FISHERY STATISTICS

1. Marine Fishery

- Monthly Large Scale Fishery Statistics
- Seasonally Small Scale Fishery Statistics
- Annually Fishery Statistics

2. Inland Fishery

- Inland catch statistics

3. Aquaculture

-Aquaculture production

4.Landing Statistics

-Landing statistics intented use

GİRİŞ

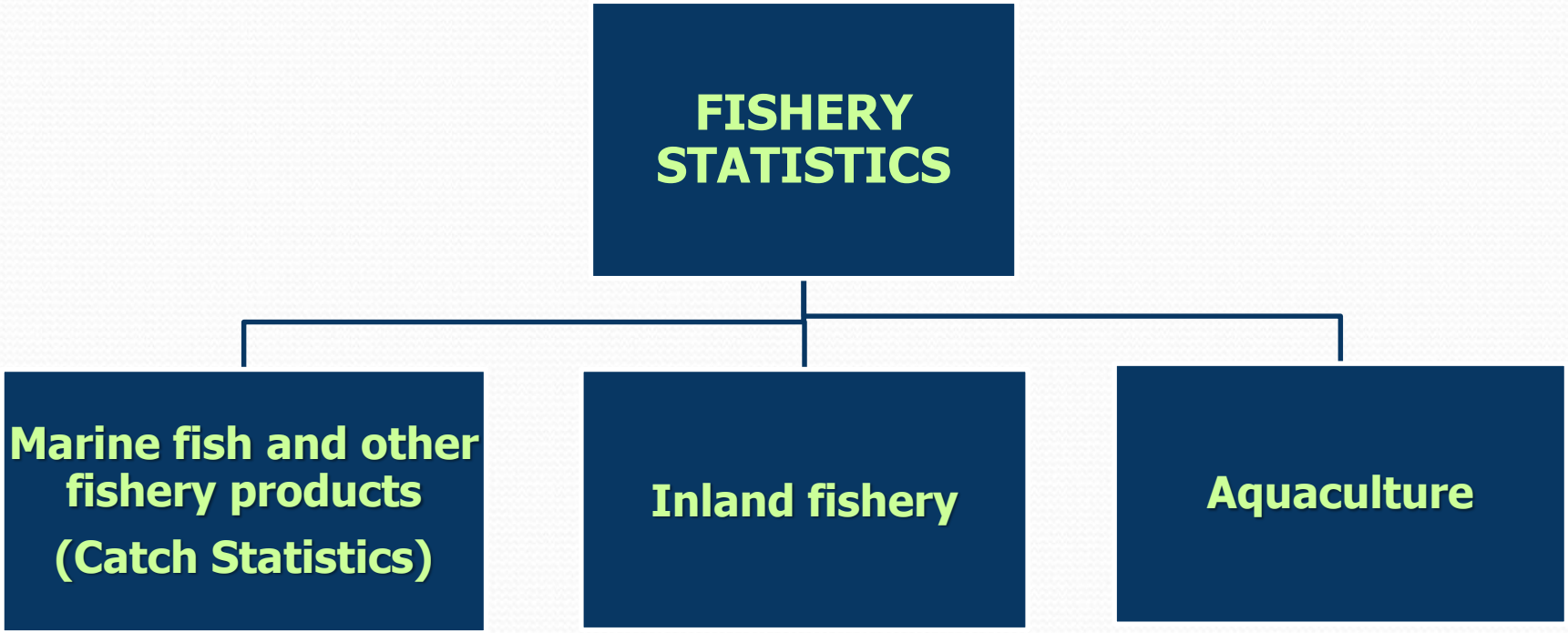
Turkey is a country, because of it is a peninsula surrounded by sea on three sides and position in the world, different ecological feature in the 8333 km of coastline on the sea, with a natural pond, with the number of dams growing every day.

With the wiew of the inland sea and a semi-enclosed seas surrounding Turkey, coastal and offshore fishing is applying in Turkey. Thus Turkey, in terms of aquaculture is one of the countries with the ideal environment.

✓ The information on the fisheries sector, which constitutes an important potential in the country's economy, was compiled by the Ministry of Trade, Fisheries and Hunting Affairs Directorate until 1967 on the basis of correspondence with the provinces and the records of the fisheries.

✓ To compiled and presented in a healthy manner of data related to fisheries to the benefit of researchers and users of data related to fisheries, Turkey Statistical Institute has undertaken this task since 1967. Compiled information is published annually under the title «Fishery Statistics».

METHODOLOGY



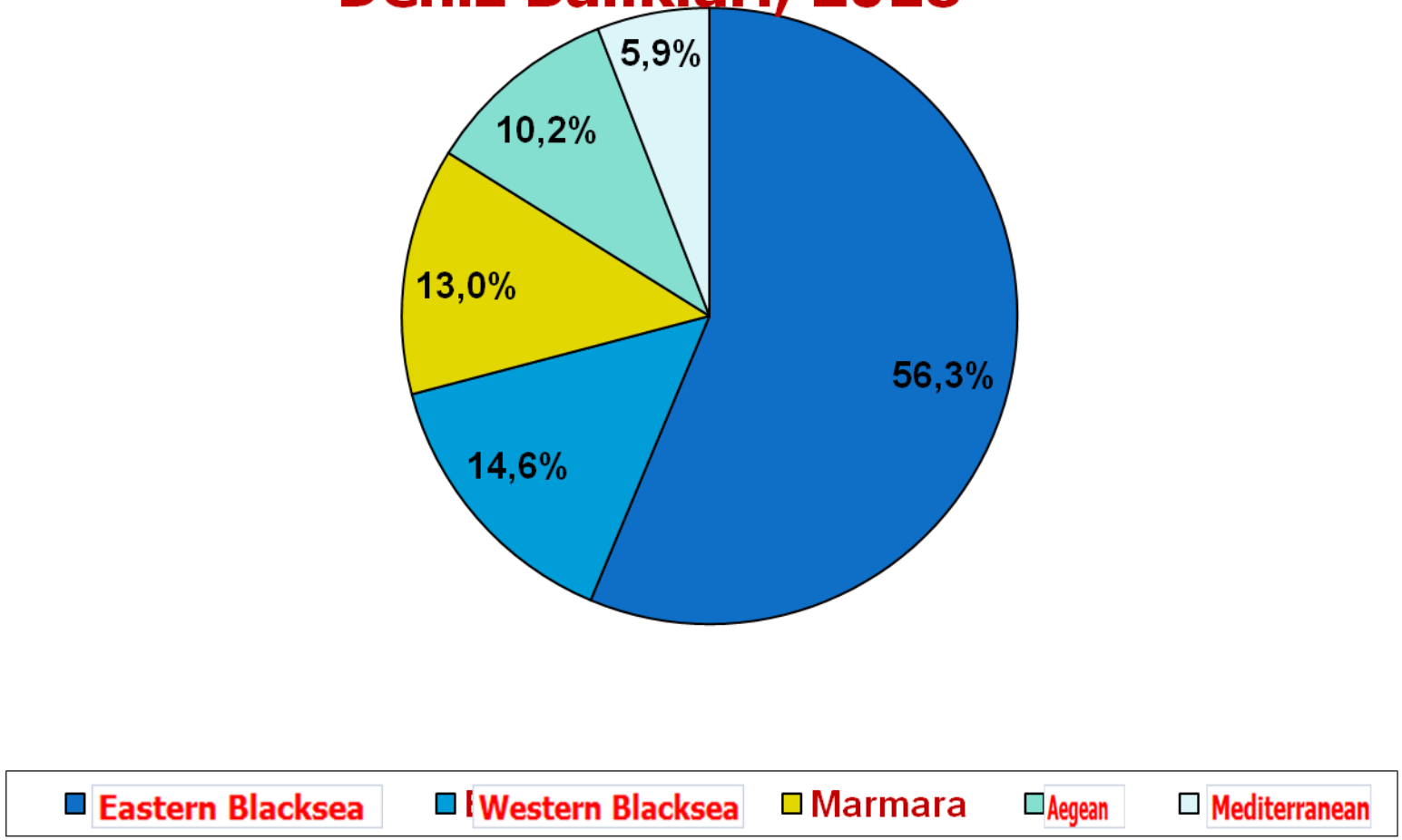
PRINCIPLES

- ✓Carrying out the works to be carried out within the framework of the reforms specified in the National Program for the Undertaking of the EU Acquis,
- ✓The information collected is continuous and up-to-date,
- ✓Composition method and methodology in accordance with the conditions of the day creation,

- ✓ Safe preparation of information,
- ✓ Timely preparation of requested information,
- ✓ Providing information to all users on equal terms,
- ✓ Ensuring that the information obtained is in conformity with the European Union definitions and thus internationally comparable.

FISHERY PRODUCTION AMOUNT DISTRIBUTION, 2018

Deniz Ürünleri Bölgelerine Göre Avlanan Deniz Balıkları, 2018



MARINE FISHERY

PURPOSE

- ✓ To compile the data of the fishery products to be used in national income and national accounts,
- ✓ To determine the status of the fisheries sector and to obtain information to be used in annual programs and plans,
- ✓ To determine the amount of fish and other fishery products in our seas,

- ✓ Determining the distribution of production and the way of marketing,
- ✓ To determine the properties of vessels and fishing gear used in fishing,
- ✓ Compiling information on investments and expenses for fishing activities,
- ✓ To determine the age and sex distinction of the employees in fisheries, the working days and the fees paid.

LEGAL BASIS

Sea products research is carried out in accordance with Article 13, 14 and 27 (a) of Law no. 5429.

COVERAGE

It covers all professional fishermen hunting in our seas. The unit of the survey is a professional fisherman.

PROFESIONAL FISHERMAN

Fishermen hunting in our seas in order to bring income, use the fishing-related hunting equipment and tools as a job.

ADDRESS FRAME

The address frame of the fishermen was taken from the Ministry of Agriculture and Forestry (MoAF).

During the update of the address frame in the Fishery Survey, both the ship records in the MoAF Aquaculture Information System and the address update made by the staff of our Regional Directorate are taken into consideration.

As of May, 2018,

✓13 887 small scale fishermen,
(Over 5 mt length 13 081 small scale fishermen)

✓2 471 large scale fishermen.

Small Scale Fisherman: The vessels which are smaller then 10 meter length.

Large Scale Fishermen: The vessels which are equal and bigger then 10 meter length.

METHOD

The survey is carried out as a cencus with large scale fishermen and sample survey with small scale fishermen. The sampling study of the small scale fishermen is carried out by the Research Designs Group and the stratified systematic sampling method is used for the provinces according to the length of the ship.

Sampling Unit

✓3361 small scale fishermen.

IMPLEMENTATION

Monthly large scale fishermen survey and seasonally small scale fishermen survey

In the application, the questionnaire is filled with the face-to-face interview with fishermen in 28 provinces in our coastal line.

From 2014, seasonally surveys have been applied to the small scale fishermen twice a year and monthly surveys to the large scale fishermen.

In 2014, Monthly Large Scale Fishermen Survey fieldwork is conducted in a collabration with Turkish Statistical Institute Regional Directorates staffs and Ministry of Agriculture and Forestry (MoAF) staffs.

The Seasonally Small Scale Fishermen Survey fieldwork is conducted by Turkısh Statistical Institute Regional Office staffs.

Annually Marine Fishery Survey

It has been implemented in all coastal settlements since 2017 between January and March.

Yearly data on ship characteristics and economic structure were compiled.

IMPUTATION METHOD

As of 2010, imputation method is applied to the large scale fishermen which includes the statistical non-response codes.

Statistical Non-Response Codes

- Unreached unit
- Rejection of unit responsible

In practice; groups of large fishermen vessel length are firstly created; the average of all the variables that can be calculated for each province and district of that province and the mode of repeating variables are calculated.

Length Groups

- 10-12 mt → 1. Group
- 13-15 mt → 2. Group
- 16-19 mt → 3. Group
- 20-30 mt → 4. Group
- 31-50 mt → 5. Group
- 51+ mt → 6. Group

According to these groups in province and district level; after determining the average and modes; If the boat belongs to which province, district and which boat group, it takes the data of all the variables calculated in the same boat group from the same province and district.

Variables of Small Scale Fishermen Survey and Large Scale Fishermen Survey

- ✓ Count of hunting day in a reference period
- ✓ Average hour spent in a fishing day
- ✓ Number of fishing net used in a fishing day
- ✓ Volume of catched fish, discarts and the prices

- ✓ Volume of catched sea products other than fish, discarts and the prices
- ✓ Mostly hunted provinces and districts
- ✓ Mostly used fishing gears
- ✓ Distribution of production (total production, own consumption, discarts and sold amount)
- ✓ Marketing (sale channels and amounts)

Variables of Anually Marine Fishery Survey

- Properties of Fishing Vessels

Vessel type, age, construction material, ownership, length, tonnage, number of engines, engine power, auxiliary motor power, radar, sonar, eco-sounder, GPS, wireless, cold storage room volume, ice machine capacity.

- Value of Fishing Vessel

Value of vessel, value of fishing gears and value of fishing technical equipments

- Employement

Employees ages, sex, working hours distribution,numbers of working days and salary.

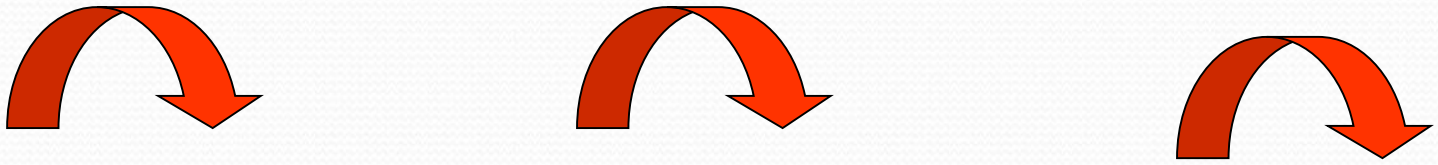
- Expenses

- Investments and sales made for fishing activites

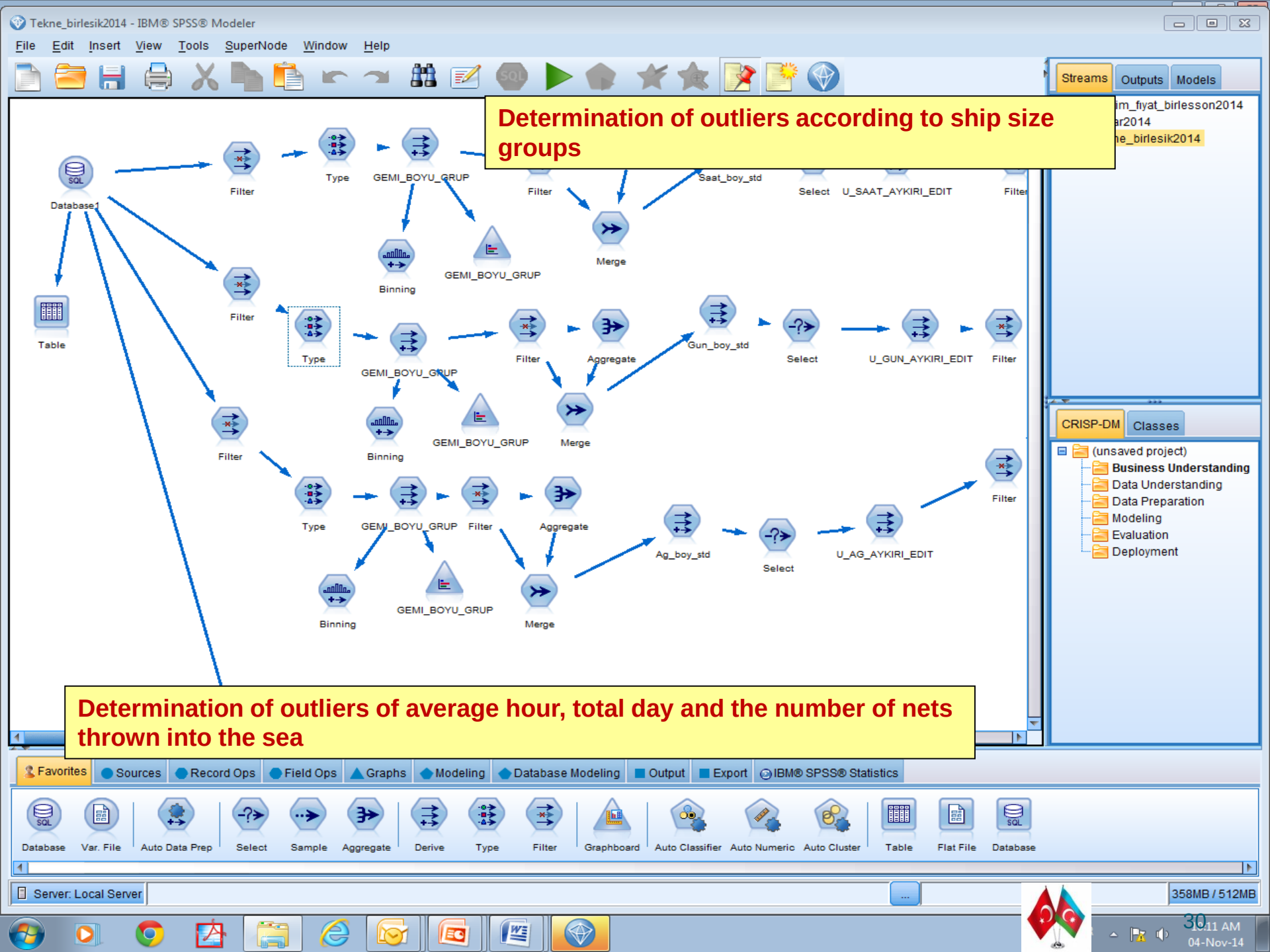
Fixed capital sales through motor, ship, network, technical equipment and other fixed capital elements purchased domestic or abroad.

DATA ANALYSIS PRACTİCE

- Analysis with SAS programme
- Data Mining Application



Press release and publishing tables preparation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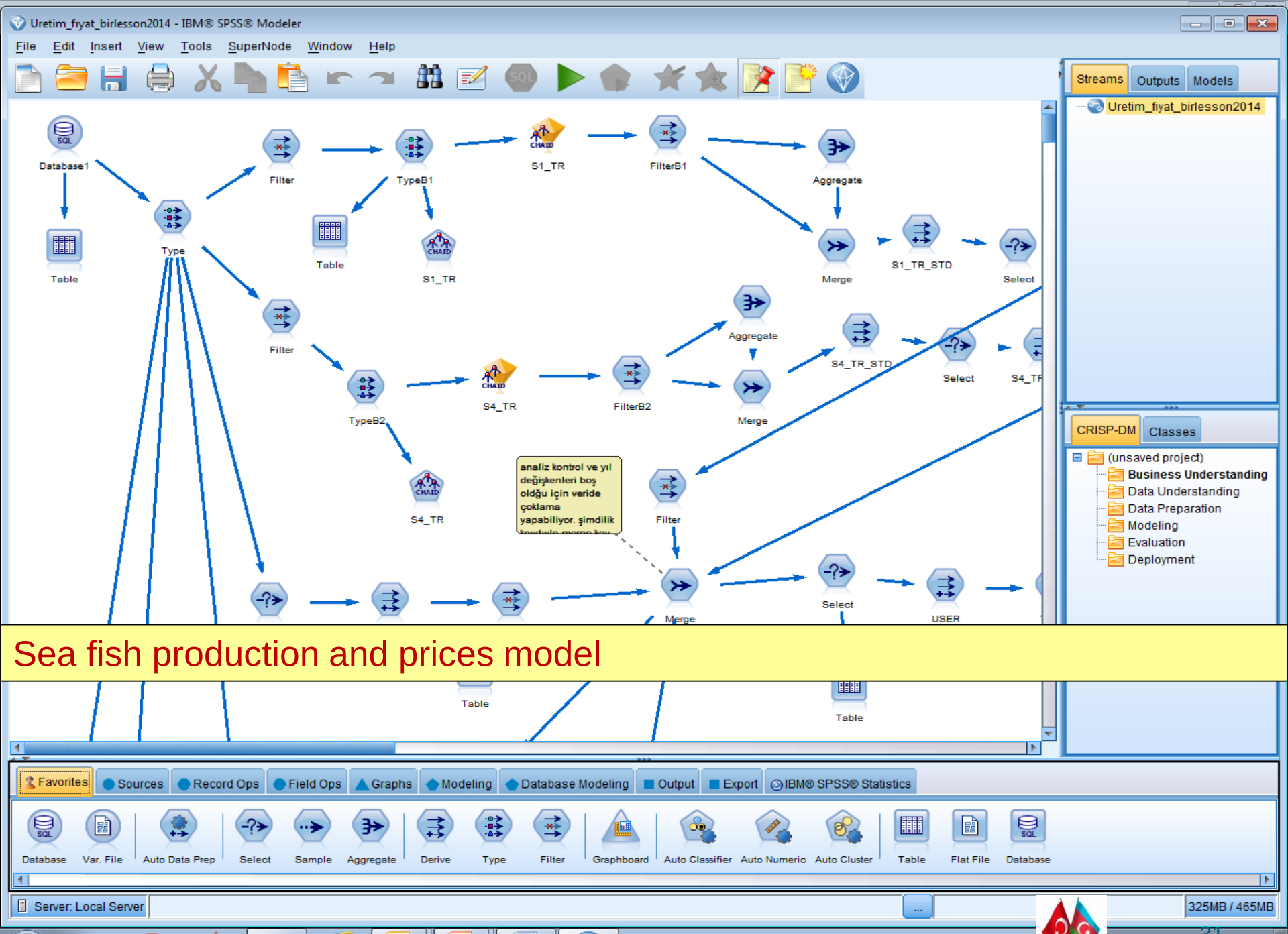
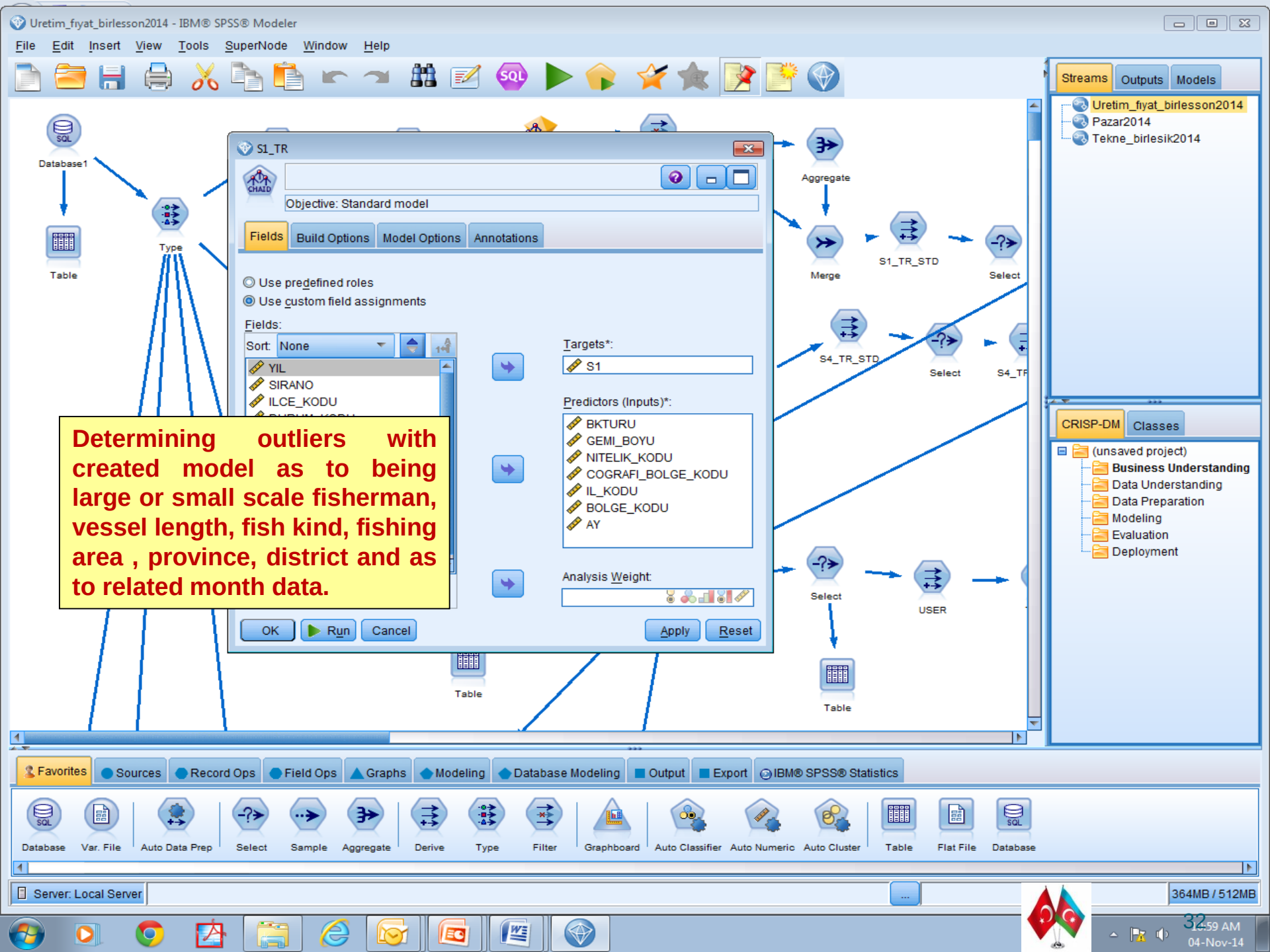


Sea fish production and prices model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GEMI_BOYU
NITELIK_KODU
COGRAFI_BOLGE_KODU
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Determining outliers with created model as to being large or small scale fisherman, vessel length, fish kind, fishing area , province, district and as to related month data.
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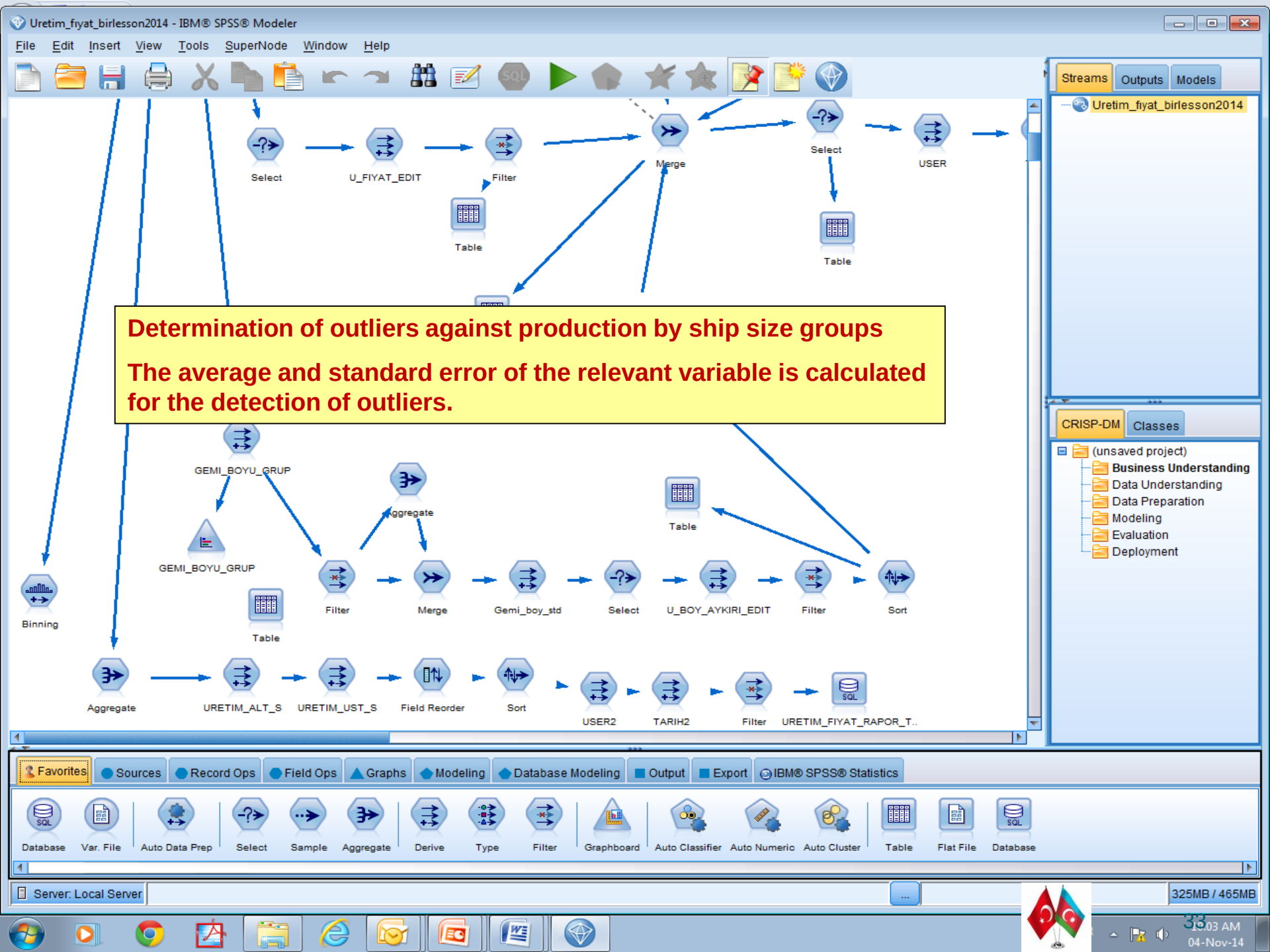
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Determination of outliers against production by ship size groups
The average and standard error of the relevant variable is calculated for the detection of outliers.
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As a result,

After,

- ✓micro and macro control of data structure
- ✓ correction of data entry errors
- ✓ control of outliers data and correction if necessary
- ✓ editing of data
- ✓ more controlled and consistent data flow to the center
- ✓ general data control and analysis in the center

from the data production process to the publication stage, the targeted full data quality is approached step by step.

INLAND FISHERY AND AQUACULTURE

Ministery of Agriculture and Forestry

Survey Forms (Quarterly)

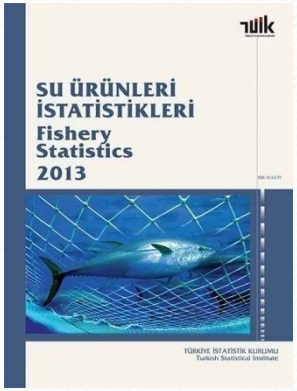
Ministery of Agriculture and Forestry Provincial Directorates

Turkstat

81 Province
Fishery cooperatives
Fishery producers
Fishery enterprices

Publishing Tables Preparation

Publishes and Publishing Time



Fishery statistics of reference year are being published in following year by our group. They are published as press release and electronic data via our website.

Marine fishery data are published in sea regions level and country level, inland water fishing and aquaculture data are published in province level and country.

Points To Consider

- Large scale fishermen non-response rates and reasons
- In the previous month, if the data is entered as unanswered and the following month's information is received the data of previous month should compile,
- The vessels have transferred and sold codes
- The vessels have refusal code

- Deficiencies in updating fishing lists
- The new large scale fishermen
- Data entering errors
- Sea fish with an important proportion
- Timeliness
- Delays in querying suspicious records after analysis

Distribution of non-response codes

- Un reached
- Sold
- Other(Vessels are sold to government)
- Inactive in reference period
- Out of coverage
- Scrap
- Refusal

Lacks of updating vessel lists

- The most important information in updating the fishing lists is their contact information. The correct collection of contact information at the time of the survey is an important data source for the updated list.

- The corresponding explanations made according to the non-response codes may vary.

Lacks of updating vessel lists (continue)

- Deficiencies in the information about the vessels sold make it difficult to make a survey for that vessel. This adversely affects the updating of the address frame.

Lacks of updating vessel lists (continue)

-Inactive vessels are to be mentioned why it is not active.

-Unreached vessels are to be mentioned why it is unreached.

-If the boat is out of coverage, the use activity must be specified.

- In the previous month, if the data is entered as unanswered and the following month's information is received the data of previous month should compile,

➢ The vessels have transferred and sold codes

The questionnaires transferred and sold must be sent to the relevant region on time. Surveys that were not transferred during the field application period left the regions in a difficult position.

In addition, all questionnaires that receive transfer and sold out response codes must be entered by the regions where they are sent and their data should be entered. In the other way, the questionnaires are not seen done.

➢Questionairres with refusal code

The questionnaires which are given refusal code by Ministry staff must be notified to the related TURKSTAT Regional Directorate.

➢ New large scale fishermen

Before entering the new detected fisherman data, who are not in their address but determined in their region, the new vessel should be screened in the list to avoid duplication. For this, the vessel's information must be sent to the centeral office.

- Data Entering Errors (Most faced data entering errors)

  - Non-response codes,

The non-response codes given for vessels are very important because they are used in the imputations.

  - Sea products code errors,

  - Sea products price errors ,

Fishing province and district code errors

In particular, there are two seaside coastlines according to the districts of our 4 provinces.

In particular, the incorrect data entry in the district codes of the related provinces by the fishing species constitutes a different result of the sea products area where the species are catched.

- The amount of marine fish that have a very important proportion in production should be examined.

Anchovy, sprat, horse mackerel,mullet, whiting, sardine, bonito

- The amount of production sent to fish meal and oil factories should also be examined.

Anchovy and sprat

➢ Timeliness

Surveys must be completed on time to ensure compliance with the time specified in our production process calendar

➢ Delays in querying suspicious records after analysis

Especially in the analysis phase, the delay in the return of the suspicious records delay the analysis time.

TURKEY'S FISHERY STATISTICS RELATING TO ADAPT TO WORK ACQUIS

- Turkstat is compiling fishery statistics based on fleet data received from the Ministry of Agriculture and Forestry (MoAF).

- In the process of full membership of the European Union (EU), both the 13th Chapter Agriculture and Fisheries and the 18th Chapter Statistics, obtaining adequate, regular and reliable data is the most important issue in the harmonization of the fishery sector.

LEGAL BASIS

- **Turkish Statistical Law**
- **Acquis**
  - Statistical Compendium
  - Regulations
    - Regulation (EC) No 216/2009
    - Regulation (EC) No 762/2008
    - Regulation (EC) No 1921/2006
  - Data Sets
    - Catch Statistics
    - Aquaculture Statistics
    - Landing Statistics

Eurostat Datasets

- FISH_AQ2A : Production from aquaculture excluding hatcheries & nurseries
- FISH_AQ3 : Input to capture based aquaculture
- FISH_AQ4 : Production of hatcheries & nurseries
- FISH_AQ5 : Data on structure of the aquaculture sector
- FISH_AQ6 : Methodological report
- FISH_C34TO51 : Catch statistics
- FISH_LANDG : Landing statistics

The EU gives great importance to the collection of fisheries statistics.

Built a systematic compiling and analyzing studies for fishery statistics with various legal regulations.

As a result of decreases in stocks of EU, EU fishing fleet conducts fishing activities in the waters of third countries through agreements.

The EU ranks third in the world with 8.830.957 tons of production according to 2018 data (Eurostat, 2018).

- Fishing statistics in the EU are compiled by Eurostat, from the national data sources of the member countries of the European Economic Area (EEA).

- Eurostat collects the data using the concepts and definitions developed by the Fisheries Statistics Regulation Working Group (Fish WG) and the international fisheries organizations, including Eurostat (Eurostat, 2009).

- These statistics are compiled according to the main fishing areas of the FAO (Food and Agriculture Organization).

- Data on fishing are compiled by taking into account fishing logbooks, landing reports and sales reports. In addition, sea-based movements of fishing vessels are monitored by the Ship Monitoring Center with satellite-based systems.

- The data of the landings and the sales reports of the boats are monitored. These data are collected according to the fishing areas which are created for the convenience of statistical data. These fishing areas are divided into sub-areas within themselves when deemed necessary.

- Marine fishery statistics are compiled by TurkStat in Turkey. In addition, the MoAF presents statistics on fishery in its sectoral reports

- The data on the characteristics of the fishing vessels are recorded by the MoAF and port presidencies. MoAF, which is obliged to provide license to fishing vessels, records the vessels 10 m above and port presidencies 10 m below.

- TurkStat organizes fishery statistics under three headings: marine catch, inland water catch and aquaculture. While collecting data about fishing, TurkStat uses a sampling method for small-scale fishermen and a full-scale survey for large-scale fishermen.

- Within the scope of the twinning project carried out by the MoAF to comply with the EU Common Fisheries Policy, Aquaculture information system (AquIS) *(Turkish name is SÜBİS)* was established and the records of the fishing fleet were transferred to a web-based system.

- It is aimed to keep the records of the fishery with AquIS until it reaches the final consumer. AquIS has now become partially functional.

- Turkey, are allowed to keep the fleet of new boats not granted entry as well as control the fishing effort, fishing resorts to ban certain periods

- Landing notices are listed in the ship's log book held by the master. In EU countries, a logbook is required for boats over 10 m.

- Since the landing notifications will be filled after the product is landed, the quantity of product obtained will reflect the actual values. This information is used to determine both national and international catch quantities.

- As a result of studies on the compliance process, Turkey has created a new database.

Within the scope of AquIS, which is a product of the twinning project realized, the fishing fleet has been registered in a new web-based information system. These deficiencies and differences were partially corrected with AquIS (Table).

Added variables related to fleet registration with AquIS

Before EU harmonization process

Characteristics of Fishing Boats
Method of use, Age,
History of fishing,
Building materials,
Property, Length (m), Tonnage (GT and GRT),
Number of motors, Motor power (HP), Number of auxiliary motors,
Auxiliary motor power, Generator power, Radar, Sonar,
Eco-sounder, GPS satalayt, Radio,
Cold casing volume

Data added through the EU harmonization process

Main hunting tool, Secondary hunting tool,
Tonnage (GT), Community Registration Number (CFR),
Event date, Event code, IRCS indicator, Region name,
GİS indicator, Administrative decision date,
The section covered by the administrative decision,
Year and month of operation,
Type of export, Import / export country

RESULTS

The success of the fisheries management depends mainly on the collection of healthy data and their processing with the right methods.

Good communication and collaboration between managers, scientists and other interest groups plays an important role in obtaining reliable fishery data.

The presentation of the data to the decision makers is also one of the factors affecting the success of the management. For the success of the management plans, the data should be transformed into information by appropriate methods and communicated to the managers in a way that reflects the situation of fisheries.

Turkey, has made some strides in the collection of fishery statistics within the scope of EU's CFP (Common Fishery Policy) harmonization.

Compliance activities are gathered under corporate governance, legal compliance, resource and fleet management, monitoring and audit.

With the AquIS established during the compliance process, the fishing fleet information has been transferred to a web-based system that contains information appropriate to the community fleet registration system. All records were transferred in 2008. TurkStat showed improvement in terms of information given by fishing vessels.

TurkStat gives the characteristics of fishing fleets in groups.

These groupings are possible to calculate and monitor the hunting effort due to the capacity of the fishing fleet. Engine power, tonnage, crew number etc. data are given in groups.

For vessels that operating in different hunting activities such as trawler and purse seiners providing the majority production, engine power and tonnage data are given.

In the EU compliance process, landing notifications are transferred to AquIS regularly by the port offices after the fleet registration system.

The majority of the Turkish fishing fleet consists of boats under 10 m. It is well known how many of these boats are active in fishing and what their place in fishing production is.

The EU, in fisheries management, obtains regional knowledge and makes appropriate arrangements for each fishing area.

EU fisheries management is established in the axis of fleet management.

In developing the fisheries management, the EU foresees a management approach in which fisheries are integrated with environmental components.

Turkey, when compared to the majority of EU fishing, bears a character of Mediterranean fisheries showing large differences between regions on a national scale. Many different species, different fishing gears and fishing vessels are used in various scales.

Turkey, in order to resolve discrepancies with the acquis, existing fisheries management laws, and determine the direction of institutional and functional aspects missing removal has achieved a significant opportunity.

Beyond being a member of the EU, efforts to improve fisheries management are of paramount importance.


THANK YOU
for your attention