 711 |
| Non-Hodgkin lymphoma | 2.9 | 3.1 | 978 |
| Hodgkin lymphoma | 0.7 | 0.7 | 230 |
| Multiple myeloma | 0.7 | 0.8 | 233 |
| Leukemia | 4.4 | 4.7 | 1505 |
| All locations (except for skin) | 82 | 91.2 | 27755 |

* YSH: per hundred thousand, age standardized rate, world standard population

Table 18: Cancer mortality in Turkey, male

| Location | Rough rate (per hundred thousand) | YSH* (World) | Number of deaths |
|-----------------|--------------------------------------------------|-------------------------|-----------------------------|
| Oral cavity | 1.4 | 1.7 | 472 |
| Nasopharynx | 0.5 | 0.6 | 182 |
| Other pharynx | 0.3 | 0.3 | 95 |

| | | | |
|----------------------------------------|-------------|--------------|--------------|
| Esophagus | 1.5 | 2 | 530 |
| Stomach | 8.2 | 10.4 | 2821 |
| Colon and rectum | 4.7 | 5.8 | 1625 |
| Liver | 2 | 2.5 | 672 |
| Pancreas | 1.8 | 2.3 | 632 |
| Larynx | 3.8 | 4.8 | 1302 |
| Trachea, bronchus, lung | 34.5 | 44.1 | 11884 |
| Melanoma | 0.5 | 0.5 | 159 |
| Kaposi's sarcoma | - | - | - |
| Prostate | 3.8 | 5 | 1301 |
| Testis | 0.5 | 0.5 | 164 |
| Kidney | 1.1 | 1.4 | 388 |
| Urinary bladder | 4.6 | 6 | 1586 |
| Brain, neural system | 3.3 | 3.8 | 1133 |
| Thyroid | 0.2 | 0.3 | 71 |
| Non-Hodgkin lymphoma | 2.3 | 2.7 | 807 |
| Hodgkin lymphoma | 0.4 | 0.5 | 152 |
| Multiple myeloma | 0.5 | 0.7 | 180 |
| Leukemia | 4.4 | 5 | 1519 |
| All locations (except for skin) | 85.7 | 107.8 | 29560 |

* YSH: per hundred thousand, age standardized rate, world standard population

Table 19: Cancer mortality in Turkey, female

| Location | Rough rate (per hundred thousand) | YSH* (World) | Number of deaths |
|-------------------------|------------------------------------------|---------------------|-------------------------|
| Oral cavity | 0.8 | 0.9 | 271 |
| Nasopharynx | 0.3 | 0.3 | 94 |
| Other pharynx | 0.2 | 0.2 | 54 |
| Esophagus | 1.2 | 1.4 | 405 |
| Stomach | 4.8 | 5.4 | 1618 |
| Colon and rectum | 4.9 | 5.4 | 1654 |
| Liver | 1.3 | 1.4 | 429 |
| Pancreas | 1.4 | 1.6 | 473 |
| Larynx | 0.3 | 0.3 | 97 |
| Trachea, bronchus, lung | 4.3 | 4.9 | 1453 |
| Melanoma | 0.4 | 0.4 | 136 |

| | | | |
|----------------------------------------|-------------|-------------|--------------|
| Kaposi's sarcoma | - | - | - |
| Breast | 8.8 | 9.7 | 2970 |
| Cervix uteri | 2.1 | 2.4 | 726 |
| Corpus uteri | 1.7 | 2 | 581 |
| Ovary | 3 | 3.4 | 1001 |
| Kidney | 0.8 | 0.9 | 262 |
| Urinary bladder | 0.8 | 0.9 | 274 |
| Brain, neural system | 3 | 3.2 | 1002 |
| Thyroid | 0.6 | 0.7 | 198 |
| Non-Hodgkin lymphoma | 2 | 2.2 | 693 |
| Hodgkin lymphoma | 0.3 | 0.3 | 87 |
| Multiple myeloma | 0.6 | 0.6 | 186 |
| Leukemia | 3.9 | 4.1 | 1303 |
| All locations (except for skin) | 52.5 | 58.7 | 17768 |

*YSH: per hundred thousand, age standardized rate, world standard population

Graphic 6: Age standardize incidence and mortality rates in Turkey

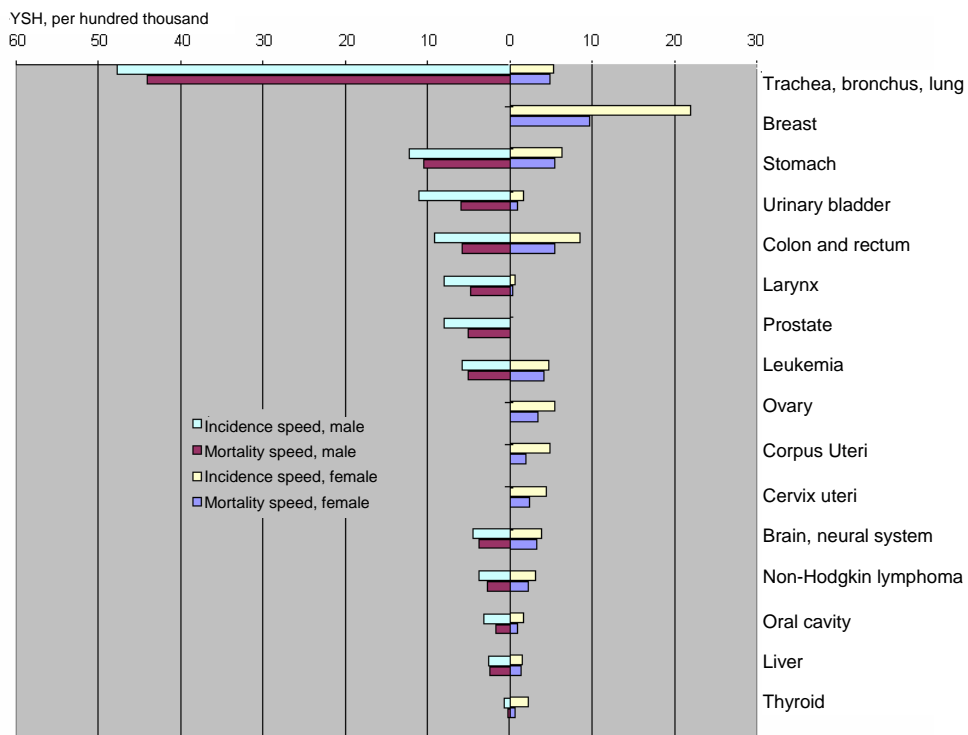


Table 21: Cancers most frequently seen in Turkey, male

| Location | Rough rate (per hundred thousand) | YSH* (World) | Number of cases |
|-------------------------|-----------------------------------|--------------|-----------------|
| Trachea, bronchus, lung | 37.3 | 47.7 | 12862 |
| Stomach | 9.6 | 12.2 | 3320 |
| Urinary bladder | 8.6 | 11 | 2952 |
| Colon and rectum | 7.4 | 9.1 | 2545 |
| Larynx | 6.4 | 8 | 2206 |
| Prostate | 6.1 | 8 | 2099 |

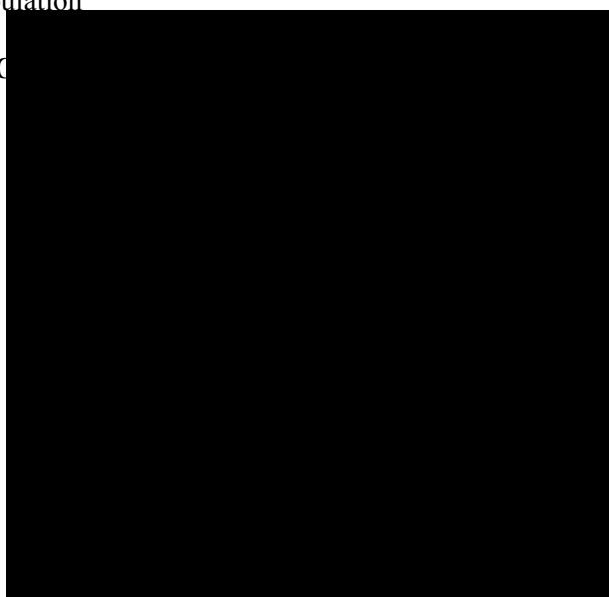
* YSH: per hundred thousand, age standardized rate, world standard population

Table 22: Cancers most frequently seen in Turkey, female

| Location | Rough rate (per hundred thousand) | YSH* (World) | Number of cases |
|-------------------------|-----------------------------------|--------------|-----------------|
| Breast | 19.9 | 22 | 6729 |
| Colon and rectum | 7.6 | 8.5 | 2571 |
| Stomach | 5.7 | 6.4 | 1915 |
| Ovary | 4.8 | 5.4 | 1628 |
| Trachea, bronchus, lung | 4.6 | 5.3 | 1572 |
| Leukemia | 4.4 | 4.7 | 1505 |

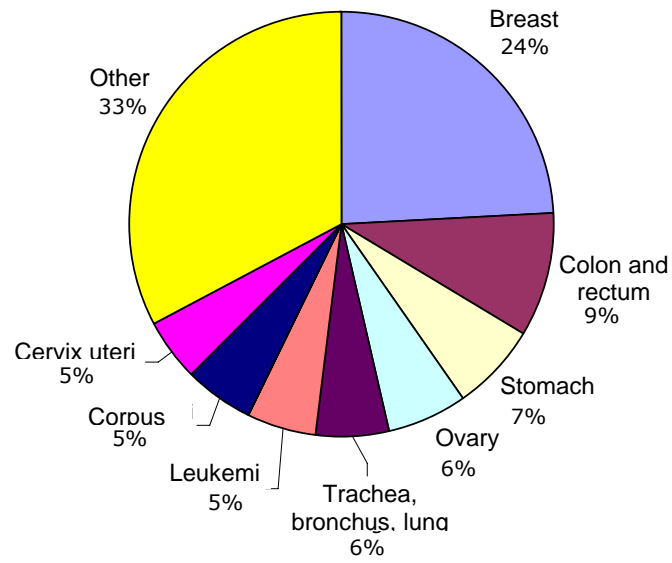
*YSH: per hundred thousand, age standardized rate, world standard population

Graphic 7: C

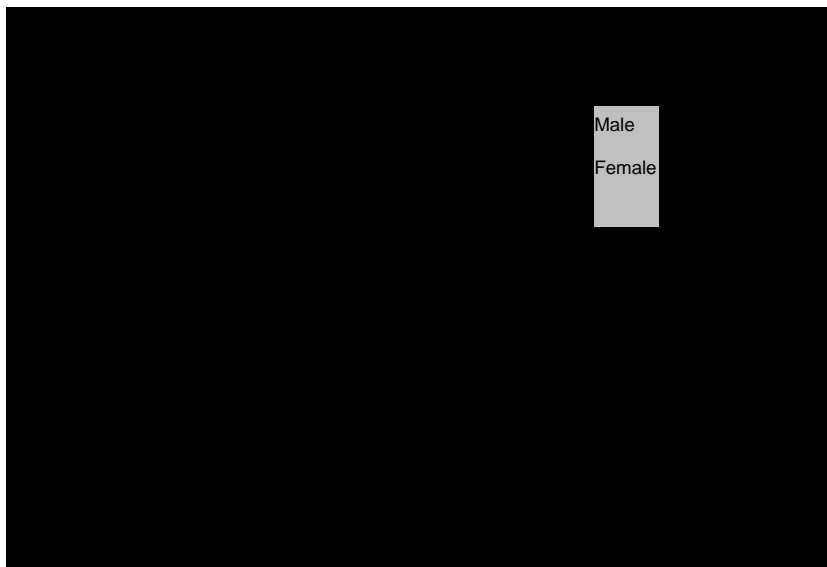


rectum 41 bladder

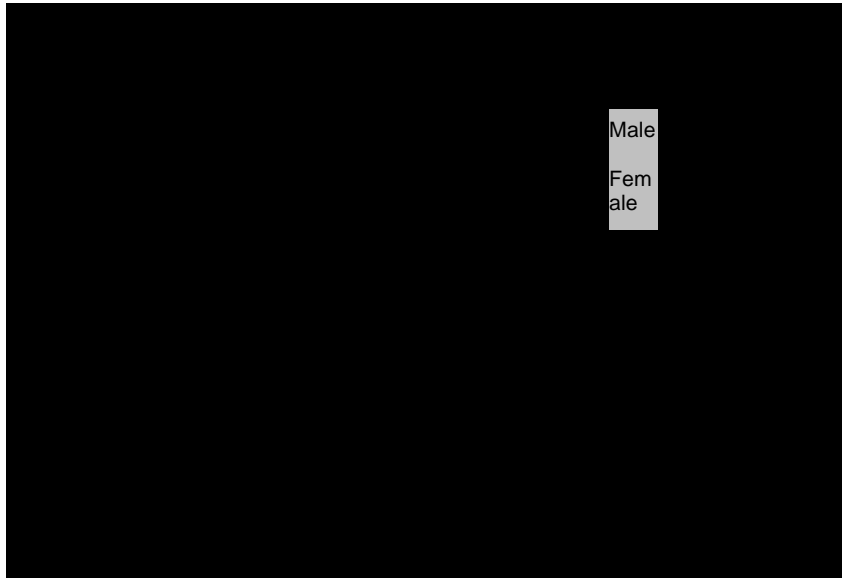
Graphic 8: Cancers by their locations, Turkey, female



Annex 1: Population Pyramid in Turkey in 2002



Annex 2: Population Pyramid in İzmir in 1996-2000



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