TurkStat & Population Statistics and Censuses of Turkey

Mehmet Doğu KARAKAYA & Mehmet Şaban UCARI

TurkStat Expert
TURKSTAT (Turkish Statistical Institute)
Demographic Statistics Department – Population Characteristics Group

8th November, 2021
CONTENT

DATA SOURCES FOR POPULATION STATISTICS

ADDRESS BASED POPULATION REGISTRATION SYSTEM (ABPRS)
Important Dates...

- Defterhane, 1389
- Central Statistical Council at Prime Ministry of the Empire, 1891
- The Central Statistical Department, 1926
- The General Directorate of Statistics (GDS), 1930
- The State Institute of Statistics (SIS), 1962
- Turkish Statistical Institute (TurkStat), 2005
Data Sources for Population Statistics

1- Population Censuses (1927-2000)

2- Address Based Population Registration System (2007 – 2020- ...)

3- 2011 Population and Housing Census

4- 2021 Population and Housing Census

Population Characteristics

Database
Census History in Turkey

- The first census in 1927,
- The second census in 1935,
- Every five years between 1935-1990,
- The last traditional census in 2000
- Totally 14 traditional population censuses

Method

- Traditional census method (face to face interview),
- Standard questionnaire (paper),
- «De facto» population definition,
- One day application with national curfew (no permission to go out)
Establishing Address Based Population Registration System

and

changing the census methodology from traditional to register based.
Address Based Population Registration System (ABPRS)
1. **Civil Registration Services Law** No. 5490, dated 29.04.2006.

2. The regulation related to Address and Numbering Study. (Prepared in accordance with Civil Registration Services Law)

3. **The Turkish Statistical Law** No. 5429 (related articles on field application and data confidentiality).

- Civil Registration Services Law charged;
  - TurkStat for establishing the ABPRS.
  - Ministry of Interior for maintaining and updating the system.
Why ABPRS?

- Successful plans and programs in national and regional level
- Saving public resources
- Standardization of addresses
- Carrying out the public services more effectively
- Updated statistics on population

ABPRS
## Unstandardized Address Structure – Before NAD

<table>
<thead>
<tr>
<th>NAME-SURNAME</th>
<th>POSTED DOCUMENT TYPE</th>
<th>ADDRESS ON THE DOCUMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hüseyin YILDIRIM</td>
<td>Electric Bill</td>
<td>Anavatan Avenue, Besides Zirve Hotel Pelitli / TRABZON</td>
</tr>
<tr>
<td>Hüseyin YILDIRIM</td>
<td>Water Bill</td>
<td>Devlet Karayolu Avenue, Yildirim Apartment Pelitli / TRABZON</td>
</tr>
<tr>
<td>Hüseyin YILDIRIM</td>
<td>Telephone Bill</td>
<td>Adnan Kahveci District, Rize Avenue, Besides Zirve Hotel, 61010 Pelitli / TRABZON</td>
</tr>
<tr>
<td>Hüseyin YILDIRIM</td>
<td>Social Security Document</td>
<td>Adnan Kahveci District, Rize Avenue, No:160 Pelitli / TRABZON</td>
</tr>
<tr>
<td>Hüseyin YILDIRIM</td>
<td>Mail</td>
<td>Hükümet Avenue, Besides Zirve Hotel 2nd Storey, Pelitli / TRABZON</td>
</tr>
<tr>
<td>Kenan YILDIRIM</td>
<td>Student Selection and Placement (Result of a Central Exam)</td>
<td>Hükümet Avenue, Adnan Kahveci District, No:160 Pelitli / TRABZON</td>
</tr>
</tbody>
</table>
To set up a central address database including all of the addresses in the country.

To obtain a standardized numbering and signboarding for all over the country.

To define an address standard and prevent different descriptions of an address.

To establish ABPRS covering information on place of residence of all people living in the country.

It means “de-Jure” definition.
The Central Civil Registration System (MERNIS)

- centrally administered system
- Any changes in civil status (births, deaths, marriages etc.) are registered electronically
  - in real time
  - over a network
  - by the civil registration offices
- ...based on family ledgers
- No information was available on place of usual residence (before ABPRS)
- Maintenance of the system obtained
  - by the Ministry of Interior, General Directorate of Civil Registration and Citizenship (GDCRC).
- ...has become the backbone of the e-Government infrastructure.
TR Identity Number

- Unique ID number for Turkish Citizens
- Available since 2001.
- ...comprised of **11 digits** (which do not contain personal information)

...provides:
- Fast and efficient identification
- Register **all civil status events** from the moment of birth
- Fast and efficient services to the users of public services
- Connection between addresses and personal information.
Background of ABPRS

Address Components Standard

- Geographical elements used for the description of an address.
- ...was published by Turkish Standards Institute (with the code TSTEN14142-1) in 2006.

- The address must contain;
  - Province, district, municipality, town and village names.
  - Quarter, square, boulevard, road and street names.
  - Building and indoor numbers.
  - Address codes
What is ABPRS?

Personal information was matched with address information by using Identification Numbers and address codes.
Field work were carried out
- by the municipalities in the localities having municipal organizations and
- by the Special Provincial Administrations in the villages.

Infrastructural studies were carried out by TurkStat.

Data was entered by local organizations.

Around 40 million addresses were entered to the system with unique address codes.
Coverage of the study:

- Persons living in **dwellings or other housing units**,  
- Persons residing in institutional places,  
- Nomads,  
- Foreigners living in Turkey.  

- Turkish Citizens residing abroad were not included.
Updating the System

- Burned and Demolished Buildings
- Construction Forms (new buildings)
- Use of the agencies
- Border changes of a settlement
- Constructing new residential areas
- Changes of address
- Changes of components
- Changes of usual residence address
- Birth, death, marriage, divorce
- Controlling the notification of the changes
- Increasing the consciousness
- Use for the services
Updating the System

- Persons are under the obligation of notifying changes of usual residence address.

- A person can have only one address of usual residence.
  - But other addresses such as summer houses, winter houses, second or third houses may be entered to the system (without obligation).

- Persons are not under the obligation of notifying changes occurring in address components.
  - Such changes should be made by municipalities and special provincial administrations.

- Address change notifications should be made within 20 working days to the civil registration offices
  - (or agencies providing address-based services) by the persons with using a simple declaration form.
Statistics produced from ABPRS

Statistics produced annually (since 31 December 2007):
- Population size by localities
- Age, sex
- Literacy and completed level of education
- Nationality
- Marital status
- Place of civil registration
- Mean household size
- Internal migration (2009)
- Place of birth (2014)
- Type of households (2016)
- Immigration and emigration (2018)

ABPRS is also base for:
- Life tables
- Population projections
After 14 traditional censuses, 2011 PHC was conducted with “combined” method.

- %20 of variables: Address Based Population Registration System (ABPRS) and National Education Statistics Database (NESD)
- %80: Sample survey

In 2011 PHC, registers were also used for:
- Address frame (National Address Database)
- To check the accuracy
  - (Social Security Records, Unemployment Agency Records, Building Permits)
- Corrections/Imputations
2011 PHC

- De jure population definition (instead of de facto)
- 3 months field application (instead of one-day)
- 12% sample rate (enumeration area)
- Full enumeration in institutional places
- In total: 2.4 million households and 9 millions individuals
- Face to face interview
  - 40% PAPI
  - 60% CAPI
Use of registers for census for the first time (20% of the variables)

Difficulty in hiring and training of a large group of field staff for a short term work

Relatively high cost

Not being able to produce estimations for small geographic levels based on sample survey

Lack of interest and support of municipalities

Rising concern about confidentiality and privacy
## 2000 vs 2011 PC

<table>
<thead>
<tr>
<th></th>
<th>2000 PC</th>
<th>2011 PHC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Method</strong></td>
<td>Traditional</td>
<td>Combined</td>
</tr>
<tr>
<td><strong>Definition for residency rule</strong></td>
<td>De-facto</td>
<td>De-jure</td>
</tr>
<tr>
<td><strong>Duration of field application</strong></td>
<td>One day application with a national curfew</td>
<td>2-3 month</td>
</tr>
<tr>
<td><strong>Questionnaire</strong></td>
<td>Standard</td>
<td>Household + Institutional Places</td>
</tr>
<tr>
<td><strong>Collection method</strong></td>
<td>PAPI</td>
<td>PAPI and CAPI</td>
</tr>
<tr>
<td><strong>Data entry</strong></td>
<td>ICR</td>
<td>Online data transfer for CAPI, Web-based program for PAPI</td>
</tr>
<tr>
<td><strong># of staff</strong></td>
<td>1 million</td>
<td>4 500</td>
</tr>
</tbody>
</table>
TURKEY
<table>
<thead>
<tr>
<th>Year</th>
<th>Administrative Divisions</th>
<th>Population</th>
<th>Annual Pop. Growth Rate</th>
<th>Median Age</th>
<th>Surface Area (km²)</th>
<th>Density (per km²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>Turkey 81 provinces, 973 districts</td>
<td>83 614 362</td>
<td>5.5 %</td>
<td>32.7</td>
<td>783.562</td>
<td>109</td>
</tr>
</tbody>
</table>
Views from cities & villages

İstanbul
Pop: 15 462 452

Ankara
Pop: 5 663 322

İzmir
Pop: 4 394 694
Turkish Statistical Law, 2005

- Transition to Program Based Statistical Implementation Period (OSP, National Data Release Calendar etc.)
- Ensures the Scientific and Technical Independence
- Identifies the issues on data confidentiality
- Includes the data quality related issues
- Establishes the Statistical Council
- Reorganizes the TurkStat
Official Statistics Programme

- 5 year programme since 2007
- Based on Turkish Statistical Law
- Establishes a framework for official statistics.
- States the objectives, coverage, methods, frequency, work plan and dissemination principles.
- Defines the duties of the institutions and organizations regarding the compilation, evaluation and publication of data.
CENSUS HISTORY
Census History

14 traditional population censuses (1927-2000)

- One-day full enumeration with national curfew
- Paper based questionnaire (ICR method in 2000 Census)
- No information on usual residence (de jure)
- Need of a large number of staff
- High cost
- Overcounting
- Long duration of data processing (around 3.5 years)
- Population statistics are available within 5-10 year interval
General Structure of the System Established

MERNIS (Turkish Citizens)
National Address Database (NAD)
Foreigners living in Turkey

MATCHING the information in MERNIS and addresses in the NAD by using the Turkish Republic identification numbers
MATCHING foreign citizens and addresses in the NAD by using passport numbers

Turkish Citizens living in abroad

ABPRS
Establishment of the NAD

The related regulation defined:

- How the buildings should be numbered,
- The rules to determine the name and the number of avenues, streets or group of buildings,
- The direction of streets,
- Content and structure of signboards,
- Where the signboards will be put,
- How to number the interior doors of the buildings,
- How to control the numbering studies.
BASIC RESULTS
<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
<th>APGR%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1927</td>
<td>13 640 270</td>
<td>-</td>
</tr>
<tr>
<td>1935</td>
<td>16 158 018</td>
<td>21.10</td>
</tr>
<tr>
<td>1940</td>
<td>17 820 950</td>
<td>17.03</td>
</tr>
<tr>
<td>1945</td>
<td>18 790 174</td>
<td>10.59</td>
</tr>
<tr>
<td>1950</td>
<td>20 947 188</td>
<td>21.73</td>
</tr>
<tr>
<td>1955</td>
<td>24 064 763</td>
<td>27.75</td>
</tr>
<tr>
<td>1960</td>
<td>27 754 820</td>
<td>28.53</td>
</tr>
<tr>
<td>1965</td>
<td>31 391 421</td>
<td>24.63</td>
</tr>
<tr>
<td>1970</td>
<td>35 605 176</td>
<td>25.19</td>
</tr>
<tr>
<td>1975</td>
<td>40 347 719</td>
<td>25.01</td>
</tr>
<tr>
<td>1980</td>
<td>44 736 957</td>
<td>20.65</td>
</tr>
<tr>
<td>1985</td>
<td>50 664 458</td>
<td>24.88</td>
</tr>
<tr>
<td>1990</td>
<td>56 473 035</td>
<td>21.71</td>
</tr>
<tr>
<td>2000</td>
<td>67 803 927</td>
<td>18.28</td>
</tr>
</tbody>
</table>
TurkStat published 14th annual population figures based on PR referring the year 2020.
Total Population: 83,614,362
- 50.1% males,
- 49.9% females...
Population by Age Groups - 2020

- 0-14 Age Group: 9.5%
- 15-64 Age Group: 67.7%
- 65+ Age Group: 22.8%
**Population Pyramids**

1955

- 85+
- 80-84
- 75-79
- 70-74
- 65-69
- 60-64
- 55-59
- 50-54
- 45-49
- 40-44
- 35-39
- 30-34
- 25-29
- 20-24
- 15-19
- 10-14
- 5-9
- 0-4

2020

- 85+
- 80-84
- 75-79
- 70-74
- 65-69
- 60-64
- 55-59
- 50-54
- 45-49
- 40-44
- 35-39
- 30-34
- 25-29
- 20-24
- 15-19
- 10-14
- 5-9
- 0-4

**Female**

**Male**
Population Size (83 614 362)

İstanbul
Pop: 15 462 452

İzmir
Pop: 4 394 694

Ankara (Capital)
Pop: 5 663 322
Median Age (Total: 32.7 / Male: 32.1 / Female: 33.4)
Average Household Size (3.30)
TurkStat & 2021 Population and Housing Census & Population Characteristics Database

Mehmet Doğu KARAKAYA & Mehmet Şaban UCARI

TurkStat Expert
TURKSTAT (Turkish Statistical Institute)
Demographic Statistics Department – Population Characteristics Group

8th November, 2021
Population and Housing Census Methodology

Main target: Changing the system from combined method to register-based census
Driving Forces

- **Negative features** of the censuses with field operation

Positive effects of:

- Completion of the **Central Civil Registration System (MERNIS)** including unique ID numbers: 2002
- Setting up the **National Address Database (NAD)**: 2006
- Establishment of the **Address Based Population Registration System (PR/ABPRS)**: 2007
- Creating the **National Education Statistics Database (NESD)**: 2008
Driving Forces

- Producing annual population statistics according to PR: 14 years, 2007-2020.

- Utilizing administrative registers for the first time for census purposes: 2011

- Setting up the Institutional Living Quarters Address Database: 2012

- Transforming the National Address Database to Spatial Address Registration System (SARS) by adding coordinate information to addresses: 2012-202? (ongoing...)
PHC Preparations

- **Steering Committee (SC)** was established (June 2018):
  - Consists of a vice president and 5 related heads of departments of TurkStat
  - To manage and coordinate all processes of 2021 PHC
  - To decide the working groups
  - To decide the registers to be used
  - To determine the needs (budget, IT infrastructure)

- **Working groups on «Labor Force Statistics» and «Quality»** were established
Registers Needed

- Population (ABPRS)
  (demography, migration, household/family)
- Address (NAD)
- Education (NESD)
- Disability Ministry of Family, Labour and Social Services
- Employment and Unemployment (PCDB)
- Building and Dwelling (Sample survey)
## Current Situation

<table>
<thead>
<tr>
<th>Core Topics</th>
<th>eurostat</th>
<th>UNECE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>40</td>
<td>35</td>
</tr>
<tr>
<td><strong>Produced</strong></td>
<td>24</td>
<td>20</td>
</tr>
<tr>
<td><strong>Likely to be produced</strong></td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><strong>Sample survey (CATI)</strong></td>
<td>12</td>
<td>11</td>
</tr>
</tbody>
</table>

- **Core Topics**
  - Total
    - eurostat: 40 (100%)
    - UNECE: 35 (100%)
  - Produced
    - eurostat: 24 (60%)
    - UNECE: 20 (57%)
  - Likely to be produced
    - eurostat: 4 (10%)
    - UNECE: 4 (11%)
  - Sample survey (CATI)
    - eurostat: 12 (30%)
    - UNECE: 11 (32%)
2021 PHC Pilot Study

1st Pilot Study (2019)

2nd Pilot Study (2020)

3rd Pilot Study (2021)

Main Study 2021 PHC (2022)
What is the PCDB?

Population Characteristics Database (PCDB):

Provides integrated information on persons such as:
- birth,
- nationality,
- disability,
- education,
- employment status,
- income,
- property,
- migration,
- family structure.

Aim:

To produce high quality, low cost, sustainable and comprehensive statistics for PHCs and other data users.

...will be established by being integrated registers on:
- social security,
- unemployment,
- tradesman,
- active students,
- income-tax,
- disability,
- agriculture and other registers.
Data Integration

Social Security Register
contains the insured's earnings, premium amount, premium payment days, etc. records

Agricultural Register
contains agricultural activities of persons

Income and Tax Register
contains the Annual Income Tax Return and earnings records

Employment and Unemployment Register
contains Turkish Employment Agency's job seekers records

Disabled Register
contains type of disability and rate of disability

Social Assistance Register
contains disabled pension, widow's pension, orphan's pension and other social assistance

Education and Exams Register
contains active and passive students records and higher education exams and exams for job

Retirement Register
contains retired records

Population Characteristics Database

Turkish Republic ID Number
Registers Situation for the PCDB?

- **21** registers needed
- **20** registers obtained
- **1** registers not obtained yet
PCDB for 2021 PHC

77% Registers
23% Modelling

2019 Pilot Study
Challenges of Administrative Data

- Lack of Metadata
- Different Classification by Dataholders
- Missing Value in Registers
- Differences of Definitions
- Reference Date
- Multiple Record – Deduplication – Data Loss
- IT Infrastructure
Advantages of Administrative Data

- Unique Key (TR ID Number / Address ID Code)
- Dataholders willing to share data
PCDB beyond 2021 PHC

Turkish Republic ID Number

PCDB

Transportation and Communication
Justice
Agriculture
Health
Trade and Services
Other...

Enviroment and Energy