

ÇUKUROVA UNIVERSITY
INSTITUTE OF NATURAL AND APPLIED SCIENCES

MSc THESIS

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**STATISTICAL ANALYSIS OF TRAFFIC ACCIDENTS IN GENDARMERIE
ZONES OF TURKEY BETWEEN 2000 AND 2005**

DEPARTMENT OF MECHANICAL ENGINEERING

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ÇUKUROVA ÜNİVERSİTESİ
FEN BİLİMLERİ ENSTİTÜSÜ

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YÜKSEK LİSANS TEZİ

MAKİNA MÜHENDİSLİĞİ ANABİLİM DALI

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ABSTRACT

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UNIVERSITY OF ÇUKUROVA**

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The human factor in traffic accidents holds the first place in the distribution of failure as the statistics about traffic accidents were analyzed. It is observed that traffic accidents are not only limited by injuries and deaths, but also causes some psychological illness of injured person and his/her relatives. Beside this, the loss caused by traffic accidents to country's economy is very huge and amount should not be underestimated.

In this study; all types of available informations about traffic accidents in Gendarmerie zones of Turkey between year 2000 and 2005 are collected from traffic Agency Department of General Department of Gendarmerie. SPSS statistical package computer program is used for the processing of the data. Regression and correlation analyses are used to find degree of the relations between all possible factors which effect the traffic accidents. Solutions for the decreasing of the traffic accidents which cause many dead and injured people are proposed.

Keywords: The Gendarmerie region, traffic, traffic accidents, statistics.

ÖZ

YÜKSEK LİSANS TEZİ

TÜRKİYE’DE JANDARMA BÖLGELERİNDE 2000-2005 YILLARI ARASINDA MEYDANA GELEN TRAFİK KAZALARININ İSTATİSTİKSEL ANALİZİ

Ahmet ŞEKER

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Trafik kazaları ile ilgili istatistikler incelendiğinde, kazalardaki kusur dağılımında insan faktörünün başta geldiği görülmektedir. Ülkemizde trafik kazalarının neticesinin sadece ölüm ve yaralanmalarla sınırlı kalmadığı, trafik kazası sonrasında mağdur ve yakınlarında psikolojik rahatsızlıkların da olduğu gözlenmektedir. Bununla birlikte kazaların ülke ekonomisinde meydana getirdiği kayıplar küçümsenmeyecek kadar büyüktür.

Bu çalışmada, 2000-2005 yılları arasında Türkiye’de Jandarma bölgesinde meydana gelen kazalarla ilgili veriler Jandarma Genel Komutanlığı Trafik Şube Müdürlüğü’nden alınmıştır. Bu verilerin analizinde SPSS istatistiksel analiz programı kullanılmıştır. Regrasyon ve Kolerasyon analizleri kullanılarak trafik kazalarına etki eden bütün faktörlerin arasındaki ilişkiler saptanmıştır. Birçok ölüm ve yaralanmanın meydana geldiği trafik kazalarının azaltılmasına yönelik çözüm önerilerinde bulunulmuştur.

Anahtar Kelimeler: Jandarma bölgesi, trafik, trafik kazaları, istatistik.

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NOMENCLATURE

Corr.	: Correlation
ECE	: Economic Commission for Europe
GDH	: General Directorate of Highways
GGC (TBD)	: Gendarmerie General Commandership, Traffic Branch Directorship
GIS	: Geographical Information System
GPS	: Geographic Place Systems
HCC	: Highway Central Chairmanship
HGD	: Highways General Directorate
HTL	: Highways Traffic Law
HTR	: Highways Traffic Regulations
IRTAD	: International Road Traffic and Accident Database
N	: Number of data
r	: Relation (Correlation) Between Datasets
R	: Correlation number
Reg.	: Regression
SGD	: Security General Directorate
SIS	: State Institute of Statistics
SPSS	: Statistical Package for the Social Sciences
TRL	: Transportation Research Laboratory
TGNA	: Turkish Grand National Assembly

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1. INTRODUCTION

In traffic accidents many people can be wounded, injured and died. This huge problem occurs in Turkey and our country has to deal with these problems which cause virtual and is about economical losses. More importantly; the cost of the ones who died in accident is about \$ 100,000 in some countries, but the life can not only be measured because; psychological and sociological problems like nightmares, fear, sleeping sicknesses and high suicide probability that the friends and relatives face with weakens the societies mentally.

The general definition of traffic accidents is; “incidents including one or more cars on the way causing death or injury or substantial damage”.

The components of a traffic accident are as follows:

- a) Accident occurred in a street, on a main road open to traffic.
- b) One or more people may have died, injured, or substantial damage may have been taken in the accident.
- c) The accidents need at least one moving vehicle.

The accidents caused by the components above include;

- 1) Crash of two vehicles.
- 2) The collision of people and vehicles.
- 3) The collision of vehicles and animals or fixed obstacles (SIS, 2005).

Traffic: The situation and movement of pedestrians, animals, and vehicles on the road (Çakmak, 2000).

As it can be understood from the definition of the traffic; traffic has three main components:

1-People, 2-Vehicle, 3-Road

According to the report of Research Commission of High National Council of Turkey, shows that accident are caused mainly human fault and accidents in the highways is in the third place in the order of death reasons (Zador, 2000). Our country has one of the highest accidents in the world. For example, when compared with developed countries, our country has the highest ratios (accidents per traffic volume) of accidents and deaths (HTR, 1998).

The traffic accidents do not cause only deaths and injuries, but also create psychological problems of relatives, and friends in Turkey (depression, fear, digestion problems, feeling of revenge, loss of memory, etc), lack of job and education success (28% of the injured people has decreased their efficiency at work, 14.4% changed his work), and relations with his friends and relatives effect badly (10.2% of the injured ones' relationships with their friends, 6.8% of the injured ones' relationship with their family effected badly).

The accidents occurring in the highways have a characteristic to cause serious health problems. A scientific questionnaire showed that 4% of the people whose relative has died in a traffic accident and 7% of the people that got injured in a traffic accident and his relatives and friends start using drugs, and 37% of the people whose relative has died in a traffic accident and 17% of the people injured in a traffic accident and his relatives and friends thought of attempting suicide (Darçın, 2002).

In a research conducted by World Bank, it is predicted that the socio-economic cost of traffic accidents to Turkey is 2.1% of the total expenditure of Turkey (This value is estimated in between 5 and 6 billion USD) (Darçın, 2002).

The main reason behind the increasing number of traffic accidents is the lack of determining the real reason of the accident. The fact is a sorrowing reality an unidentified problem can not be resolved. In our country it is believed that a traffic accident can be caused by either vehicles or pedestrians; which prevent the controlling of service and management systems. Even though driver faults are in the first place in the order of faults, other reasons should not be ignored. Under these circumstances, the purposes of this research are:

1- To take the data of the Gendarmerie zone into account and come up with significant issues.

2- Analyze the reasons of the traffic accidents occurring in Turkey especially in Gendarmerie zones, and indicate the precautions that should be taken in order to prevent these accidents.

2. PREVIOUS STUDIES

Bağırhan (2006) studied “the traffic security estimation of intercity highways”. In this study he evaluated by observing factors such that the geometric features of highways, environment effect and speed causing traffic accidents on two-lane undivided highways. A model, in which every variable are considered together, is developed by using fuzzy logic approach. By developing this model, Black spots caused by the highway geometric failure on the used two-lane undivided highways are detected. Necessary precautions and determined possible accident regions during the projectivization, construction and on the existent parts are proposed.

Bilim (2006) analyzed “determining of critical points and analyzing traffic accidents in Konya inner-city”. Study consists of three stages. At first stages, the traffic accidents statistics in inner-city of Konya between the years 2004 and 2005, at second stage he made a survey to indicate the view point of Konya’s people to inner-city traffic and traffic rules, at third stage some observations and analyses the reason why in 10 places where the accidents happened most are analyzed. Some suggestions by giving necessary actions in order to decrease the traffic accidents in these 10 regions are given.

Tuncuk (2004) studied “Isparta case: Traffic accident analyses via geographical information system”. The intensive accident happened points and accident black spots are determined via geographical information system (GIS). The black spots and possible accident regions on the digitalized planning map of the province Isparta by using the program Arcinfo 7.21 are shown. A database by the fact-finding reports of traffic accidents during the years 1998-2002 taken from the Traffic District Office of Isparta is developed. A topology by using collision diagrams of traffic accidents and geographical coding reference systems is developed. The black spots on the intersection of streets of cross roads and the number of accidents by giving charts are shown. Tables from the derived results and interpreted them are constructed.

Yaşatır (2006) studied “The problems of Gendarmerie Municipal Police about driver during working and the proposals to this problem”. The main aim of studying

this thesis is to make general view of traffic psychology, in order to prevent accidents, which still exists as a problem in most of other countries especially Turkey and give solutions to the problems that Gendarmerie Municipal Polices faced with. To indicate and gave suggestions to the problems that Gendarmerie Municipal Police faced with by a survey and statistical study are tried. Especially by the survey, he tried to display the relation between Gendarmerie Traffic team and driver, the traffic psychology of driver, the traffic management of Gendarmerie Traffic team and of human relations.

Mirasyedi (2006) analyzed “the analysis of effects of seasons on traffic accidents in Turkey and accident estimation models”. The main factors that affect humans in the view of traffic accidents as, the geometric feature of way, volume of traffic, population density, and vehicle feature, visibility range of driver, reaction time and weather condition are introduced. All factors except weather can be considered as numerical variable and weather condition can be considered as a non-numerical independent variable. In his thesis he researched the effects of seasons, as an independent non-numerical variable, to the numbers of injuries and deaths in accidents. By expanding the scope of the study he searched some social factors beside weather. Models by deriving benefit from the statistics of traffic accidents in Turkey between years 1978-2003 with multiple regression analysis are introduced. Finally he got the results “Injured number – Accident number” curves by using the past 26 years’ data for each season.

Darçın (2002) studied the analysis of “How to make controls in order to reduce the number of accidents in the responsible areas of Gendarmerie”. The Gendarmerie traffic supervision activity and also gave information about the units that are related with the traffic security are searched. On the education skills technical equipment, organization and personnel and supervision units of Gendarmerie on the field of traffic security are emphasized. He compared Turkish Gendarmerie and other countries on the skills of supervision, technical equipment, and appliance. Suggestion about encountering methods and legal regulations and mentioned drunk-driving and excessive speeding are given.

Hisar (2004) studied “A study on the necessary precautions in order to reduce traffic accidents and reasons of accidents in Turkey”. By the statistical data, on the driver failure that is the biggest proportion in the traffic accidents are emphasized. Solutions to the issues mentioned supervision activities, substructure condition of Turkey and other countries, technological beneficial conditions and health and first aid are given.

3. TRAFFIC ACCIDENTS, REGULATIONS AND ORGANIZATIONS OF TURKEY

3.1. Traffic Accidents

3.1.1. Definitions

Traffic is an Italian originated word. It passed to our language from French. It is expressed "Traffikco" in Italian and "Trafic" in French. The corresponding word in Ottoman language is "Seyrüsefer" (coming and going).

Traffic is mainly means transportation and transportation includes the conditions and movements of vehicles, pedestrians, and animals by train in railroads, by plane in air, by ship in sea, and by vehicle on highways.

Specifically the definition of traffic is the union of rules regulating the movement of vehicles, pedestrians and animals (Larousse Encyclopaedia).

Traffic; is the situation and movement of pedestrians, animals, and vehicles on the road (Çeliker, 1998). Therefore 3 main elements are involved in the traffic which are;

- People,
- Vehicle,
- Road.

People: Traffic's most important element is people. It is separated into three branches; driver, pedestrian and passenger. If the fault percentages are analyzed, it can be easily seen that the people is in the first place.

Road: Nearly everyday, we are reading from newspapers and watching from television the daily accidents. The major part which can not be neglected could be listed as spoiled roads, gaps insufficient substructures, narrow roads, etc. If the priorities are not set and importance is not given, many more lives will be lost on these roads everyday. As a result for the safety of people the roads should be at optimum condition.

Vehicle: One of traffic's elements is vehicle. Today automobile industry is growing rapidly and manufacturing new car models. With the developing technology today, many cars are manufactured towards the needs of the era. Although these facts exist, many old cars which can not reach the requirements are still in use. These inadequate cars should be banned from traffic since they are a part of fault reasons. Moreover required regulations should be made and the cars who reach the standards should be allowed to be used in traffic.

3.1.2. General Explanation of Faults (Çakmak, 2000).

3.1.2.1. Driver Faults

Essential Faults:

- 1- Not stopping in red lights or stop sign of the officer in charge.
- 2- Entering roads that have the no entrance sign or entering the opposite road, conjunction or ramp where the roads are double tracked.
- 3- Entering the opposite road where the road has double or more track.
- 4- Crashing from the backside.
- 5- Passing from areas having trespassing prohibition.
- 6- Lack of maneuver when changing direction.
- 7- Violating a track.
- 8- Violating the passing priority at junctions.
- 9- Violating the priority rule where the coating is narrow.
- 10- Violating the general conditions regulating the maneuvers.
- 11- Parking or stopping in highways outside the settlement area when it is not obligatory, and not taking the necessary precautions.
- 12- Crashing to vehicles that have parked in parking lots or properly parked outside highways.

Secondary Faults:

- 1- Not stopping at the stop sign.
- 2- Loading and unloading passengers or load in a place or form prohibited.
- 3- Carry passengers in a place or form prohibited.
- 4- Continuing to travel with a vehicle which is not proper to traffic.
- 5- Driving a vehicle in a sleepy, exhausted, ill or absent-minded condition.
- 6- Not using the dimmer switch or short headlights in an approach.
- 7- Not having a reflector in the vehicle.
- 8- Not having a pulling rope, wooden wedge or chain.
- 9- Driving a car drunk.
- 10- Driving a car over speed limits.

3.1.2.2. Passenger Faults

- 1- Hanging out from the vehicle.
- 2- Mount on or off without informing.
- 3- Moving in the vehicle improperly.
- 4- Traveling outside the car (mudguard).
- 5- Jumping out from a moving a car.
- 6- Passenger being ill.
- 7- Passenger being drunk.
- 8- Traveling on an open load or improperly and dangerously.

3.1.2.3 Vehicle Faults

- 1- Broken brakes.
- 2- Broken rod.
- 3- Broken spring.
- 4- Broken tire.
- 5- Broken shaft.
- 6- Broken headlights.

- 7- Other light problems.
- 8- Broken door.
- 9- Broken window cleaner.
- 10- Broken horn.
- 11- Deflation of tire.
- 12- Breaking of the axle.
- 13- Failure in gear-shift system.
- 14- Broken steering-wheel.

3.1.2.4. Pedestrian Faults

- 1- Passing at red light.
- 2- Violating the vehicle priority when passing.
- 3- Appearing on the road suddenly.
- 4- Appearing on the back or the front of a stationary vehicle.
- 5- Sitting, playing or lingering on the road.
- 6- Hanging over a moving vehicle.
- 7- Pedestrian being drunk.
- 8- Pedestrian being blind.
- 9- Pedestrian being deaf.
- 10- Pedestrian entering the highway.

3.1.2.5. Road Faults

- 1- Collapse of bridge.
- 2- Collapse of a road.
- 3- Low banquet.
- 4- Loose equipment on the road.
- 5- A gap on the road.
- 6- Lack of sign.
- 7- An obstacle on or near road that reduces sight.

- 8- Dangerous inclination.

3.2. Traffic Regulations

Active laws, regulations and instructions related to Traffic in Turkey are shown below:

A) Laws

- 1- Highway Law Number 2918.
- 2- Law of Communication Control on Highways Number 1593.
- 3- Vehicle Law Number 237.
- 4- Law of Carrying on Highways Number 4925.

B) Regulations

- 1- Highway Traffic Regulation.
- 2- Highway Transportation Regulation.
- 3- Regulation about Traffic Signs.
- 4- Regulation about any indicator, sign, light that will inform about traffic security, road construction that will be on or near the highways.
- 5- Regulation about the any establishment that will be opened or built near the highway.
- 6- Regulation about the banning the advertisement on commercial vehicles.
- 7- Regulation about the montage, manufacture, and modification of any vehicle.
- 8- Regulation about the transportation of toxic substances on highways.
- 9- Highway Traffic Insurance Guarantee Account Regulation.
- 10- Regulation about the fine collection procedure.
- 11- Vehicle Driver Course Regulation.
- 12- Improvement of Traffic Services Fund Regulation.
- 13- Commercial Vehicle Driving Certificate Regulation.
- 14- Commercial Vehicle Driving Certificate Education and Examination Regulation.
- 15- Honorary Traffic Inspection Duty and Labor Regulation.
- 16- Auto Park Regulation.

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- 17- Regulations about the transportation of passengers between cities on highways.
 - 18- Regulations about the international transportation of passengers on highways.
 - 19- Control of Toxic Waste Regulation.
 - 20- School Bus Service Regulation.
 - 21- Highway Security High Council's Establishment, Duty and Labor Regulation.
 - 22- Central Chairmanship of Traffic Service and Provincial Traffic Foundation Duty and Labor Regulation.
 - 23- Central Chairmanship of Traffic Research Establishment, Duty and Labor Regulation.
 - 24- Regulation about the montage and application of parts used in vehicles with tires.
 - 25- Trailer and Vehicle Qualification Type Regulation.
 - 26- Vehicle Regulation on Agriculture or Woods Qualification Type Regulation.
 - 27- Qualification Type Regulation of Vehicles with two or three tires.
- C) Instruction GGI: 27-2 Gendarmerie Traffic Service Instruction (used by Gendarmerie General Commandership)

3.3. Charged Units and Organization (Darçın, 2002)

3.3.1. Present Organization Related to Traffic

Present organizations scheme related to traffic in Turkey is summarized in the table which shown below:

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Table 3.1. Present organizations related to traffic in Turkey (Swe Road, 2001)

Association	Area of Responsibility
Parliament	Laws Budget
Government • Government Planning Organization	Sector investment plan for periods of 5 years and one year.
Ministry of Internal Affairs • Security General Directorate • Gendarmerie	Application and inspection of laws Registration of vehicles. Delivering driver certificates Accident statistics Reporting the traffic accidents and violations.
Ministry of Development and in habit • Highway Central Chairmanship (HCC)	Acknowledge the necessary regulations and indications on the highways it is responsible from. Applications related to signs and indications. The convenience of establishments' aside the road. Periodic vehicle inspection The stationary and mobile control of vehicle weight.
Ministry of Education	Regulations related to driver courses and distribution of driver certificates. Education before school, primary education and high school education. Inform the public
Ministry of Health	Applications related to first aid, therapeutic and rehabilitation.
Ministry of Industry and Trade	Approval of Vehicle Types
Ministry of Transportation	Regulations and applications (including coordination) about transportation.
Ministry of Forest	Regulations related to forest roads.
Ministry of Government General Chairmanship of Province Services	Application related to province roads.
Ministry of Justice	Acquiring the needed help to revise the law.
Cities • State traffic commission • Administrative district traffic commission	City traffic security issues.
Towns • Town traffic units	Town traffic security issues

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Ministry of Finance is responsible from collecting some of the fines.

Besides, there are some private organizations dealing with the traffic security;

- 1- Turkey Driver and Automobile Owners Federation.
- 2- Automobile Industry Association.
- 3- Preventing Traffic Accidents Association.
- 4- Traffic Accident Aid Association.

3.3.2. The Duties and Responsibilities of Ministries and Organizations

Ministry of Internal Affairs - General Chairmanship of Security and Gendarmerie General Commandership:

- 1- Application of rules (traffic control and inspection).
- 2- Application and inspection of laws.
- 3- Registration of vehicles, delivering driver certificates.
- 4- Actions needed to create a secure zone for people other than the ones having the accident (reporting the traffic accidents and violations are included).
- 5- All the statistics related to registration of vehicles, driver certificates, and accidents.
- 6- Informing the public.

Ministry of Development and Inhabit-Highway Central Chairmanship (HCC):

- 1- Acknowledge the necessary regulations and indications on the highways it is responsible from.
- 2- Applications related to signs and indications.
- 3- Decisions related to standardization of signs.
- 4- The convenience of establishment aside the road (gas station and lighting systems).
- 5- Periodic vehicle inspection.
- 6- The stationary and mobile control of vehicle weight.

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Ministry of Education:

- 1- Regulations related to driver courses and distribution of driver certificates.
- 2- Public traffic education at before school, primary school and high school.
- 3- Informing the public

Ministry of Health:

- Regulations related to first aid and inspection afterwards, and medical applications and rehabilitation.

Ministry of Industry and Trade:

- Approving vehicle types.

Ministry of Transportation:

- Coordination of transportation (publishing regulations related to transportation sector).

Ministry of Forest:

- Traffic regulations related to forest roads.

Ministry of Government-General Chairmanship of Province Services:

- Traffic regulations related to province roads.

Ministry of Justice:

- Acquiring the needed help to revise the law.

Towns:

- The application and regulation of maintaining the conditions of highways which is related traffic security.

3.4. Traffic Units in Charge in Turkey (Darçın, 2002)

3.4.1. Councils in Charge

To identify the goals, apply and coordinate these goals rules below are made.

Highway Security High Council:

This council is lead by the Prime minister and includes, Ministries of Justice, Internal Affairs, Finance, Education, Development and Inhabit Industry, Health, Transportation, Forest and the ministry which Province Service is bound to, Gendarmerie General Commandership, Prime minister Government Planning Councilor, Chairman of General Security and Highway General Chairman. If required, other ministries are also invited (HGD, 1998).

High Council of Highway Security decides with the help of chosen suggestions from Council of Traffic Security which is prepared by Traffic Service Chairmanship. The council is gathered once in two years or when the prime minister's request. The duty of the secretary is done by General Security Chairmanship.

3.5. Charged Foundations and Institutions

3.5.1. General Security Chairmanship

The duties given by Highway Traffic Rules to General Security Chairmanship is executed Traffic Service Chairmanship which is related to General Security Chairmanship. The Chairmanship of Traffic Service is run by General Security Vice President. General Security Chairmanship central region, city and county traffic police is bounded to Traffic Service Chairmanship.

Applications about vehicles and drivers, distributing license plate and its certificates and any activity towards these services are done in registered bureaus which are in necessary places in towns and cities.

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Security services, apart from their personnel could work with hire other personnel up to the number in the decided staff amount at registered sections or bureaus.

General Security Chairmanship's duties and authorities related traffic;

- 1- Inspect the proper ness of vehicles, necessary certificates and equipments, drivers and certificates belonging to them, drivers and other people's conditions, and inspect the convenience of regulations and some establishment's to laws.
- 2- Control the stationary and mobile traffic.
- 3- Conducting a report for the accidents it has laid hands upon.
- 4- Reporting about the ones who have violated traffic rules, do the necessary applications and inspect the further applications.
- 5- Help to achieve the necessary conditions for the injured people and communicate with their relatives.
- 6- Register vehicles and distribute the license plates.
- 7- Distribute the driver licenses.
- 8- Make the judicial record of vehicles and drivers, process the technical and legal alteration, gather the statistical data and evaluate them.
- 9- Gather and evaluate the reasons for the traffic accidents and their statistics including all the issues, and take the necessary precautions and report to the establishments according to the result.
- 10- Provide the necessary information and documents to fasten the payment of damage indemnity.
- 11- Apply other regulations given by Highway Traffic Law (HTR, 1998).

3.5.2. Highway General Chairmanship

The duties and authorities of Highway General Chairmanship are these;

- 1- To provide and maintain the necessary precautions and signs for life and property security.
- 2- Stabilize, provide and control the signing standards on all highways.
- 3- Approve and analyze projects related to highway security, and publish ideas for

traffic and vehicle technique.

- 4- Determine and highlight the over and below values for the speed limits on the roads which it is responsible from.
- 5- Provide the necessary data according to the reasons of accidents and take the required precautions to prevent new accidents.
- 6- Build bus stops, parking lots, lighting systems, junction and etc on the roads which it is responsible from.
- 7- Improving the physical condition of the road and taking the necessary precautions as a result of reports conducted from officers in charge, and accidents occurred.
- 8- Weighing the vehicles and reporting any violation about the rules.
- 9- Testing or sending to examination the registered cars and any violation of Highway Traffic Law (item number 13), protection of highway structure and traffic signs (item number 14), other signs, lights and indications on or beside the road (item number 16), any structure or establishment beside the road outside the county (item number 17), any structure or establishment beside the road in the county (item number 18), establishments authorized for examination (item number 35), acknowledging the warnings of the officer in charge for regulation and inspection of traffic (item number 47/a), loading of vehicles (item number 65), reporting anyone whose violating the rules, obeying the traffic lights, signs, rules and obligations (item 47/b,c,d) and report and hand over anyone to the nearest place for the application of the necessary process if there is a violation (HTR, 1998).

3.5.3. Ministry of Education

Ministry of Education has the following responsibilities;

- 1- Education of vehicle drivers, opening driver courses and letting private courses, and controlling them.
- 2- Making the examination of the ones educated in private and official courses, and handing certificates to the successful ones.

- 3- Arranging the general traffic education plan for inside and outside the school and applying this plan with the help of necessary establishments.
- 4- Requesting an obligatory first aid and traffic lessons at the primary and high schools.
- 5- Determining the essential authorities and rules of building, opening and inspection of children traffic education parks.

3.5.4. Ministry of Health

Planning and applying the first aid related to the accidents on the highways, providing a health service to the injured people in the shortest time. Building first aid stations with the approval of Ministry of Internal Affairs and Highway general Chairmanship, recruiting the required personnel, equipment for these stations, and having enough first aid and emergency ambulances and personnel for each city are the duties of the Ministry of Health (GDH, 1998).

3.5.5. Ministry of Transportation

Making the required regulations and laws according to the negotiations between two or more countries even though these are secret, taking precautions and coordinating the highway transportation according to Highway Traffic Rules and regulations related to these rules (GDH, 1998).

3.5.6. Ministry of Agriculture and Province Labor

Taking the necessary precautions on province roads for order and security, observing the projects related to road security about junctions, bus stops, parking lots, lighting and similar systems and approving the necessary ones; letting the establishment of structures providing connection to other roads, taking the necessary precautions according to the reports of the officers and analyze of traffic accidents are the responsibilities of Ministry of Agriculture and Province Labor (HTR, 1998).

3.5.7. Ministry of Forest

The duty of the Ministry of Forest is to put signs as a precaution on necessary forest roads and on main forest roads which are important for the order and safety of traffic.

3.5.8. Towns

In towns, town traffic department chairmanship, town traffic chief, and town traffic official post are established according to the capacity of work and service by Ministry of Internal Affairs.

In bigger cities traffic bureau authority is build which are bounded to town traffic department chairmanship.

In these units, the number of technical and departmental personnel number is determined by the chairman of the town.

To maintain their work related to traffic by obeying the decisions of City and County Traffic Commissions, and coordinating with the town traffic policemen. The authorities and the responsibilities of town traffic services are these;

- 1- Maintain the road structure to have the required traffic order and security in the town.
- 2- Construct road and junction.
- 3- Provide necessary traffic signs, lighting systems, indicators and the continuity of the functioning of these equipments.
- 4- Ease the traffic flow, and have a systematic chart for the buses' transportation times to minimize the unnecessary stopping time.
- 5- Taking the necessary precautions for the security and order of the traffic in a construction on the road.
- 6- Build, and run parking lots, high and low passages.
- 7- Approving the construction of new establishments aside the road according to requirements.
- 8- Constructing children traffic parks to take part in the education of the

public.

- 9- Removing any obstacle other than parked vehicles that is making the traffic flow difficult, indicating the obstacles that can be removed so that it can be easily seen day and night.
- 10- Taking the precautions where there is an accident because of the insufficient indication or road structure.
- 11- Register any vehicle that has no engine if necessary except the ones used on the agriculture sector.

Towns can not inspect or report of any other situation if it is not included in the above services (HTR, 1998).

3.6. Commissions in Charge

3.6.1. City Traffic Commission

City traffic commission has Town, Security, Gendarmerie, Education, Turkey Driver and Highway Federation plus any university, bureau, foundation and civil association that is approved by the Province as participants (HTL, 1998).

The number of participants of any university, bureau, foundation and civil association that is approved by the Province can not be more than three in the commission. Current topics are decided by the governor of province. Decisions are set by vote numbers. If the votes are equal the decision is made on the side of the president of the commission.

The decisions of City Traffic Commission are made effective by the approval of the governor of province. If the commission is lead by the governor of province there is no need to take an approval.

Duties and Authorities;

- 1- Taking the necessary precautions to achieve the security and order of the traffic in the city.
- 2- Taking the related precautions and improving services to achieve a convenient traffic flow, and reporting anything that may be related to the country to Ministry

of Internal Affairs.

- 3- Determining convenient place and number for commercial vehicles for traffic order and security, while the laws of highway transportation is kept secret.

To approve the construction for lands which are convenient for establishing parking lots, and to let the establishments run by other investors (HTR, 1998).

3.6.2. District Traffic Commission

District Traffic Commission has the City Traffic Commission's administrator members or charged representatives as participants, and is gathered according to the conditions and needs of the district (HTL, 1998).

The authority and duty of the district commission is decided by City traffic Commission and approved by the governor of province.

3.7. People in Charge

3.7.1. Honorary Traffic Inspectors

People who are suggested by Highway Traffic Council and approved by Highway Traffic High Council to help the people who are responsible from the inspection of drivers and their properness to traffic rules are put to duty as honorary traffic inspector by the governor of province.

The qualifications of honorary traffic inspectors are as follows:

- To be a Turkish citizen.
- To be at least 40 years old.
- To be graduated from a university.
- To have a drivers license at least for ten years.
- Not to be a direct responsible of a traffic accident.
- Not to have lost the driver license because of losing 100 points by traffic rules violations in the 5 year period after the application.
- Not to be banned from public service.

- Not to have a criminal record.

The number of inspectors is determined by the one of the thousand of vehicles in the city, but the number may be increased according to the socio-cultural, tourist, economic and similar levels of the city if requested by the governor of the province (VTIDOR, 1998).

3.7.2. School Passage Officers

These are the officers with uniforms and necessary indicators and approved by the traffic policemen, they are charged to secure the flow of traffic in front of the primary and high school exits.

All drivers should obey the indications and commands of anyone who has the approved documentation by Security Chairmanship and writing “school passage officer”.

3.8. Traffic Policemen

3.8.1. The Organization of Traffic Policemen in Turkey

The main duty of traffic policemen is to carry out the traffic services. Traffic policemen are obliged to carry out the service of policemen in an emergency condition.

Except obligatory conditions caused by security and order, traffic policemen are not expected Civil Management Chief to carry out policemen services, and traffic policemen can not use the equipments and vehicles given for personal use (HTL, 1998).

In places where the number of traffic policemen is insufficient, other policemen or in areas outside the duty zone of traffic organization officers or low ranked officers trained in traffic education may be obliged to carry out the traffic services and report any violation (HTL, 1998).

In Turkey the policemen are branched into three main sections; judicial,

administrative, political. Other than these groupings policemen is branched into two, Traffic Policemen and Agile Force Policemen. In Turkey, there are 16,380 traffic policemen (12% of the total number of policemen) (Akçay, 1998).

Police has been organized to traffic inspection departments, traffic registration departments, traffic department administrative and some organization based on this, and road service throughout the country other than organization under the name Traffic Services Chairmanship. Gendarmerie has not been fully cooperative with police organizations in traffic because of change in Highway Traffic Law number 2918 (Darçın, 2002).

3.9. Gendarmerie Organization in Traffic Services

The highways which Gendarmerie or policemen will be responsible from is determined by protocol made by a commission lead by governor of the province.

While this protocol is made Gendarmerie receives the areas where policemen has no control over them, and other areas are given to policemen.

In places where the number of traffic policemen is insufficient, other policemen and in areas outside the duty zone of traffic organization, officers or low ranked officers trained in traffic education are obliged to carry out the traffic services and report any violation (HTL, 1998).

The duties, authorities, qualities and qualification requirements of traffic services of Gendarmerie Organization are determined by General Gendarmerie Commandership.

The personnel in charge of traffic service has to inspect the drivers and vehicles, take over any accident, provide the flow of traffic and first aid services, inspect the establishments like gas stations according to the rules as responsibilities (HTR, 1998).

Duty and Authority

The personnel in charge of traffic service who is obliged to inspect the drivers and vehicles, take over any accident have the following responsibilities (Highway Traffic Regulations/ Item number 9);

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a. To check the necessary licenses and equipments of a driver and his vehicle, and inspect the conditions of drivers and passengers conditions, plus regulation and control of the flowing traffic on roads where he is responsible.

b. Take over any traffic accident, examining the total conditions leading to the accident, determining the evidences for statistics and criminal operations. Conducting the report based on the facts examined.

c. If the road is closed because of an accident, indicating any evidence so that they will not disappear, taking the necessary precautions for traffic security.

d. In traffic accidents resulted in deaths or injuries, applying the first aid techniques to these people, and taking these people to the nearest health centre if possible or, providing an ambulance to come to the accident area.

e. Inspecting the gas stations and health equipments they should have according to the laws, checking the required equipments in the cars, and reporting any of the violation in these situations.

f. Examining the reasons of traffic accidents, taking the precautions according to the result, and informing the needed facility if required.

g. Reporting any violation of driver according to the Highway Traffic Law, handing over the necessary documents to the courts in 7 working days and providing the necessary documentation in 7 days to the required department in a traffic punishment fine.

h. Sending the report in an unregistered license plate event to traffic policemen department in charge or to City Traffic Establishment by the 116th law.

i. Taking the necessary precautions provided by the laws in a nation or international race if it is under the responsibility zone of the Gendarmerie.

j. Helping to determine the specific borders of duty zone and coordinating with the traffic policemen if needed, providing suggestions to civil administrative, and obeying the protocols set by these actions.

k. Creating daily, weekly and monthly programs to maintenance of security and order on the road where it is responsible from according to national and religious festivals, important dates, days of the week, tourism periods etc.

l. Taking the necessary precautions for some people, association or

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foundation in a construction on the road according to the Highway Traffic Law, removing any obstacle that is created throughout the construction, reporting any violation.

m. Reporting any failure in the indication panels, signs, and similar traffic equipment outside the network Highway General Chairmanship to the necessary departments.

n. Plus, carrying out any duty given to Gendarmerie by Highway Traffic Law.

3.9.1. Traffic Teams

Traffic Section Administrations and Traffic Teams are established in order to take over traffic crime under the name of Gendarmerie Commanderships.

Table 3.2. Gendarmerie Traffic Section Administration establishment (GGC, 2001)

GENDARMERIE TRAFFIC SECTION ADMINISTRATION (IN CITY GENDARMERIE COMMANDERSHIPS)		
DUTY	RANK	PRESENCE
Section Commander	Captain-Major	1
Process Low Rank Officer	Low Rank Officer	1
Typewriter Officer	Civil Officer	1

Table 3.3. Gendarmerie traffic team establishment (GGC, 2001)

GENDARMERIE TRAFFIC SECTION ADMINISTRATION (IN TOWN GENDARMERIE COMMANDERSHIPS)		
DUTY	RANK	PRESENCE
Team Commander	Low Rank Officer	1
Team Member	Gendarmerie Sergeant	2
Driver	Soldier	1

3.10. Traffic Policemen Organization in Europe

The inspection organization in traffic varies according to the political and administrative structures of a country, it could be under the power of a central (Ex: Italy), regional (Ex: Germany), place (Ex: Sweden) authorities. Except Spain, the authorities responsible from central road security are not directly authorized with the traffic-inspection services. As a result, these don't have a power over police organizations or operation strategies.

On the other hand, the other countries do not have a responsibility to provide the needs of road security authorities. The same is valid for subjects related to their budgets (SGD (Turkey), 1998).

There exists some organization structures based on one or more police forces about activities in the country, and responsibilities on the whole road network;

- 1- A national force for the whole road network (Ex: Holland)
- 2- Few national forces for the whole road network (Ex: France)
- 3- One or more forces and forces attached to towns (Spain, Italy, France, Norway)
- 4- Regional forces and forces attached to towns (Germany, England, Sweden)

Some countries have chosen specialized highway policemen which have their essential duty as the regulation of traffic and attached to central, regional and place levels under national police force. The situation is this in Spain (Agrupacion de Trafico) and Italy (Polizia Stradale). But the other countries have adapted the varying specialization of policemen with its own equipment system. These specialized units are generally responsible from road network and large passage roads. Countries at this situation are Germany, England, Sweden and Holland.

Even though many countries have decided to give this responsibility to police forces attached to towns, the authorizations vary from one country to another. For example, in Italy police forces have a large extent of violation reporting authority like recording the violations of a moving vehicle. This enables the activities of Polizia Stradale to a great extent. However in France, the situation is the opposite, policemen are authorized to record small number of violations (parking, violation of driver security) in the towns (SGD (Turkey), 1998).

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3.10.1. The Staff and Equipment of Traffic Policemen

The traffic service has been carried on with 19,451 personnel in districts and 163 personnel in centers with a total of 19,614 personnel in total (SGD, 2000).

Table 3.4. Number of Traffic Personnel in Some Centers (SGD, 2000)

CENTRE	POPULATION	TRAFFIC POLICEMEN
London	9,000,000	10,000
Vienna	2,000,000	4,000
Tokyo	18,000,000	11,000
İstanbul	11,000,000	2,300

In our country the number of vehicle, equipment and personnel number of traffic policemen and gendarmerie is insufficient. Since there is an insufficient number team car, motorcycle and equipment with it in an effective traffic inspection, the duty is not done properly. Especially on duties where there is a vehicle to be escorted there are not convenient level of benefit from the vehicles. Although there is no limitation of gasoline usage to team vehicles because of budget shortage plans there is a specified amount of gasoline that can be consumed. As a result, there is no chance of using the vehicle or the equipment beneficially.

The insufficiency or in other words the equipment levels of Turkey is seen clearly in table 3.5.

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Table 3.5. The equipment levels of Traffic establishments in Turkey (SGD, 2000)

THE EQUIPMENT LEVELS OF TRAFFIC ESTABLISHMENTS (2001)			
KIND	INSIDE CITY	INTERCITY	TOTAL
STATIONARY TABLE RADIOPHONE	201	320	521
HAND RADIOPHONE	1,961	700	2,661
AUTO RADIOPHONE	1,568	1,453	3,021
2.440 MOTORCYCLE RADIOPHONE	547	17	564
RADAR	123	252	375
POLICEMEN-GENDARMERIE LAMP OF STOP-PASS	1,020	1,252	2,272
OVERHEAD LAMP	1,522	1,353	2,875
WITH REFLECTOR VEST	1,820	1,090	2,910
FIRST AID BAG	927	2,270	3,197
RAINCOAT	4,525	2,560	7,015
ALCOHOLMETER	1,587	428	2,015
TELEVISION	200	124	324

3.11. Factors Affecting the Accidents

3.11.1. Weather Conditions (Karakuş, 2006)

Inconvenient weather conditions which affect the vehicle equipments, driver and road negatively can be ordered as below:

- Humidity
- Snow
- Temperature
- Fog
- Fall (rain, snow etc)
- Wind
- Other

1- Humidity; Excessive humidity can cause the existence of negative effects on drivers during drive leading to the detracting of attention and getting bored of the driver. Also in the region where humidity percentage is high, the vehicle equipments of which resistance to corrosion is low expose to corrosion and become useless after

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a short time.

2- Snow; After snow falls ,the snow accrues on roads melts by the sunlight and turns into sliding ice layer after sunset as a decrease in the temperature below 0 Celsius. Ice layers are seen more in winter.

3- Temperature; Temperature is low in regions where altitude is higher than sea level and in the roads passing through mountain areas because of the altitude difference. As a result it causes ice up and becomes an important risk factor on traffic accidents.

4- Fog; At critical heat changing times, the moisture in the air become fog as hanging in the air. Fog absorbs flowing of lights to the direction and diffuses it. Hence while driving, visibility range decreases and the perception of coming vehicles from opposite direction. The probability of making accident of a fog light broken car appears.

5- Fall; In the case of rain fall in an event depending on the thickness of the water layer on the road and the profile of the tire decrease the force acting on tire. This event, the water cleat between tire and road, is called aqua-planning. This event happens more easily in rough profile tire and bald tire. If your car tire is bald enough, the chance of happening of this event is high.

6- Wind; Vehicle's moving direction, velocity, the direction of the wind and the wind factor that affects the endurance of the vehicle depending on the vehicle's velocity make a contribution to accidents .In this situation the endurance of the vehicle can vary according to the linkage of the tire and the floor because of the aerodynamic forces are affected by the wind. Driver coerces in order to control the inconsistent endurance vehicle. As a result accidents may happen.

7- Other; beside the climatologically conditions, the physical conditions are important factors in the increase of traffic accidents. Highway markers, directly contact with the out surroundings reflective surface are exposed to sunlight, ultraviolet light, rain, humidity and different temperatures. Because of this air conditions roads signs wear in time. It is unavoidable to make an accident in the case of not recognizing of this worn road signs.

3.11.2. Human

As it can be remembered from table 4.1, the biggest portion in causing traffic accidents is the human factor. Human failure can be analyzed in three titles.

- 1 - Personal effects
- 2 - Psychological effects
- 3 - Physiological effects

1-Personal Effects

Experience, age, gender, physiology, education, alcohol, exhaustion, sleeplessness, taking medicine, drug using are considered as the factors of the personal effects of the human failure in accidents. Inexperienced drivers who enter into traffic cause a lot of accidents because of the lack of experience. Beside this, in our country as a consequence of lack of effective driver education course, traffic giants are brought up rather than educated and sensitive drivers.

2- Psychological effects

Psychological effects also play an important role in traffic accidents. As long as drivers, who get used to drinking alcohol, burning up (high speed), behave negative attitudes towards other drivers ,in other words, sickly characters , are on highways, traffic accidents are unavoidable. Furthermore, being exquisite, depressed, sadness and feeling of personal show off and using of stolen vehicles are some of the psychological factors that directly affect accidents.

3- Physiological effects

Being high weighted in front of steering wheel causes early exhaustion. It is also observed that reflexes are getting weaken and slower in high weighted drivers.

As a result, it is unavoidable not to happen accidents while the driver is incompetent and ineffective in the cases of instantaneous gear shifting. Hearing disorders are especially effective factors in local traffic. It is still seen handicapped citizens in the traffic who uses normal cars instead of using invalid cars. They threaten not also their lives but also other drivers.

3.11.3. Speed

High speed, heads the list of fatal accidents on highways since it shortens the time that is needed to escape from collision and increases the effect of collision. Exceeding the speed limit is one of the most committed traffic crimes. High speed problem or inadequate speed problem is a very serious and most seen way security problem. Additionally, as speed gets high the ratio and seriousness of accidents increases. It must be supported the attempts of decreasing the injuries, especially fatal injuries. On average, a 1 km/h decrease in speed, leads to a 4% decrease in accidents. In this situation, a great benefit is obtained: especially the 85% dead ratio of foot passengers at a speed of 50 km/h decreases to 10% when speed decrease to 30 km/h (SGD, 2000).

Speed is closely related with two physic laws. Firstly stopping distance (at emergency situations) is proportional to the square of the speed. By grounding on empiric data Transportation Research Laboratory (TRL) attains this result: If average speed is decreased by 1 km/h, accidents and injuries will decrease by 3% on average (SGD (Traffic Culture-1), 1999).

In an accident done by an automobile, if collision speed is increased from 40 km/h to 60 km/h, the risk of foot passenger death is multiplied by a factor of 5 (SGD (Highway Traffic), 1999).

The fatality ratio of the collision of a vehicle having a speed of 50 km/h to a foot passenger is about 85%. Beside this, if the vehicle has an average speed of 30 km/h the fatality ratio comes on to scene by 10%. Former studies which were done to identify the relation between the speed and fatality rate shows that a 1 km/h increase in speed causes 3% increase in fatality ratio. According to the result of the analyze of the 36 former studies it is understood that, a 2% decrease in accidents in suburban regions which are done by vehicles having a speed about 50 km/h and 4% decrease in accidents in urban regions when vehicles having a speed of 50 km/h, decrease their speed by 1 km/h. In the basis of high speeding problem it is caused by the refusing to accept that the drivers do speeding and high speeding is a dangerous thing. Moreover drivers believe that high speeding has advantages sides likes

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shortening the time of travel, enjoying of high speeding, getting excitement by speeding and testing the abilities of themselves during high speeding. High speeding behavior has negative results such as decreasing of the perception of the risk of accidents and feeling of lack of confidence (SGD, 2000).

In most of European countries, fines related to violations such as exceeding the speed limit and crossing against the red light are detected automatically and recorded. Such approaches are very advantages according to cost-benefit and it must be applied widely in regulations related with the applications of law (SGD, 2000).

Denmark Highway Administration determines an active number about the cost of cost of highway accidents. The cost of a fatal accident is determined as 1,181,000 Danish Krone. If the campaign is continued one year, 364 million Danish Krone if it is continued in a very short time period, 60 million will be saved. This savings make a balance as a 4.5 million Danish Krone against campaign investment. Even if it is seen from the worse side campaign will yield a revenue of 13 times bigger than the investment and by an optimistic perspective it yields an 80 times bigger revenue (SGD (Highway Traffic), 1999).

According to the Handbook of Norwegian Traffic Security the lowest speed limit which gives the lowest cost according road types as in the table 3.6.

Table 3.6. Speed Limit for the Minimum Cost According to the Road Type (SGD (Traffic Culture-1), 1999)

ROAD TYPE	SPEED PROVIDE LOWEST COST (km/h)
HIGHWAY	95
7 m wide ROAD	60
11 m wide ROAD	70
13 m wide ROAD	80

The main aim of speed control is to; provide a portion of speed that is determined by the law on the ways where drivers happened to make accidents. Also, the speed supervision leads drivers to be accurate and sensitive and give rise to a decrease in accidents, number of injuries, deaths, and minimum economic loss.

Another effect of speed supervision is to make a contribution to country's economy by providing fuel saving.

A study has done in U.S.A. shows that the speed limitation causes a 3% saving in fuel consumption. In the same country, by decreasing of the speed limits deaths after accidents decreases by 24% (SGD (Traffic Inspections), 1998).

By 16 studies done in the past, it is stated that speed controls which are done separately and in the combination with other applications affect to decrease the accidents by 6% and deaths in the accidents by 14%. It is put forward for consideration in the cost-benefit analysis that immobile speed control type is 3 to 14 times cheaper than those in mobile speed control. Speed applications must be done longer and more intensively and the maximum benefit must be gotten (SGD (Traffic Inspections), 1998).

As in previous years, the camera technology measures speed is a very efficient application both financially and beneficially. 11 studies which were done to consider the effects of these cameras show that it has an effect decreasing the accidents by 19%. This decline is shows more effectiveness in urban areas (28%) rather than in suburban areas (4%). It is deduced that in a member country, cost-benefit analyses benefit which is gained by speed measure cameras 5 times more in a year and 25 times in a period of 5 years. The reaction of community got in a positive manner while it is started to apply widely. Shortly, it is seen that a brother who may kill you is chosen rather than a brother watches you (SGD, 2000).

Speed Cameras

Putting of speed cameras into practice into traditional speed law application has many new positive contributions. After analyzing of the results of 11 former studies which were done before show that speed cameras and precautions taken by speed cameras cause to affect to reduce the number of accidents approximately by 19%. This decline is shows more effectiveness in urban areas (28%) rather than in suburban areas (4%). In many countries the speed controls which are done automatically in a particular part of the highways expressed to drivers by cautionary signboard beside the roads. It is detected that the halo effect of distance of speed

cameras is about 500 m in urban areas and 1,000 m in suburban areas. In a study done by Finland people it is stated that halo effect distance of speed cameras is approximately between 4 km and 10 km. The information about the distribution of effects of speed cameras may depend on the method of evaluation (SGD (Traffic Inspections), 1998).

The acceptance degree of speed cameras in Norway, Finland and England is in wide range. In a research done in Norway that 67% of the participants of the survey state are positive thoughts about speed control cameras. In England 57% of the participants are contented, 24% support to increase the number, 16% demand to decrease the number of positioned speed cameras. In a research in Sweden 44% of participants deliver positive 46% of participants deliver negative opinion (SGD, 2000).

3.11.4. Alcohol

The 48th item of the 2918th Highway Traffic Law as in below:

It is forbidden for people to drive vehicles on highways who take narcotic or illicit drugs and drunken alcoholic beverage because of the lack of the ability of secure driving.

Drunken-Driving

Alcohol basically affects the reaction time, ability of sight, behavior and adaptation ability (gear shift). This effect can reduce according to the endurance of the drunken driver with respect to the age, experience, feature of brought up (Özüm, 1982).

Drunken-driving is one of the important factors that affect the resulting of traffic accidents. Studies show that, drunken-driving is responsible for the 47% of fatal accidents, 20% of injuries and 10% physically damaged accidents (Evans, 1999).

A very low 0.02% alcohol blood level is also damage the driving ability. Increases the level of alcohol in blood also increases the risk of involvement of a driver in an accident. Even if alcohol is very low in blood, it affects adolescents more

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and more. With the braveness that alcohol brings, adolescent drive faster and dangerously and increases the level of alcohol in blood increases the risk of making accidents. Researches show that drivers aged 16-19 have a higher risk of attempting accidents rather than the older drivers whatever the level of alcohol is. It shows that the risk of injuries in both males and females increases (Zador, 2000).

Table 3.7. Speed and Alcohol Limits in Europe While Driving (SGD, 2000)

COUNTRY NAME	URBAN (km/h)	SUBURBAN (km/h)	HIGHWAY (km/h)	ALCOHOL LIMIT (ppm)
Belgium	50	90	120	0.5
Bulgaria	60	80	120	0.5
Denmark	50	80	110	0.8
Germany	50	100	130 ¹	0.8
Finland	50	80	120	0.5
France	50	90	130 ²	0.5
Greece	50	110	120	0.5
England	48	96	112	0.8
Ireland	48	96	112	0.8
Italy	50	90	130	0.8
Luxemburg	50	90	120	0.8
Holland	50	80	120	0.5
Norway	50	80	90	0.5
Austria	50	100	130	0.8
Poland	60	90	110	0.2
Portugal	60	90	120	0.5
Sweden	50	70	110	0.2
Swiss	50	80	120	0.8
Slovenia	60	80	120	0.0
Spain	50	90	120	0.8
Turkey	50	90	120	0.5
Hungary	50	80	120	0.0

¹Advised speed limit

² In wet and rainy weather it changes as 80 and 100

Supervision of Alcohol in Turkey

The reason of many accidents happen in our country is drunken-driving. Because of the alcohol level increases, the quantity of oxygen in blood decreases. Brain loses its functions because of the lack of oxygen. It shows simulative and narcotizes effects on drivers. In both circumstances, the probability of making accident increases (SGD (Police Traffic), 1998).

As the quantity of alcohol in blood increases, Brain functions such as balance, sight and hearing increases. Many important sense and control abilities such as muscle control, accuracy, reaction time decreases. Stopping distance will increase in the case of an overtaking of a person or vehicle in front of a drunken driver rather than a driver without alcohol. Parallel with the stopping distance, the probability of accident risk also increases.

Drunken-driving is not prevalent when it is considered with the other traffic crimes, but it is a very dangerous behavior. If E.U. countries taken in hand.

The averages of 3% of all travels are done by the drivers who take alcohol above alcohol limit, and 30% of all injured drivers are drunken-drivers. Alcohol is the main factor of accidents and increases the seriousness of injuries (GGC, 1999).

In recent years, it is seen a decrease in the number of drunken-driving, as a result of an increase in sense about health and an increase in successive applications the security precautions. But international researches and experiences shows that the combination of drinking alcohol and driving is still the most important factor that affects the traffic security.

Alcohol and The performance of Driving

The effects of alcohol on drivers show very big differences such that it varies from loss of hearing in the case of highly drunken-driver case, to decline in the ability of behave and recognition. Alcohol causes an increase, and increases the competition behavior or the speeding which results in decreasing of the accordance of motivation to security standards. Generally all functions having an importance in driving a motor vehicle in a secure way can be negatively affected by the level of taken alcohol (GGC, 2001).

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Information about the effects of alcohol on driving, the general results of attempting a traffic accident and driving vehicle without alcohol can be considered as a lecture that in school course programs. These subjects must be positioned in the existent health education and traffic security programs. Necessary importance must be given to this subject in driver education programs. At every turn it must be remind to drivers that their own faults affect not only themselves but also the other drivers and this is a responsibility for them. Because of the tendency to misestimating of the result of the risk of the activities, it must be focused on to the probable events that may happen to foot passengers and the other individuals using highways (GGC, 2001).

Table 3.8. Alcohol Quantity in Blood and Effects

(<http://www.alkol.gen.tr/alkol/content/alkolun-vucuda-etkileri>)

ALCOHOL QUANTITY IN BLOOD(ML/DL)	EFFECTS
50 ml. (bellow)	Feeling fever, coloring of face, slowing of perception, relaxing
100 ml. (Open Drunk)	Slowing of perception, unbridling himself, detracting attention, losing control. Slowing of reflexes, unable to control muscles.
150 ml. (Drunk)	Feeling of stupefaction, muscles, unable to control movements, unable to speak clearly, to see double, memory and perception loss.
250 ml.(Excessive Drunk)	Unable to stand on foot, disgorging, oozing away.
350 ml. (Coma)	Loss of consciousness, unable to control excreting , low temperature, low blood pressure, slowing of breathing, perspiration
500 ml.	Risk of death

3.11.5. Age, Gender and Education

As a user of highways, a person's age, body feature, sight, hearing reaction abilities are the important physical features that have effects on the accidents. Such

situations exhaustion, illness, psychological state, being drunk is effective situations to be involved in accidents. Social structure, level of education, structure of intelligence, adaptation to environmental conditions, experience and knowledge level are other effective features that can be listed to involve in accidents (GDH, 2001).

In summary, we can sum up the features of the drivers that can cause the accidents (GDH, 2001).

- Insufficient level of education
- Insufficient level of knowledge
- Inexperience
- Negative physical features
- Mental features
- Temporary physical features

Age

In developing countries and countries where the males are reproductive; the deaths caused by accidents is in the third place after tuberculosis and AIDS in the death reasons. In 1996 in Mexico accident deaths were in the third place in the death reasons and 74% of the people who has died were between their most reproductive era; they were between 15-64 years old (Hijar, 2000). The accident death in Greece is in the first place for the age between 18 and 24 (SGD (Turkey and Europe), 1998).

With the increase of age, the traffic security is affected. Because with the aging of the individual, the mental health of him changes, reflexes start to fail; there is a lack of adapting and decision making, and rapid exhaustion. This situation may have effect the condition of the driver, and age becomes an important risk factor. In the researches made, it is shown that there is an increase of errors and traffic accident numbers as the age increases.

Gender

As Tavis and his friend's points out, Barancik and his friends (1981), Karpf and Williams (1984), Baker and his friends (1992), men are injured and died more than women in traffic accidents. However the factors of this difference can not be

determined. Wang and Chou have seen about 3.2 times of deaths of men caused by traffic accidents when compared to woman (Wang, 1997), Lee and his friends explained the large number of death of man could cause from that men travel longer distances and they die more (Li, 1998).

Education Level

In our country education, level increases by each day. The main reason beneath the accidents is disobey of drivers, pedestrians and passenger to rules. Illegal behavior could be caused by ignorance or doing it on purpose. The minimizing of these illegal behaviors will definitely minimizes the number of accidents, injury and death numbers. However this should not be expected so quickly because learning and increase in the sensitivity of people takes time.

In a traffic accident, the most important factor is the uneducated person, or a place where there was no sufficient opportunity for teaching the proper traffic education.

Traffic education is the need of the developing area and should be an obligatory goal of Ministry of Education.

Traffic education should not be teaches just to students in schools; it should be teaches to instructors. Plus, the educations of traffic regulators are very important.

The flaw in the traffic should be overcome not by scientific experiments, but by modifications in the regulations and laws. Traffic can not overcome the chaos it is in. Education and first aid, regulation and construction duties are way before the modern era.

3.11.6. Psychology

Traffic accidents not only show itself as death, injury, and socio-economic loss but also affect the relatives and friends of the one who has died or injured. In a scientific questionnaire done in the 9 countries of Europe with 800 friend or relative of a death and 564 injured people and their relatives and friends; it is shown that these individual go through problems like using psychotropic substances, loss of

family relations, changing jobs because of the physical conditions after the accident, divorce (İşildar, 1998).

The socio-economic harms caused by traffic accidents is related with the loss of productivity of died and injured people, medication costs, recovery of car costs, the cost of harmed goods transported, or carried (lost wallet, torn clothes). In developed countries there is about a loss of 1-2% of national income, according to the assumed calculations in 1997 the cost of traffic accidents to our country was 2 billion YTL, 250 billion dollars to Europe, and 1 quintillion to the whole world (İşildar et al, 1998).

3.11.7. First Aid

It is said that 10% of all deaths in the accidents are caused in the first five minute, 50% of deaths are caused in half hour. Because of this, any minimization of time for reaching the accident area and helping the ones who had the accident has great importance. Researches have shown that proper first aid and emergency services decreased the number of deaths by 20%. There is no suspicion that this fact will also decrease the number of handicapped people (GDH, 2001).

There is an increasing demand for people who are trained in first and emergency aid. Health work high school and universities total graduates of paramedics are 5,000 per year and it is clearly insufficient. Addition to these trainings, the public must be educated under the name “essential life support” by voluntary foundations and associations (GDH, 2001).

3.11.8. Unplanned Urbanization and Substructure

Unplanned Urbanization

Because of an unplanned development which is not unified throughout our country there is a drastic immigration to major cities. Parallel to this fact the city has a tendency to increase its population over its limits. As a result the insufficient transportation substructures become worse. Rapid population increases brings the

usage of unplanned land with itself. While there should be an extended analyze between substructures and unplanned urbanization of an area, there is no such effort, and the urbanization problem still continues.

The 90% of intercity transportation is run on double tracked roads. In this situation some demands about road capacity is aroused. As a result of this insufficiency there is a lack of flow and increasing risk of an accident. The statistics showed that no matter which issue is taken as the bases there is much more death casualties compared with the developed countries.

Substructure

When we say transportation substructure, we mean road, junction, terminal, stop, station, parking lots, indications and signs for the mobile vehicles and facilities related to these indication for any vehicle. When we look at the situation of our country on these facts, we could obviously see that it is unsatisfactory. The road distances are insufficient, plus they are not in convenient physical and geometrical conditions. The main road networks are not able to enable the shortest distance for drivers. The number of radial roads carrying the heavy traffic flow of the city, junction connections and ring roads that will connect these two types to each other is extremely low in number. Also, the number of secondary routes is almost not present.

3.11.9. The Effect of Transporting Business

The effect of transporting business in traffic accidents should be taken seriously. When look at the structure of transportation business we can see that road transportation usage is after railroad transportation usage in Europe. And the problem of transportation business accidents is overcome by this usage. However in our country nearly everything is transported through highways.

In our country 95.02% of passenger transportation is done on highways, 3.4% of passenger transportation is done by railroad, and 0.1% passenger transportation is done through sea. And the percentages of load transportation are as follows, 91.38%

by highways, 5.21% by railroad and 3.24% by sea (SIS, 2003). The developed abundance in ratio to the side of the highway brings the life loss, physical and spiritual losses, air pollution, loss of energy and time, loss of money to country economy and to public.

3.12. Inspection and Security

Inspection

The traffic accidents are a serious threat for the world which requires a strong organization attack to solve the problem. In this attack inspectors and inspections play an important role.

Turkey is in a very bad situation on the issue traffic accidents. This sorrowing fact should not be the destiny of Turkey. Serious steps should be taken to invest money and come up with convenient regulations in order to prevent accidents.

Inspection plays an important role to minimize the accident numbers. It is obvious that if the traffic inspection units are activated important developments will be achieved.

If the road users are prevented to commit crime, there will be an important benefit gained. The assumptions vary on this issue but it is predicted to minimize the cost of all losses by 50% at minimum. There can not be only one precaution preventing the accidents. Also traffic law applications bring in benefits related to cost-benefit relations. In the past, the law related to use vehicle drunk has proven to be very useful on the basis of cost and benefit relation in Sweden. This analyze also covers all of the accident types. Excessive speed, alcohol control and safety belt usage laws have proven to be useful in the cost-benefit relations (Darçın, 2002).

The organization of police forces in EU varies. First, some countries like Belgium, France, Italy and Spain have attached the military officers to help the police officers in traffic. These military police units are organized to be attached to center, and have duties on the same area with other civil policemen, and the organization of civil policemen is different it is has organizational autonomic characteristic. In some other countries, the traffic policemen works isolated from

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other policemen. The reason for this structure is that the police have regional or national duty share. As a result the strategic structure of policemen varies from country to country. For example, in England each police chief works independently in its area, this situation may be organized with central level in other countries.

Basically, these regulations enable a coordinative and transparent structure (Darçın, 2002).

Regulation can be thought as a process in steps. The first step is to set the law. In many countries there are series of laws determining the responsibilities of vehicle users. In some countries, this may be a very general series of rules (ex: highway law), in some other countries traffic rules define specific processes for specific conditions. The specification level of rules plays an important role in the automation probabilities. Because of this, setting convenient laws is an important step. The second step includes the police control of the convenience of general behaviours on roads to laws. If different cases appear, some alternative operations are processed according to the intensity of the case. The driver maybe warned but not reported, or maybe fined and reported, or banned from traffic for an hour and his car taken over or the driver being arrested. Basing on the laws the officer may write the license plate number of a mobile car and report. In the third step of the inspection phase, the recording of the violation is done and reported for legal procedures. Again many different operations may be processed. In some countries speed and parking violations is punished by the stable punishment system. In other countries punishment system point is used. More serious punishments end up in the court, but before that the public prosecutor makes an agreement to be the claimant. In the case of a trial in the court there are many options for the claimant and the defendant. Since these cases take a long time of the prosecutor and the policemen, the prosecutor may classify the folder until he finds strong evidence. As a result police officers often make a warning punishment in these cases (SGD, 2001).

The dissuasiveness of punishments and setting the criminals is only effect according to the specific law sanction. This fact contrasts with the flexibility of the policemen's actions. For example, a policeman may fine a driver or warn him. The

millions of punishment trials have forced the country to find alternative ways to solve the problems. Moreover all these actions are taken to ease the burden over the shoulders of the court, not to increase the affectivity of the laws. In some countries, especially countries speaking German, studies have been focused on the re-education of the drivers rather than punishments. This process has been quite successful on the decrease of punishments related to alcohol usage and valid for other punishments. Punishment point system that is used level by level is used in member countries of European Union, which have increased the dissuasiveness and the authorities of the policemen.

The observations written above are also applied in the laws helping the appliance of punishments. But there are still many varying controls like random breath controls for alcohol. Although this is a known control and approved by many European Countries, this control is not approved as evidence. In some countries speed cameras are used to determine the driver in the car however in some other countries the driver who's registered to own the car is punished no matter who drives the car. Basically these law differences determine the affectivity of the area of the law.

3.12.1. Traffic Inspection Procedures

The control of the convenience of vehicles to traffic, the required equipment and licenses of the vehicle and the driver according to the present law, the properness of the passenger and the driver on the basis of rules and reporting any violation if necessary are the responsibilities (SGD, 1982).

The traffic regulations in Europe focus on the speed limit, alcohol usage, safety belt usage rules (SGD, 2000).

Highway traffic accidents cause loss of thousands of lives, ten thousands of permanent injuries, and trillions of money. To maintain the security there are some changes that may be titled as reform with the law numbered 4199 in the Highway Traffic Law number 2198. The traffic units are reformed according to the law change. With this new establishment designing new projects and carrying them out

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as soon as possible, high levels planning of regulations were set as goals (Darçın, 2002).

In a research carried out related to establishments causing accidents the percentages of the faults are as follows; 31% engineers, 15% strengthening of the foundations, 9% security controls, and 6% education of the drivers. As seen if the regulation and inspections are properly done the accidents will decrease 12% (SGD (Traffic Inspections), 1998).

The controls carried out by traffic policemen may change the behaviors of the drivers if done frequently and properly.

Not always do the users are aware that the traffic control rules are for the security of themselves. This situation makes the traffic controls obligatory.

The purpose of traffic control is to increase the sensitivity of the users to the rules that are set for their own benefits. The main approach manner should show that the purpose of the control is for the security of the driver. The approach manner should be reliable. The increase of the number of controls and control manner should be systematic. Control subjects, should be issues important for traffic security (speed, alcohol). Increasing the control purpose acceptance ratio is important (SGD (Highway Traffic), 1999).

Traffic inspections are done according to the essential rules as follows (Darçın, 2002).

- 1- Mobile Inspection
- 2- Notified Inspection
- 3- Fixed Inspection.

Mobile inspection is the inspection of mobile traffic. The purpose is to determine the driver and the exact violation with exact time and place, and carry out the necessary reports and processes (Darçın, 2002).

In Europe there are two kinds of police methods are used to prevent the speed violations, only one of them is proved to be effective in changing the attitudes and accident numbers. The first one was with the inspection of a one fixed car hiding besides the road, and another unit waiting ahead of the road, the one hiding reports (by measuring the speeds with a device) to the one ahead of the road any violation,

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and that unit stops the car and fines the driver. The mobile inspections are defined as the application of traffic behavior and are done by a car that drivers may or may not notice. These mobile inspections proved to be useless on the decrease of speed violations. At the same time has no effect on traffic behaviors like alcohol usage (SGD, 2000).

According to the researches conducted in Europe, fixed speed controls are beneficial for cost-benefit relation. Automatic speed control is more beneficial for cost-benefit relation. Patrolling units do not have any sign of evidence that they are economically beneficial (SGD (Highway Traffic), 1999).

Some Research Data of European Community is given as below (SGD (Highway Traffic), 1999).

Fixed Speed Control:

As result of 16 researches;

Benefit/ cost= 7 and is very beneficial.

Automatic Speed Control:

As a result of 10 researches

Benefit/Cost=8 and is very beneficial

Mobile Speed Control

In the benefit/cost ratio the cost come out to be more and decided that this was not beneficial. The success of the inspection and its ability to create a specific and general dissuasiveness is an acceptable characteristic of the punishment. General dissuasiveness is directly related to the reliability of appliance of rules, any punishment required etc. in the heads of the drivers. Specific dissuasiveness is related with the experience of the individuals related to control punishment etc. (SGD (Highway Traffic), 1999).

The important essentials of traffic inspection are (SGD (Highway Traffic), 1999).

Before the inspections and through inspections the purpose is to give information. The purpose of this is to give a sense that there is an increase on the

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number of inspections (driver, pedestrian, and passenger). By giving information there maybe a positive effect of on the increase of support by the public, this will affect the traffic security positively.

Improved and successful Police Inspection (application) is based on a good system, better education and information, better motivation, better usage of present information and experience, and strong coordination attached with strong connections. The priority should be given to use the present information before demanding for more personnel and equipment (SGD (Highway Traffic), 1999).

In a research conducted in Holland, the cost is returned as a gain about 200%, this proves that the profits gained from the maintaining the security is 2 times greater than the cost (SGD (Inspection Profits), 1999).

As it is seen from table 4.9 increasing the inspections should not be neglected because they are effective in the increase and decrease of accident number.

Table 3.9. Inspection intensity and changes in accidents (SGD, 2001)

Decreasing the inspections 50%	Reported accidents:+11%
Normal level	No change
Increasing the inspections between 100-300%	Reported accidents:-11%
Increasing the inspections between 300-500%	Reported accidents:-12%
Increasing the inspections between 500-800%	Reported accidents:-19%

Increasing the inspection intensity less than 3 times is said to have no effect on the number of speed violations, accident numbers, determining risk situations. Increasing the inspection intensity between 3 and 5 times is said to decrease the number of speed violations, accident numbers, and increase determining risk situations, decrease the criminal numbers and lowers the number accidents by 10-20%. Increasing the inspection intensity more than 5 times has a decreasing effect on the number of speed violations, accident numbers, and decreasing effect on determining risk situations, and may stop the number of accidents by 20-30% (SGD, 2001).

3.12.2. Technology in Traffic Inspections:

In the last few years it is proven that the usage of automatic police control equipments has positive effect on obeying the traffic rules. In a study in Germany it is found that a speed limit put on the specific part of the road decreases the average speed limits by 30 km/h. By putting an automatic speed control the average speed limit decreased by an additional 20 km/h. The accidents decreased by 91% on that part of the road and the average decrease in the accidents on all of the roads is 56%. However it shouldn't be forgotten that this result is achieved by using speed limit indication plus automatic speed control. By using red light cameras, the red light violations have decreased by 40% in Singapore. The same cameras have decreased the violations by 32% in the state of Australia which is Victoria (SGD, 2001).

A continuing speed inspection study in Norway has shown that there is a 10 km/hr decrease in an area where the speed limit is 80 km/h. These effects have been spotted 2 years later. Crime ratio has lowered from 43% to 14% in an area, and lowered in another area from 35% to 7%, when the information is compared with the time where there was no inspection it seen that there is a 69% decrease. Our study has shown that the positive effect still continues for two months even when the cameras do not work (SGD, 2001).

3.12.3. Lack of Inspection

The essentials of a proper secure and mobile traffic are achieved by traffic management and organization plus traffic control. To give up from one of these essentials will be a big mistake. Because the aimed secure and flowing traffics is only possible with a good traffic control. However in our country traffic policemen deal mostly with the regulation of the traffic order.

Traffic inspection services should be one of the major duties of the traffic policemen; however most of the personnel deals with the escort of some people intercity and in the city which takes most of his time, and results in the lack of services (Çakmak, 2000).

3.12.4. Other Preventions

Lagget gives information about the long term short intense random speed law he has applied in Australia Tasmania in 1998. This strategy needs the positioning of three traffic policemen vehicle units where they can be easily seen on along a 16-20 km road where traffic accidents happen rapidly. The separated parts of the road are separated into smaller parts about 1 km long, each vehicle is set to control randomly for two hours when the traffic accidents happen more. The real application of the law is processed in different areas for each week for a period of two years, and the statistical data is made from the results. The average speed is decreased about 3.6 km/hr. As a result of these applications there is a decrease of 58% in the total number of accidents. The cost-benefit analyze of Lagget has come up with a ratio of 1 to 4 (SGD, 2000).

Bareckett and Beecher have made a large extended study about the principals of learning theory in Texas. There were applications of speed control with fixed radar in randomly chosen 24 roads. The information achieved from these chosen 24 roads is then compared with other 24 roads where there is no speed control. This application is continued for 18 months. After the end of this trial, there is a general decrease of 1.8 km/hr in speeds and 9% in drivers' tendency to reach over the speed limits, and there were decreases on fatal accidents by 15%, accidents including an injured by 9% and material damage by 3%. This study is also covers the motivation of the policemen in charge. Generally there is no close data achieved as a result of the study. In this study the motivation is watched over randomly and the application of the law was more concerned (SGD, 2000).

3.13. Geographic Information System in Transportation

The severe traffic problems in our country add up to a cost of 8 to 9 billion dollars of loss. The number of injured people's loss of work effort and recovery costs is not included (TGNA, 2001). When Turkey is compared with other countries in traffic accident ratios, the result is terrifying. The ratio of accidents in 100 million

vehicles/km is 0.9, 1.1, 1.6 in England, USA, and Germany respectively. This ratio is 20 for Turkey. This ratio has increased more than two times in the last decade of Turkey. When compared with the other countries Turkey has a smaller amount of vehicles in use, but Turkey is one of the worst countries in the death ratios.

The usage of geographical information systems need for traffic security is clear. Geographic Information System (GIS) is a data management system aimed to solve any problem and data analysis related to regions in traffic. This system is composed of a program, technical hardware (computer, GPS equipment etc) and data. GIS provide great advantages on solving problems related to the geographic conditions.

3.13.1. Geographical Information System

One of the most important information that a traffic engineer requires in an analysis of an accident is the geographic condition it has occurred in. Geographic location gives a lot of information for the analysis of the problem. The search of similar or different accidents in the same location has great importance to the security of the traffic. Similar accidents are like the languages of that location. Accident reasons in the accident reports enlighten much information. As a result, the pursuit of accidents according to the location it has occurred is very important. Because of this GIS supported accident analyses is very convenient and accurate for usage in traffic security.

3.13.2. Data Saving and Examination System on GIS Environment

To determine the real reasons of the traffic accidents, traffic engineer should know the place, frequency, intensity and type information. As long as there are no reasons to explain the flow chart of the accidents, there is no possibility of determining the solutions. The integration of GIS and Geographic Place Systems (GPS) will get the missing information of the incomplete accident record (McPherson, 1996).

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It is predicted that the truck traffic will increase by 40% by 2020 in South California. Since 28% truck accidents are in this city, Los Angeles is the place for rapid truck accidents. Economic growing may be long termed if the transportation is secured and on time. A CBS based process model uses the daily traffic and truck traffics to analyze the risk levels according to the accident data of the past (Parentela, 2001).

In a study carried out by Spring and Hummer in 1995 has connected the GIS and the present detailed map of Guildford to show the use of engineering knowledge in the determination of risky regions. The main purpose is to make an example study of how the GIS will operate to solve the special problems. The Accident Record System of North Carolina and the map data of Guildford city is used together. This project has shown the advantages of engineering information for the determination of accident reasons and the benefits and difficulties of GIS for ARS applications.

4. MATERIAL and METHOD**4.1. Material**

Especially, all the data about the traffic accidents happened during 2000-2005 are on national scale taken from the Turkish Institute of Statistics (TIS), the Security General Directorate (SGD), the General Directorate of Highways (GDH), the General Directorate of Meteorology, the General Department of Gendarmerie (GDG), the Redevelopment of Highways and Traffic Security Project (RHTS) Reports, the State Planning Agency (SPA), the Custom Specialization Commission of Transportation Reports, the General Directorate of Basic Health Services of Ministry of Health statistics of traffic accidents and Internet base. Also studies done on the international stage were analyzed and other countries' applications about traffic accidents are run an eye over. Especially in the Gendarmerie region some details and data are not on the internet and they are edited as excel data by analyzing the recorded data in the AS-400 program used by the Traffic Agency Department of General Department of Gendarmerie.

Faults caused traffic accident in the Gendarmerie zones of Turkey in 2000 are given in table 4.1 below. If the pedestrian fault is added to the human fault, result is catastrophic and 96.66 % of the accidents are caused by human error. The main human error is driver fault.

Table 4.1. Data of the Accidents in the Gendarmerie Zone in the year 2000 (GGC (TBD), 2005)

FAULTS	NUMBER	RATIO (%)
DRIVER FAULT	41,451	93.89
PEDESTRIAN FAULT	658	1.49
PASSENGER FAULT	564	1.28
VEHICLE FAULT	572	1.30
ROAD FAULT	912	2.07

Table 4.2. Data of the Accidents in the Gendarmerie Zone in Total (2000-2005) (GGC (TBD), 2005)

Years	Number of Mortal Accident	Number of Injured Accident	Number of Material Damage Accident	Total Accident Number	Number of Drivers Punished
2000	1,268	9,434	23,577	34,279	367,033
2001	1,175	10,143	22,235	33,553	341,769
2002	1,166	9,938	21,751	32,855	325,322
2003	966	10,036	22,363	33,365	308,631
2004	1,083	12,332	29,118	42,533	353,686
2005	1,059	14,020	35,685	50,764	347,874

By the data provided in the traffic statistics made by General Gendarmerie Commandership Head of Traffic Department, a total number of 34,279 accidents occurred in year 2000 in which 1,268 of it included death, 9,434 of it included injury, 23,577 of it included substantial damage. As a result of these accidents 1,625 people died, 20,529 people got injured; total cost of substantial damage was 31,238,699 YTL. Accident number is increased to 50,764 in 2005 and caused 1,310 deaths, 30,109 injuries and substantial damage of 126,876,873 YTL.

The table 4.3 provides the number of accidents, deaths, injuries and substantial damages in the Gendarmerie zone according to the years. If we consider that the people died in the hospitals are not included in this number of deaths, we could see the tragedy of our traffic system much more clearly.

Table 4.3. Gendarmerie Zone Accident Data (GGC (TBD), 2005)

Years	Accident Number	Death Number	Injured Number	Material Damage (YTL)
2000	34,279	1,625	20,529	31,238,699
2001	33,553	1,432	21,705	41,436,103
2002	32,855	1,269	21,820	50,977,480
2003	33,365	1,148	21,944	66,873,083
2004	42,533	1,346	26,548	95,729,840
2005	50,764	1,310	30,109	126,876,873

Table 4.4. Data of the Accidents in the Gendarmerie Zone in 2005 (GGC (TBD), 2005)

FAULTS	NUMBER	RATIO (%)
DRIVER FAULT	65,006	97.24
PEDESTRIAN FAULT	761	1.14
PASSENGER FAULT	346	0.52
VEHICLE FAULT	339	0.51
ROAD FAULT	401	0.60

Table 4.5. Percentage of Gendarmerie and Police Areas in Total (%)

	RATIO OF GENDARMERIE REGION IN TOTAL (%)					
YEARS	2000	2001	2002	2003	2004	2005
ACCIDENT	6.85	7.57	7.47	7.32	7.91	8.17
DEAD	29.20	32.65	30.44	28.95	30.40	28.95
INJURED	15.05	18.68	18.80	18.71	19.49	19.54
MATERIAL DAMAGE (YTL)	7.54	13.72	12.52	12.49	12.80	12.61
	RATIO OF POLICE REGION IN TOTAL (%)					
YEARS	2000	2001	2002	2003	2004	2005
ACCIDENT	93.15	92.43	92.53	92.68	92.09	91.83
DEAD	70.80	67.35	69.56	71.05	69.60	71.05
INJURED	84.95	81.32	81.20	81.29	80.51	80.46
MATERIAL DAMAGE (YTL)	92.46	86.28	87.48	87.51	87.20	87.39

Table 4.6. Fault Ratio of Occurred Accident According to Years (<http://www.kgm.gov.tr>)

YEARS	DRIVERS (%)	PEDESTRIAN (%)	PASSENGER (%)	VEHICLE (%)	ROAD (%)
2000	96.21	2.49	0.17	0.46	0.67
2001	96.82	2.38	0.16	0.32	0.32
2002	96.99	2.48	0.12	0.25	0.16
2003*	97.29	2.16	0.13	0.25	0.17
2004*	97.46	2.08	0.10	0.21	0.15

(*): These Information's are Arranged According to Accidents Happened in Security General Directorate and Gendarmerie Region.

Table 4.7. Distribution of Operation Which Pertain To Gendarmerie Traffic Teams According to Cities in Year 2005 (GGC (TBD), 2005)

LICENSE PLATE NUMBER		CITY NAME		MONTHLY ACTIVITIES OF GENDARMERIE TRAFFIC TEAMS										DRIVING LICENCES WHICH ARE TAKEN BACK WITH GENDARMERIE TRAFFIC TEAMS																
				GIVEN PUNISHMENT PEDESTRIANS		NUMBER OF DRIVERS WHICH ARE GIVEN PUNISHMENT			AMOUNT OF PUNISHMENT (X1000 TL)				NUMBER OF DRIVERS WHICH ARE SENTED TO LAW COURT		NUMBER OF VEHICLES WHICH ARE FORBIDDEN FROM TRAFFIC		FILLED 100 PUNISHMENT PUANS		USING VEHICLE AS ALCOHOLIC		EXCESSIVE SPEED		HEALTH CONDITION		CONDEMNED ACCORDING TO 41/E CLAUSE		BYE LAW COURT DECISION		TOTAL	
				NUMBER	AMOUNT OF PUNISHMENT (X1000TL)	CASH	NOTIFICATION	TOTAL	CASH	NOTIFICATION	TOTAL	CASH	NOTIFICATION	TOTAL	AMOUNT OF PUNISHMENT (X1000 TL)	TOTAL	NUMBER OF DRIVERS WHICH ARE SENTED TO LAW COURT	NUMBER OF VEHICLES WHICH ARE FORBIDDEN FROM TRAFFIC	FILLED 100 PUNISHMENT PUANS	USING VEHICLE AS ALCOHOLIC	EXCESSIVE SPEED	HEALTH CONDITION	CONDEMNED ACCORDING TO 41/E CLAUSE	BYE LAW COURT DECISION						
01	ADANA	3	183	32	6718	6750	2.433	641.355	643.788	404	1.115	13	171	1	0	0	0	5	190											
02	ADYAMAN	1	0	0	1290	1290	0	92.779	92.779	91	228	0	5	0	0	0	0	0	5											
03	AFYON	2	90	27	5064	5091	2.345	519.800	522.145	431	768	1	84	17	1	0	0	13	116											
04	AĞRI	0	0	0	958	958	0	89.772	89.772	93	129	0	1	0	0	0	0	0	1											
05	AMASYA	0	0	2	1110	1112	138	91.985	92.123	64	283	0	23	0	0	0	0	0	23											
06	ANKARA	0	0	0	30877	30877	0	2.632.919	2.632.919	527	1.546	0	450	0	0	0	0	0	450											
07	ANTALYA	4	324	242	6855	7097	14.728	788.854	803.582	1.370	1.149	3	222	234	1	0	3	463												
08	ARTVIN	1	188	2	663	665	224	160.128	160.352	30	107	0	20	0	0	0	0	20												
09	AYDIN	3	421	0	6713	6713	0	1.050.378	1.050.378	840	1.731	0	434	0	1	0	2	437												
10	BALIKESİR	1	45	2	3635	3637	758	432.215	432.973	496	524	0	292	0	0	0	0	292												
11	BİLECİK	1	45	0	1182	1182	0	151.851	151.851	129	348	0	20	0	0	0	0	20												
12	BİNGÖL	0	0	0	59	59	0	4.364	4.364	5	10	0	0	0	0	0	0	0												
13	BITLİS	1	92	0	788	788	0	47.682	47.682	32	121	0	0	0	0	0	0	0												
14	BOLU	2	92	1	4384	4385	92	1.062.848	1.062.940	202	974	0	174	1	1	0	0	176												
15	BURDUR	0	0	0	3698	3698	0	541.313	541.313	353	1.109	1	234	0	0	0	0	235												
16	BURSA	1	45	1	13715	13716	92	2.036.072	2.036.164	909	2.410	1	771	186	3	2	2	965												
17	ÇANAKKALE	2	90	13	3470	3483	1.250	365.416	366.666	461	493	0	114	8	0	0	0	122												
18	ÇANKIRI	1	45	3	1402	1405	275	133.518	133.793	76	378	1	11	0	0	0	0	12												
19	ÇORUM	4	466	6	2663	2669	413	223.111	223.524	170	485	0	26	0	0	0	0	26												
20	DENİZLİ	2	234	2	3504	3506	90	346.224	346.314	369	1.219	0	114	5	0	0	1	120												
21	DIYARBAKIR	0	0	0	2598	2598	0	349.735	349.735	130	455	0	3	0	0	0	0	3												
22	EDİRNE	1	45	0	1315	1315	0	179.734	179.734	124	190	0	81	0	0	0	0	81												
23	ELAZIĞ	1	45	8	1698	1706	549	124.459	125.008	69	220	0	10	0	0	0	0	10												
24	ERZİNCAN	4	183	1	1022	1023	37	90.005	90.042	59	200	0	30	0	0	0	0	30												
25	ERZURUM	1	46	0	2181	2181	0	316.530	316.530	152	537	0	16	0	0	0	0	16												
26	ESKİŞEHİR	1	188	2	4525	4527	90	476.794	476.884	223	1.121	0	326	0	0	0	0	326												
27	G.ANTEP	0	0	17	1894	1911	1.091	181.950	183.041	221	394	0	22	1	0	0	0	22												

4. MATERIAL and METHOD

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LICENSE PLATE NUMBER		CITY NAME		MONTHLY ACTIVITIES OF GENDARMERIE TRAFFIC TEAMS												DRIVING LICENCES WHICH ARE TAKEN BACK WITH GENDARMERIE TRAFFIC TEAMS											
				GIVEN PUNISHMENT PEDESTRIANS		NUMBER OF DRIVERS WHICH ARE GIVEN PUNISHMENT				AMOUNT OF PUNISHMENT (X1000 TL)				NUMBER OF DRIVERS WHICH ARE SENT TO LAW COURT												NUMBER OF VEHICLES WHICH ARE FORBIDDEN FROM TRAFFIC	
				NUMBER	AMOUNT OF PUNISHMENT (X1000TL)	CASH	NOTIFICATION	TOTAL	CASH	NOTIFICATION	TOTAL	CASH	NOTIFICATION	TOTAL	NUMBER OF DRIVERS WHICH ARE SENT TO LAW COURT											NUMBER OF VEHICLES WHICH ARE FORBIDDEN FROM TRAFFIC	
28		GIRESUN	2	376	0	1056	1056	0	92.181	92.181	50	221	0	20	0	0	0	0	20								
29		GÜMÜŞHANE	0	0	3	1170	1173	182	88.156	88.338	34	172	0	9	0	1	0	0	10								
30		HAKKARİ	0	0	0	524	524	0	34.328	34.328	26	85	0	0	0	0	0	0	0								
31		HATAY	4	229	103	4421	4524	8.740	486.494	495.234	351	783	0	114	73	0	0	0	187								
32		İSPARTA	4	609	37	3982	4019	3.922	628.547	632.469	310	553	0	85	1	0	0	1	87								
33		İÇEL	6	270	0	8251	8251	0	963.519	963.519	674	1.933	1	374	4	1	0	0	380								
34		İSTANBUL	0	0	95	47854	47949	4.734	4.528.327	4.533.061	1.674	5.815	1	917	34	1	0	3	956								
35		İZMİR	17	2483	20	37926	37946	2.094	6.638.350	6.638.444	1.458	6.442	12	1.343	618	3	0	1	1977								
36		KARS	0	0	0	1739	1739	0	135.901	135.901	86	349	0	4	0	0	0	0	4								
37		KASTAMONU	0	0	18	3080	3098	1.999	462.903	464.902	193	305	0	45	0	0	0	1	46								
38		KAYSERİ	4	418	5	4772	4777	319	532.526	532.845	239	486	5	113	0	0	0	1	119								
39		KIRKLARELİ	2	90	4	2453	2457	273	563.559	563.832	271	778	0	186	0	0	0	0	186								
40		KIRŞEHİR	12	632	0	2597	2597	0	307.899	307.899	168	656	0	138	0	1	0	0	139								
41		KOCAELİ	1	188	3	9829	9832	182	2.821.003	2.821.185	440	1.890	0	348	78	1	0	0	427								
42		KONYA	1	45	31	8088	8119	2.444	1.536.687	1.539.131	725	2.090	2	123	36	2	0	2	165								
43		KÜTAHYA	2	90	31	2970	3001	1.685	335.961	337.646	444	851	0	92	20	0	0	0	112								
44		MALATYA	0	0	0	1975	1975	0	174.198	174.198	174	532	0	33	5	2	0	0	40								
45		MANİSA	0	0	0	5145	5145	0	508.490	508.490	820	910	1	269	17	0	0	0	287								
46		K.MARAŞ	1	193	9	1746	1755	879	153.284	154.163	170	378	1	15	0	0	0	0	16								
47		MARDİN	0	0	2	3256	3258	916	468.334	469.250	58	411	0	1	2	0	0	0	3								
48		MUĞLA	8	836	35	10951	10986	2.947	1.083.275	1.086.222	954	1.611	0	765	0	0	0	0	765								
49		MUŞ	0	0	2	2067	2069	184	269.637	269.821	107	383	0	6	0	0	0	0	6								
50		NEVŞEHİR	0	0	21	2511	2532	2.175	309.853	312.028	167	277	0	86	0	0	0	0	86								
51		NİĞDE	1	46	1	942	943	45	99.990	100.035	81	141	0	36	0	0	0	1	37								
52		ORDU	4	180	0	2781	2781	0	218.439	218.439	203	467	0	73	3	1	0	0	77								
53		RİZE	0	0	2	1660	1662	233	130.948	131.181	77	232	0	21	1	0	0	0	22								
54		SAKARYA	3	135	7	9381	9388	937	1.250.014	1.250.951	487	1.133	0	228	0	0	0	0	228								
55		SAMSUN	8	1121	0	3001	3001	0	320.328	320.328	217	990	0	54	0	0	0	0	54								

4. MATERIAL and METHOD

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LICENSE PLATE NUMBER		CITY NAME	MONTHLY ACTIVITIES OF GENDARMERIE TRAFFIC TEAMS										DRIVING LICENSES WHICH ARE TAKEN BACK WITH GENDARMERIE TRAFFIC TEAMS							
			GIVEN PUNISHMENT PEDESTRIANS		NUMBER OF DRIVERS WHICH ARE GIVEN PUNISHMENT			AMOUNT OF PUNISHMENT (X1000 TL)			NUMBER OF DRIVERS WHICH ARE SENT TO LAW COURT		NUMBER OF VEHICLES WHICH ARE FORBIDDEN FROM TRAFFIC	FILLED 100 PUNISHMENT PUANS	USING VEHICLE AS ALCOHOLIC	EXCESSIVE SPEED	HEALTH CONDITION	CONDEMNED ACCORDING TO 41/E CLAUSE	BYE LAW COURT DECISION	TOTAL
			NUMBER	AMOUNT OF PUNISHMENT (X1000TL)	CASH	NOTIFICATION	TOTAL	CASH	NOTIFICATION	TOTAL										
56	SIİRT	0	0	0	1099	1099	0	159.568	159.568	60	234	0	0	0	0	0	0	0	0	0
57	SINOP	19	855	0	1257	1257	0	84.058	84.058	97	283	0	18	0	0	0	0	0	18	0
58	SIVAS	0	0	0	920	920	0	91.253	91.253	83	168	0	19	8	0	0	0	0	27	0
59	TEKİRDAĞ	0	0	2	3282	3284	90	569.100	569.190	292	442	0	298	0	0	0	2	0	300	0
60	TOKAT	3	135	2	910	912	90	117.996	118.086	129	175	0	30	0	2	0	0	0	32	0
61	TRABZON	6	985	14	2178	2192	1.059	150.270	151.329	133	254	0	38	0	0	0	0	0	38	0
62	TUNCELİ	0	0	0	947	947	0	155.393	155.393	38	234	0	15	0	0	0	0	0	15	0
63	ŞURFA	2	90	0	2673	2673	0	188.893	188.893	436	506	0	8	0	0	0	0	0	8	0
64	UŞAK	0	0	3	1294	1297	182	115.547	115.729	156	292	0	39	0	0	0	0	0	39	0
65	VAN	0	0	0	11795	11795	0	994.671	994.671	291	2.599	0	3	3	0	0	0	0	6	0
66	YOZGAT	2	376	0	1725	1725	0	172.203	172.203	227	292	0	53	12	0	0	0	0	65	0
67	ZONGULDAK	0	0	0	1614	1614	0	196.909	196.909	146	414	0	130	0	1	0	0	3	134	0
68	AKSARAY	1	45	19	800	819	1.141	80.007	81.148	94	143	0	31	0	2	0	0	0	33	0
69	BAYBURT	0	0	0	443	443	0	56.008	56.008	41	180	0	1	0	0	0	0	0	1	0
70	KARAMAN	1	45	0	350	350	0	63.008	63.008	79	92	0	24	0	0	0	0	0	24	0
71	KIRIKKALE	0	0	3	1163	1166	230	255.333	255.563	74	359	0	40	0	0	0	0	0	40	0
72	BATMAN	3	135	21	1061	1082	1.491	160.072	161.563	43	130	0	1	0	0	0	0	0	1	0
73	ŞIRNAK	0	0	0	1728	1728	0	131.836	131.836	29	298	0	1	0	0	0	0	0	1	0
74	BARTIN	1	45	8	1706	1714	544	159.364	159.908	96	303	0	49	53	1	0	0	0	103	0
75	ARDAHAN	0	0	0	633	633	0	86.971	86.971	58	189	0	25	8	0	0	0	0	33	0
76	İĞDIR	0	0	1	1034	1035	45	142.956	143.001	45	240	0	0	5	0	0	0	0	5	0
77	YALOVA	0	0	19	1403	1422	1.568	169.870	171.438	64	266	0	29	0	0	0	0	0	29	0
78	KARABÜK	0	0	0	759	759	0	95.717	95.717	40	115	0	31	0	0	0	0	0	31	0
79	KİLİS	3	135	0	423	423	0	36.320	36.320	43	105	0	1	0	0	0	0	1	2	0
80	OSMANIYE	0	0	3	1189	1192	182	101.235	101.417	109	142	6	14	0	0	0	0	0	20	0
81	DÜZCE	2	90	0	4494	4494	0	544.835	544.835	302	334	0	91	7	0	0	0	1	99	0
TOTAL		160	13.744	885	346.989	347.874	66.117	43.352.315	43.418.432	21.893	57.907	49	10.141	1.441	26	2	43		11.702	0

Table 4.8. Traffic Accidents in Gendarmerie Traffic Commitment Region in Year 2005 (GGC (TBD), 2005)

LICENSE PLATE NUMBER	CITY NAME	TRAFFIC ACCIDENTS IN GENDARMERIE TRAFFIC COMMITMENT REGION WHICH INTERFERES BY GENDARMERIE TRAFFIC TEAMS							ELEMENTS WHICH CAUSE TRAF ACCIDENT IN GENDARMERIE TRA REGION				
		TYPE OF ACCIDENT				DEAD NUMBER	INJURED NUMBER	MATERIAL DAMAGE (x 1000 TL)	DRIVER COURSE	PEDESTRIAN COURSE	PASSENGER COURSE	VEHICLE COURSE	WAY COURSE
		DEAD	INJURED	MATERIAL DAMAGE	TOTAL								
01	ADANA	41	500	623	1164	55	993	2.953.021	1.483	70	25	18	17
02	ADIYAMAN	8	89	49	146	9	273	351.950	157	0	3	2	3
03	AFYON	32	300	297	629	41	715	2.343.307	880	22	15	12	11
04	AĞRI	5	21	27	53	5	103	335.400	56	1	0	1	0
05	AMASYA	7	51	73	131	10	122	323.080	179	0	0	5	0
06	ANKARA	33	758	3.719	4510	46	1.586	9.916.055	5.550	85	29	21	37
07	ANTALYA	41	692	1.146	1879	46	1.191	4.636.140	2.353	28	26	12	19
08	ARTVİN	4	73	92	169	4	178	375.251	277	0	1	1	1
09	AYDIN	23	313	280	616	28	679	1.701.745	873	9	2	1	6
10	BALIKESİR	22	343	335	700	26	698	1.912.930	948	12	6	7	4
11	BİLECİK	4	71	97	172	4	155	455.551	236	3	0	1	0
12	BİNGÖL	0	8	16	24	0	26	51.100	30	0	0	0	0
13	BİTLİS	6	25	29	60	7	110	291.070	71	0	0	0	0
14	BOLU	14	162	373	549	15	358	1.712.511	735	8	7	6	9
15	BURDUR	20	141	186	347	25	315	1.185.545	391	2	0	1	5
16	BURSA	26	551	2.337	2914	26	1.011	6.316.960	3.358	45	17	14	16
17	ÇANAKKALE	11	177	97	285	12	324	809.570	423	6	11	7	3
18	ÇANKIRI	10	72	66	148	14	204	379.670	174	0	0	2	0
19	ÇORUM	16	164	144	324	16	340	764.400	333	4	7	5	6
20	DENİZLİ	29	257	167	453	34	518	1.326.840	587	14	5	2	0
21	DIYARBAKIR	21	98	103	222	28	296	868.000	305	8	1	5	5
22	EDİRNE	6	114	156	276	7	242	918.298	447	5	4	0	0
23	ELAZIĞ	2	94	93	189	3	217	610.790	241	0	0	2	0
24	ERZİNCAN	8	59	78	145	8	112	350.680	174	1	2	1	0
25	ERZURUM	17	96	156	269	33	322	927.980	304	3	6	5	17
26	ESKİŞEHİR	19	198	351	568	26	454	2.051.040	752	1	1	3	1
27	GAZİANTEP	27	219	270	516	31	505	1.553.512	601	6	2	8	4
28	GİRESUN	10	119	171	300	10	271	808.690	364	3	3	3	4
29	GÜMÜŞHANE	5	50	63	118	6	109	370.200	151	1	2	1	3
30	HAKKARİ	3	19	13	35	3	90	118.760	51	1	0	1	0
31	HATAY	16	219	283	518	17	443	1.267.951	633	12	3	0	2
32	ISPARTA	8	139	101	248	14	303	628.717	378	7	4	2	4
33	MERSİN	23	265	377	665	35	575	1.817.845	816	18	0	2	0
34	İSTANBUL	46	1.200	12.895	14141	52	2.115	31.731.813	18.029	123	30	29	44
35	İZMİR	44	571	1.159	1774	53	1.090	3.550.650	2.416	35	10	18	10
36	KARS	8	41	66	115	16	92	411.790	156	0	8	6	1
37	KASTAMONU	18	110	86	214	21	323	641.700	258	13	0	0	0
38	KAYSERİ	16	316	568	900	25	709	2.332.350	1.228	29	7	11	6
39	KIRKLARELİ	4	75	117	196	8	144	565.180	306	5	0	0	3
40	KIRŞEHİR	4	44	22	70	4	101	222.450	84	4	1	1	2

LICENSE PLATE NUMBER	CITY NAME	TRAFFIC ACCIDENTS IN GENDARMERIE TRAFFIC COMMITMENT REGION WHICH INTERFERES BY GENDARMERIE TRAFFIC TEAMS						ELEMENTS WHICH CAUSE TRAF ACCIDENT IN GENDARMERIE TRA REGION					
		TYPE OF ACCIDENT				DEAD NUMBER	INJURED NUMBER	MATERIAL DEAMGE (x 1000 TL)	DRIVER COURSE	PEDESTRIAN COURSE	PASSENGER COURSE	VEHICLE COURSE	WAY COURSE
		DEAD	INJURED	MATERIAL DEAMGE	TOTAL								
41	KOCAELI	11	291	1.329	1631	11	604	4.090.430	2.098	19	9	10	14
42	KONYA	26	338	264	628	34	767	1.671.932	727	10	5	14	16
43	KÜTAHYA	19	196	164	379	23	469	979.390	574	10	10	5	3
44	MALATYA	7	50	86	143	10	124	502.850	185	0	1	1	2
45	MANISA	35	351	362	748	42	766	2.501.890	801	2	4	6	11
46	K.MARAŞ	12	141	135	288	17	344	745.746	332	6	4	6	4
47	MARDİN	8	84	87	179	11	194	580.550	209	9	0	2	0
48	MUĞLA	23	568	1.023	1614	27	961	3.666.736	2.074	20	9	16	17
49	MUŞ	2	54	29	85	2	127	384.200	114	2	1	5	1
50	NEVŞEHİR	8	95	72	175	10	220	515.905	259	2	1	3	1
51	NİĞDE	7	91	68	166	8	214	552.250	229	10	7	5	2
52	ORDU	18	197	362	577	21	514	1.628.310	895	7	1	2	1
53	RİZE	6	95	123	224	8	185	722.020	297	3	4	0	2
54	SAKARYA	16	305	816	1137	21	657	2.989.835	1.569	7	6	5	6
55	SAMSUN	19	185	285	489	23	422	867.160	718	0	3	3	2
56	SIİRT	1	28	24	53	1	95	208.750	56	2	0	0	3
57	SINOP	6	71	60	137	6	128	391.035	187	4	0	0	0
58	SIVAS	14	132	113	259	16	349	767.750	369	1	5	5	17
59	TEKİRDAĞ	12	160	379	551	12	312	1.513.500	638	1	4	3	18
60	TOKAT	10	98	75	183	11	226	501.604	225	5	11	1	1
61	TRABZON	16	176	455	647	19	409	1.491.990	853	3	1	4	3
62	TUNCELI	3	19	15	37	3	86	121.910	44	0	0	0	0
63	Ş.URFA	9	132	76	217	12	388	657.220	270	4	1	5	2
64	UŞAK	12	96	98	206	12	216	572.344	247	1	4	0	0
65	VAN	8	33	31	72	9	92	345.150	87	0	0	0	0
66	YOZGAT	15	141	90	246	17	364	706.300	314	3	1	1	0
67	ZONGULDAK	12	172	383	567	13	436	1.588.930	688	10	2	2	6
68	AKSARAY	8	88	72	168	11	204	370.490	230	1	1	1	1
69	BAYBURT	2	31	36	69	5	74	236.850	93	0	0	1	0
70	KARAMAN	7	46	29	82	8	109	186.395	114	1	0	1	0
71	KIRIKKALE	5	72	74	151	6	202	383.970	207	2	0	5	5
72	BATMAN	2	57	60	119	2	148	361.700	141	0	1	4	5
73	ŞİRNAK	6	54	68	128	6	118	573.600	138	7	1	2	2
74	BARTIN	8	96	140	244	9	208	510.600	372	6	2	1	3
75	ARDAHAN	4	45	47	96	5	109	267.900	133	1	1	0	6
76	İĞDIR	2	15	6	23	3	34	38.000	28	4	1	2	1
77	YALOVA	3	63	275	341	3	115	681.723	361	5	1	1	1
78	KARABÜK	5	58	114	177	8	124	603.051	249	0	1	0	0
79	KİLİS	2	14	7	23	3	56	44.750	39	0	0	0	0
80	OSMANİYE	6	107	68	181	6	214	423.590	240	2	1	1	0
81	DÜZCE	7	161	404	572	13	313	1.038.075	814	7	4	0	2
TOTAL		1059	14020	35685	50764	1310	30109	126.876.873	65006	761	346	339	401

Table 4.9. Monthly Activities of Gendarmerie Traffic Teams in Year 2005 (GGC (TBD), 2005)

SERIES NUMBER	MONTH NAME	MONTHLY OPERATIONS OF GENDARMERIE TRAFFIC TEAMS										DRIVING LICENCES WHICH ARE TAKEN BACK WITH GENDARMERIE TRAFFIC TEAMS						
		GIVEN PUNISHMENT PEDESTRIANS		NUMBER OF DRIVERS WHICH ARE GIVEN PUNISHMENT			AMOUNT OF PUNISHMENT (X1000 TL)			NUMBER OF DRIVERS WHICH ARE SENT TO LAW COURT	NUMBER OF VEHICLES WHICH ARE FORBIDDEN FROM TRAFFIC	FILLED 100 PUNISHMENT PUANS	USING VEHICLE AS ALCOHOLIC	EXCESSIVE SPEED	HEALTH CONDITION	CONDEMNED ACCORDING TO 41/E CLAUSE	BYE LAW COURT DECISION	TOTAL
		NUMBER	AMOUNT OF PUNISHMENT (X1000TL)	PEŞİN	NOTIFICATION	TOTAL	CASH	NOTIFICATION	TOTAL									
1	JANUARY	12	552	65	22.361	22.426	4.247	2.406.588	2.410.835	1.062	2.802	0	734	136	1	0	2	873
2	FEBRUARY	2	92	34	23.184	23.218	2.736	2.968.111	2.970.847	1.131	3.352	6	648	215	2	0	9	880
3	MARCH	3	280	54	29.743	29.797	4.264	3.339.469	3.343.733	1.461	5.510	5	848	101	4	0	4	962
4	APRIL	6	415	52	29.111	29.163	4.111	3.746.446	3.750.557	1.678	5.499	2	1.069	207	3	0	5	1.286
5	MAY	13	1.107	84	25.858	25.942	5.032	3.196.446	3.201.478	1.674	4.654	1	1.103	95	4	1	2	1.206
6	JUNE	22	2.757	68	25.653	25.721	4.233	3.345.375	3.349.608	1.693	4.373	0	665	100	3	0	5	773
7	JULY	17	1.617	122	28.904	29.026	10.120	3.460.022	3.470.142	2.063	4.404	19	1.000	102	2	0	4	1.127
8	AUGUST	31	2.300	169	28.916	29.085	13.118	3.522.462	3.535.580	2.442	4.655	1	1.030	44	0	1	1	1.077
9	SEPTEMBER	22	2.134	70	35.253	35.323	5.229	4.434.750	4.439.979	2.780	6.063	6	959	73	1	0	1	1.040
10	OCTOBER	9	834	66	36.121	36.187	5.175	4.722.697	4.727.872	2.193	6.414	1	294	85	2	0	3	385
11	NOVEMBER	15	1.294	43	31.226	31.269	4.019	4.060.517	4.064.536	1.911	5.025	6	792	23	2	0	5	828
12	DECEMBER	8	362	58	30.659	30.717	3.833	4.149.432	4.153.265	1.805	5.156	2	999	260	2	0	2	1.265
	TOTAL	160	13.744	885	346.989	347.874	66.117	43.352.315	43.418.432	21.893	57.907	49	10.141	1.441	26	2	43	11.702

Table 4.10. Traffic Accidents in Gendarmerie Traffic Commitment Region in Year 2005 (GGC (TBD), 2005)

SERIES NAME	TRAFFIC ACCIDENTS IN GENDARMERIE TRAFFIC COMMITMET REGION WHICH INTERFERES BY GENDARMERIE TRAFFIC TEAMS										ELEMENTS WHICH CAUSE TRAFFIC ACCIDENT IN GENDARMERIE TRAFFIC REGION				
	MONTH NAME	TYPE OF ACCIDENT				DEAD NUMBER	INJURED NUMBER	MATERIAL DAMAGE (x 1000 TL)	DRIVER COURSE	PEDESTRIAN COURSE	PASSENGER COURSE	VEHICLE COURSE	WAY COURSE	TOTAL	
		DEAD	INJURED	MATERIAL DAMAGE	TOTAL										
01	JANUARY	56	875	2.737	3.668	79	1.899	8.353.245	4.806	51	23	28	25	4.933	
02	FEBRUARY	42	622	2.234	2.898	56	1.227	6.443.382	3.631	50	19	21	23	3.744	
03	MARCH	62	734	2.349	3.145	69	1.589	7.043.060	3.882	47	14	22	29	3.994	
04	APRIL	58	896	2.427	3.381	85	1.881	7.947.863	4.197	49	23	25	32	4.326	
05	MAY	79	1.097	2.724	3.900	94	2.361	9.883.590	4.855	58	16	15	33	4.977	
06	JUNE	95	1.265	2.757	4.117	109	2.602	10.129.938	5.771	57	26	25	30	5.909	
07	JULY	144	1.775	3.308	5.227	175	3.954	12.671.697	6.580	99	41	50	54	6.824	
08	AUGUST	141	1.793	3.454	5.388	166	4.014	14.253.443	6.870	86	38	36	42	7.072	
10	SEPTEMBER	130	1.432	2.890	4.452	164	3.180	12.242.568	5.683	70	38	32	35	5.858	
09	OCTOBER	96	1.276	3.328	4.700	112	2.562	12.416.251	6.033	71	43	21	40	6.208	
11	NOVEMBER	87	1.194	3.562	4.843	118	2.643	12.323.284	6.175	67	35	32	30	6.339	
12	DECEMBER	69	1.061	3.915	5.045	83	2.197	13.168.552	6.523	56	30	32	28	6.669	
TOTAL		1.059	14.020	35.685	50.764	1.310	30.109	126.876.873	65.006	761	346	339	401	66.853	
RATIO		%2,09	%27,62	%70,29					%97,24	%1,14	%0,52	%0,51	%0,60		

Table 4.11. Percentages of Motorized Vehicle, Population and Accident Numbers
(<http://www.kgm.gov.tr>, 2005)

YEARS	MOTORIZED VEHICLE NUMBER	RISE %	POPULATION	RISE %	DRIVING LICENCES NUMBERS	RISE %	ACCIDENT NUMBER	RISE %
1994	5,606,712	6,35	60,637,000	1,85	8,794,843	7,74	233,803	11,96
1995	5,922,859	5,34	61,763,000	1,82	9,388,630	6,75	279,663	19,61
1996	6,305,707	6,07	62,909,000	1,82	10,242,628	9,10	344,641	23,23
1997	6,863,462	8,13	64,064,000	1,80	11,297,235	10,30	387,533	12,44
1998	7,371,241	6,89	65,215,000	1,76	12,277,101	8,67	440,149	13,58
1999	7,758,511	4,99	66,350,000	1,71	13,151,950	7,13	438,338	-0,41
2000*	8,320,449	6,75	67,420,000	1,59	14,109,116	7,28	500,663	12,45
2001*	8,521,956	2,36	68,365,000	1,38	14,767,116	4,67	442,960	-13,03
2002*	8,655,170	1,54	69,302,000	1,35	15,285,187	3,51	439,958	-0,68
2003*	8,903,843	2,79	70,231,000	1,32	15,787,933	3,29	455,667	3,45
2004*	10,236,358	13,02	71,152,000	1,29	16,468,317	4,31	537,384	15,21

Source: State Institute of Statistics, Motorized Vehicle Statistics, July (2005)

(*): These Informations Are Arranged According to Occurred Accidents in Security General Directorate and Gendarmerie Region.

Table 4.12. Accident number, Dead number and Injured number at Million Vehicles
x Km. (<http://www.kgm.gov.tr>)

YEARS	TOTAL VEHICLES X KM (MILLION)	ACCIDENT	DEAD	INJURED
2000	56,151	172	7	115
2001	52,631	151	6	102
2002	51,664	149	6	104
2003	52,349	157	6	111
2004	57,767	175	6	119

(*): These Informations Are Arranged According to Occurred Accidents in Security General Directorate and Gendarmerie Region

Table 4.13. Ratio of Automobiles in Some Country, 2003 (IRTAD, 2005)

COUNTRY	AUTOMOBILE (x1000)	TOTAL (x1000)	AUTOMOBILE RATIO %
AUSTRIA	3,987	5,114	77.96
BELGIUM	4,821	5,980	80.62
GREECE	3,195	5,061	63.13
CZECH REPUBLIC	3,647	4,490	81.22
DENMARK	1,888	2,502	75.46
FINLAND	2,195	2,657	82.61
FRANCE	29,160	36,198	80.56
NETHERLAND	6,855	8,387	81.73
ENGLAND	26,953	31,950	84.36
IRELAND	1,507	1,937	77.80
SPAIN	18,688	25,170	74.25
SWEDEN	4,045	4,998	80.93
SWEDZERLAND	3,754	4,888	76.80
USA	131,072	230,788	56.79
HUNGARY	2,630	3,141	83.73
NORWAY	1,900	2,752	69.04
POLOND	11,244	15,899	70.72
PORTUGAL	3,683	5,197	70.87
JAPAN	54,541	80,970	67.36
TURKEY *	5,401	10,236	52.76

(*): Data belongs to 2004

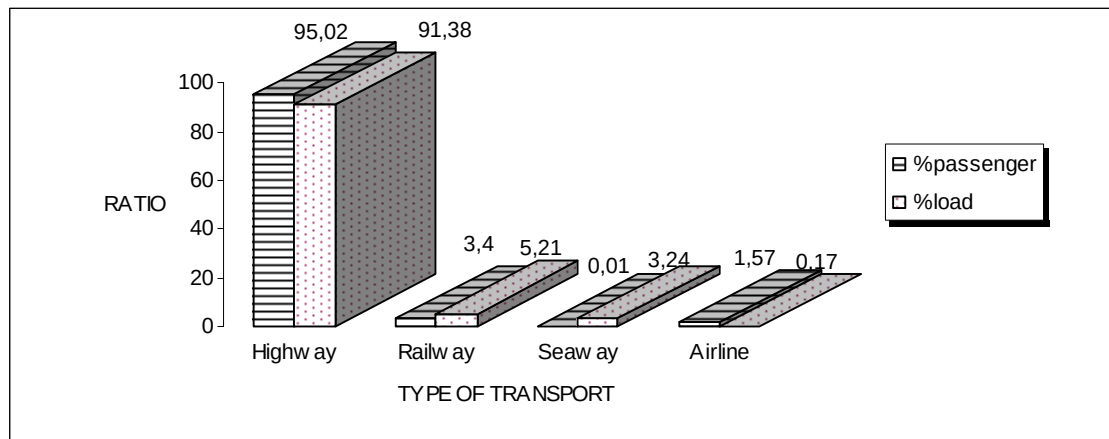
Figure 4.1. Ratio of Transport (<http://www.die.gov.tr>, 2003)

Table 4.14. Legal Speed Limit of Vehicles Which Are Obey in Turkey
(<http://www.kgm.gov.tr>, 2005)

VEHICLE TYPES	IN SETTLEMENT PLACE	OUT SETTLEMENT PLACE	ON HIGHWAY
	(Km/Hour)	(Km/Hour)	(Km/Hour)
Automobile	50	90	120
Bus	50	80	100
Minibus, lorry and pickup	50	80	90
Ground vehicle and motorbike	50	70	80
Vehicles which carry dangerous matter and vehicles which have load carrying permission certificate or special certificate (if there is not adverse command at the certificate)	30	50	60
Motorized and motorless bicycle	30	50	-
Rubber wheel tractor, vehicle, work machines which pull a defective Vehicle	20	20	-

Table 4.15. Amount of Vehicle According to Years (www.turkstat.gov.tr, 2006)

YEAR	TOTAL	AUTOMOBILE	MINIBUS	BUS	PICKUP	LORRY	MOTORBIKE	SPECIAL VEHICLE	INDUSTRIAL MACHINE	TRACTOR
1990	3 750 678	1 649 879	125 399	63 700	263 407	257 353	531 941	26 519	63 024	769 456
1991	4 101 975	1 864 344	133 632	68 973	280 891	273 409	590 488	28 606	66 981	794 651
1992	4 584 717	2 181 388	145 312	75 592	308 180	287 160	655 347	31 158	72 000	828 580
1993	5 250 622	2 619 852	159 900	84 254	354 290	305 511	743 320	33 703	79 233	870 559
1994	5 606 712	2 861 640	166 424	87 545	374 473	313 771	788 786	35 495	83 072	895 506
1995	5 922 859	3 058 511	173 051	90 197	397 743	321 421	819 922	37 272	87 214	937 528
1996	6 305 707	3 274 156	182 694	94 978	442 788	333 269	854 150	40 212	95 318	988 142
1997	6 863 462	3 570 105	197 057	101 896	529 838	353 586	905 121	45 327	107 151	1 053 381
1998	7 371 541	3 838 288	211 495	108 361	626 004	371 163	940 935	49 925	117 913	1 107 457
1999	7 758 511	4 072 326	221 683	112 186	692 935	378 967	975 746	52 105	120 937	1 131 626
2000	8 320 449	4 422 180	235 885	118 454	794 459	394 283	1 011 284	55 677	129 157	1 159 070
2001	8 521 956	4 534 803	239 381	119 306	833 175	396 493	1 031 221	57 490	131 019	1 179 068
2002	8 655 170	4 600 140	241 700	120 097	875 381	399 025	1 046 907	58 790	133 003	1 180 127
2003	8 903 843	4 700 343	245 394	123 500	973 457	405 034	1 073 415	60 511	137 933	1 184 256
2004	10 236 357	5 400 440	318 954	152 712	1 259 867	647 420	1 218 677	28 004	—	1 210 283
2005	11 145 826	5 772 745	338 539	163 390	1 475 057	676 929	1 441 066	30 333	—	1 247 767

4.2. Method

Some important, considerable tables and graphics are derived by using “SPSS 11.0” program and office applications after considering all data and statistics, especially data and statistics sticking out between years 2000-2005.

4.2.1. Statistical Package for the Social Sciences (SPSS)

The “Statistical Package for the Social Sciences” (SPSS) is a package of programs for manipulating, analyzing, and presenting data; the package is widely used in the social and behavioral sciences. There are several forms of SPSS. The core program is called SPSS Base and there are a number of add-on modules that extend the range of data entry, statistical, or reporting capabilities. In our experience, the most important of these for statistical analysis are the SPSS Advances Models and SPSS Regression Models add-on modules. SPSS Inc. also distributes stand-alone programs that work with SPSS (Sabine, 2004).

4.2.2. Regression Analysis (Reg.)

In statistics, regression analysis examines the relation of a dependent variable (response variable) to specified independent variables (explanatory variables). The mathematical model of their relationship is the regression equation. The dependent variable is modeled as a random variable because of uncertainty as to its value, given only the value of each independent variable. A regression equation contains estimates of one or more hypothesized regression parameters ("constants"). These estimates are constructed using data for the variables, such as from a sample. The estimates measure the relationship between the dependent variable and each of the independent variables. They also allow estimating the value of the dependent variable for a given value of each respective independent variable.

Uses of regression include curve fitting, prediction (including forecasting of time-series data), modeling of causal relationships, and testing scientific hypotheses

about relationships between variables
(http://en.wikipedia.org/wiki/Regression_analysis).

Regression analyze is a method to explain the correlation mathematically. This explanation is called as “regression equation”.

In general a regression equation likes:

$$Y' = a + bX$$

X: The independent variable that have been chosen.

Y': The estimated value of Y with respect to X value.

a: The value of Y-axis at the point of intersection of line and Y-axis.

b: Slope of the equation.

a and b: Coefficients of regression.

4.2.3. Correlation Analysis (Cor.)

In probability theory and statistics, correlation, also called correlation coefficient, indicates the strength and direction of a linear relationship between two random variables. In general statistical usage, correlation or co-relation refers to the departure of two variables from independence. In this broad sense there are several coefficients, measuring the degree of correlation, adapted to the nature of data.

A number of different coefficients are used for different situations. The best known is the Pearson product-moment correlation coefficient, which is obtained by dividing the covariance of the two variables by the product of their standard deviations. Despite its name, it was first introduced by Francis Galton.

The correlation is defined only if both of the standard deviations are finite and both of them are nonzero. It is a corollary of the Cauchy-Schwarz inequality that the correlation cannot exceed 1 in absolute value.

The correlation is 1 in the case of an increasing linear relationship, -1 in the case of a decreasing linear relationship, and some value in between in all other cases, indicating the degree of linear dependence between the variables. The closer the coefficient is to either -1 or 1, the stronger the correlation between the variables.

If the variables are independent then the correlation is 0, but the converse is

not true because the correlation coefficient detects only linear dependencies between two variables (<http://en.wikipedia.org/wiki/Correlation>).

5. RESULTS and DISCUSSIONS

In this study, the reasons of traffic accidents happened between the years 2000-2005 on the Gendarmerie zones of Turkey are investigated and analyzed some important statistical results and developments in the world are considered beside the conditions of Gendarmerie and Police forces. And the following results listed below are derived in the study.

Traffic accidents, in some countries it can be measure of hundred thousands of dollars, but the injuries and deaths which can not be evaluated in monetarily cause not only to break down of people in the accidents, his/her families and relatives psychologically and sociologically but also affects society in both ways. In a scientific survey done on the damning of the injured and relatives of injured and death people, it is declared that 4% of relatives and 7% of injured people started to use illegal drugs, 37% of relatives of death people and 17% of injured and his/her relatives wanted to suicide during the first 3 years after accidents (Karakuş, 2006). Traffic accidents must be considered as the grim realities such that the results of the accidents are not news on the newspaper, not a study of statistical results or not a digital number on an activity, but they are the social problems that must be considered sensitively.

- After an accident, almost everyone firstly tries to understand that how the accident happened and what the failure or mistake caused the accident. In the world and also in our country the answer of this question is that about 97% of accidents caused by human failure. When the Gendarmerie data of year 2000 (Table 5.1) is considered, the sum of driver, pedestrian and passenger failure is 96.66% and it is the biggest proportion in the factors of accidents. Other faults are 1.30% vehicle faults and 2.07% road faults. Even if the driver fault is the biggest portion, the other faults can not be neglected. Driver faults decreases in parallel with the redevelopment of enterprise and supervision.
- When fault ratios are analyzed, it is seen that driver faults were never lower than 96%. This ratio is followed by 2-2.5% by pedestrian faults. Studies should be conducted in order to decrease these faults firstly in driver faults and then pedestrian

faults.

- Studies show that, drunken-driving is responsible for the 47% of fatal accidents, 20% of injuries and 10% physically damaged accidents (Evans, 1999).
- When it is looked at the accident happened in the Gendarmerie region between the years 2000-2005 (Table 5.2), there is no change in between the years 2000-2003, but between the years 2004-2003 and 2004-2005, the number of accidents increased by 27.48% and 19.35% respectively.
- When it is observed carefully in the year 2000 the number of deaths per 100 accidents is 4.74, this ratio for year 2001 is 4.26, year 2002 is equal to year 2003 there is a reduction to 3.44, year 2004 there is still decrease to 3.16, and in the year 2005 there is sharp decrease to 2.58 per 100 accidents. As understood by the values, a continuous decrease will be observed for the future. The reason for the decrease of death ratio per every year is increasing of vehicle safety with new models and new safety standards and as well as improvement of emergency medical services in Turkey.

Because of the linear increase in the number of accidents, numbers of injured and monetary are also increased. Although in year 2005; the numbers of deaths are less than in year 2004, but the number of injuries are increased in year 2005 with respect to year 2004.

- As seen from table the numbers of traffic personnel according to population are very inadequate in Turkey. In London, there are 10,000 traffic polices for every 9,000,000 people, In Vienna, 4000 for 2,000,000, in Tokyo 11,000 for 18,000,000 people. In Turkey there are only 2300 traffic policemen for every 11,000,000 people.
- As long as there are no reasons to explain the flow chart of the accidents, there is no possibility of determining the solutions. Moreover GIS systems can provide these kinds of information. The integration of GIS and Geographic Place Systems (GPS) provides all the missing information of the incomplete accident record (William, 1998). The usage of Geographical Information Systems (GIS) provides great advantages on visualizing the data, on analyzing the results and on solving problems related to the geographic conditions. The investments and studies about this issue are insufficient. The required investments should be made on this

subject whom its benefits clear in minimum time. Otherwise our country will lose money and time plus mislead information.

- Based on Transportation Research Laboratory's (TRL) experimental data, if average speed decreases 1 km/h, accidents and injuries decrease by a proportion of 3% (SGD, 2000). The situation is that obvious. Everybody easily calculates that a 1 km/h decrease will prevent to loss of many lives and capital. If the collision speed of the car increases from 40km/h to 60km/h the death risk of a foot passenger increases five times than in the former case (SGD (Highway Traffic), 1999). This can be recorded as an important research result that must not be forgotten.

5.1. General Accident Data of Turkey

Figure 5.1 shows that total number of accidents between years 2000 and 2005 in Turkey. There is a slight reduction at the total number accident in years 2001 and 2002. Total accident number is slightly increased in years 2004, but there is an important increase in 2005 because of the financial development in the rural area of Turkey, and many people in these areas are having tractors, agriculture machineries and vehicles.

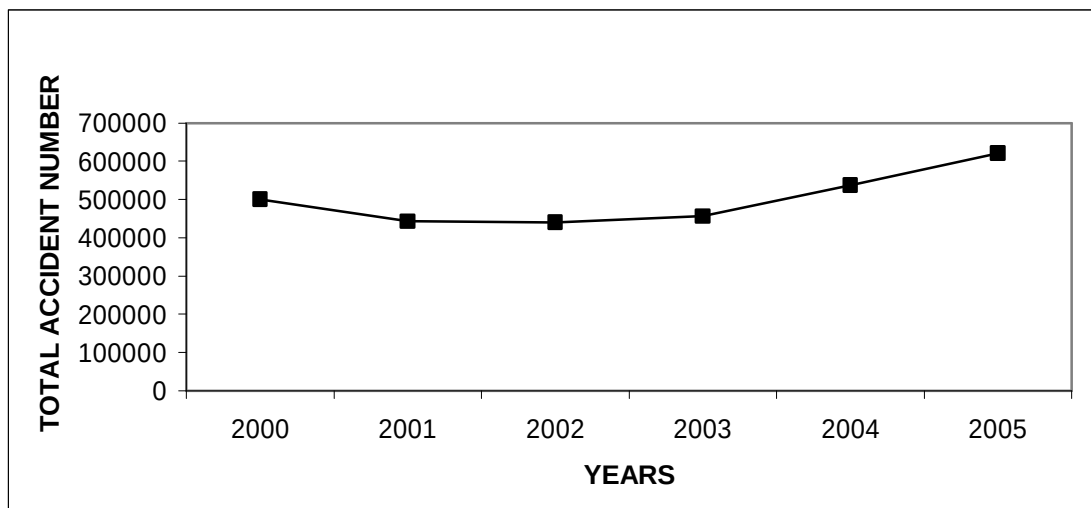


Figure 5.1. Total Number of Accidents between years 2000 and 2005 in Turkey

Figure 5.2 shows that total number of casualties between years 2000 and 2005

in Turkey from the figure there is a linear correlation between the total number of accidents and dead numbers. But the dead number is slightly less if it is compared with accident numbers in 2005. The reason for this is increased safety of vehicles, road, consciousness and emergency medical treatments.

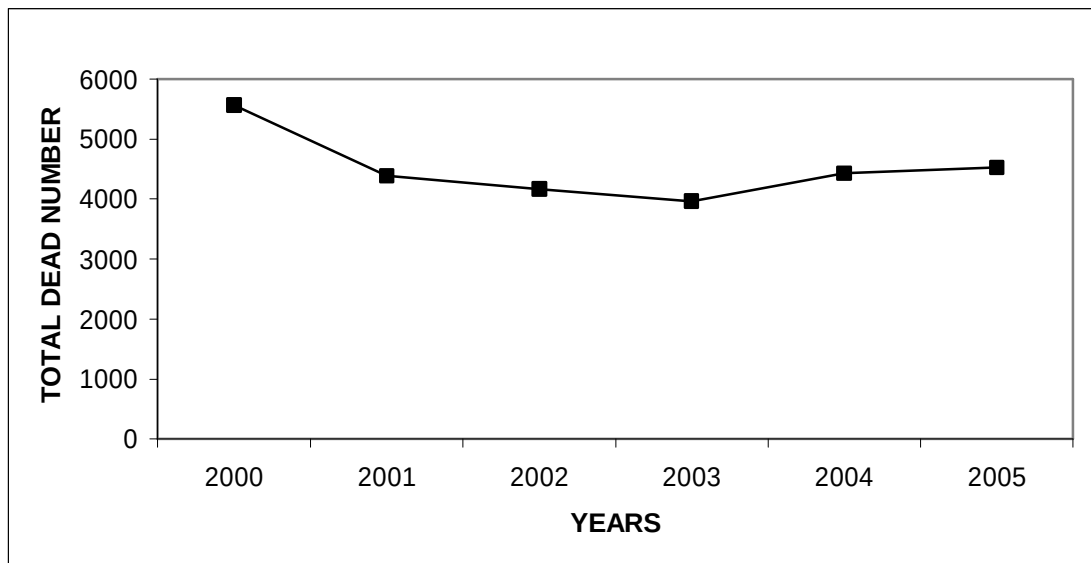


Figure 5.2. Total Number of Dead between years 2000 and 2005 in Turkey

Figure 5.3 shows the total number of injuries between years 2000 and 2005 in Turkey. Total numbers of injuries are slightly decreased in year 2001, because of strict control of traffic, but increased continuously in between years 2002-2005. The reason for the increase of the number of injuries is the increase the total number of vehicle, vehicle speed and young drivers.

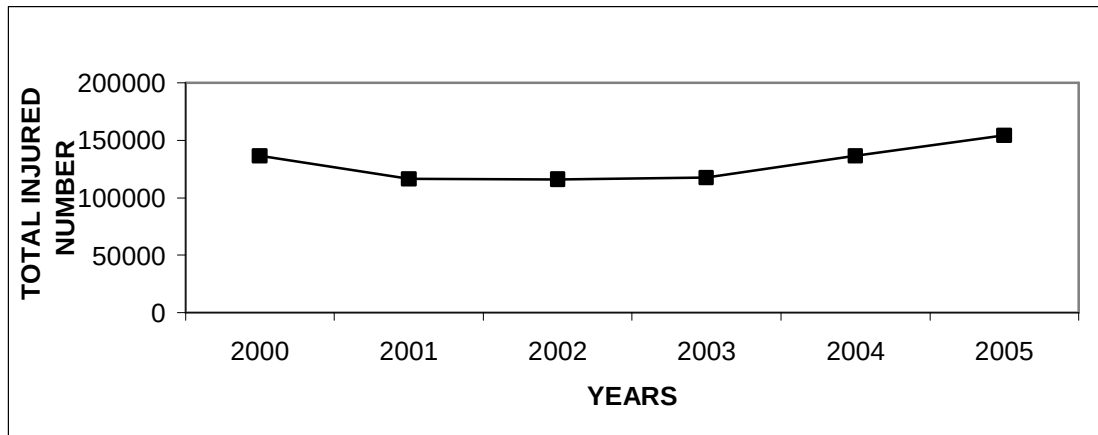


Figure 5.3. Total Number of Injuries between years 2000 and 2005 in Turkey

Figures 5.4 indicates the total amount of material damage between years 2000 and 2005 in Turkey in 2001, there was very strict traffic control in Turkey and huge amount of penalties were applied. After 2001, amount of material damage is increased sharply because of increased vehicle and part price of advanced and comfortable vehicles.

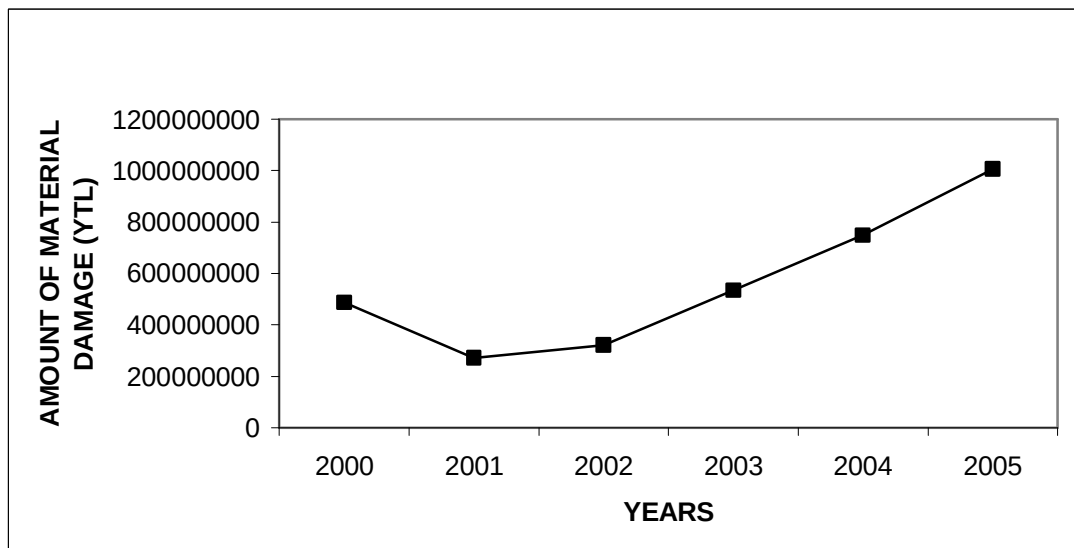


Figure 5.4. Total Years Amount of Material Damage between years 2000 and 2005 in Turkey

Figures from 5.5 to 5.13 in below are the results of data retrieved only from Gendarmerie zones of Turkey between years 2000 and 2005.

Figure 5.5 illustrates the number of materially damaged accident in Gendarmerie zones of Turkey between years 2000 and 2005. The number of materially damaged accident is almost same in between year 2000 and 2003, but sharp increase in years 2004 and 2005. This increase can easily be explained by the increased by the increase in the total number of accidents.

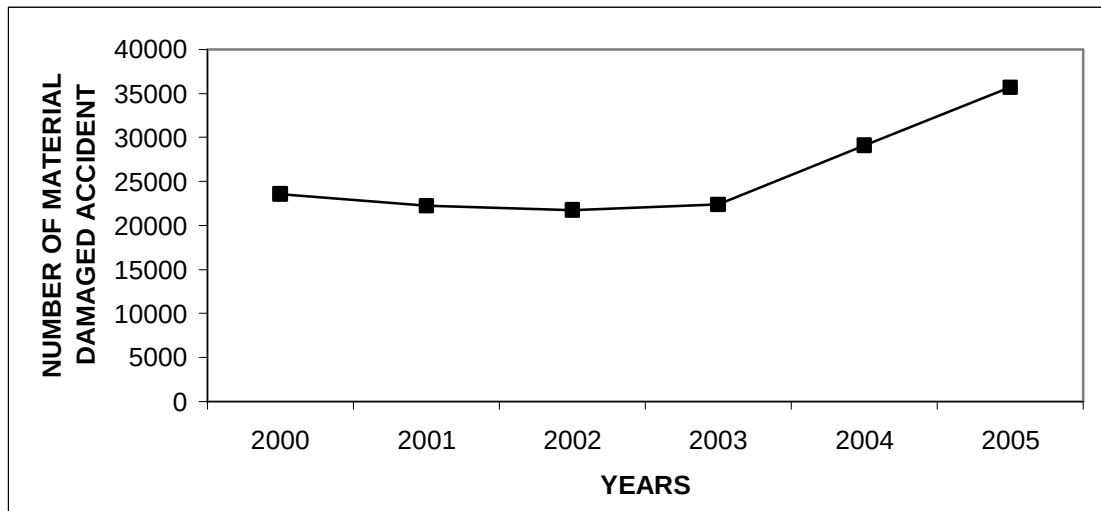


Figure 5.5. Number of Materially Damaged Accidents in Gendarmerie zones of Turkey between years 2000 and 2005

Figure 5.6 indicates that total number of accidents between years 2000 and 2005 in Gendarmerie zones of Turkey. Total number of accidents in Gendarmerie zones of Turkey is almost constant in between years 2000 and 2003. But followed years (2004 and 2005) there are sharp increase on the number of accidents because of increased number of vehicles in the rural areas of Turkey.

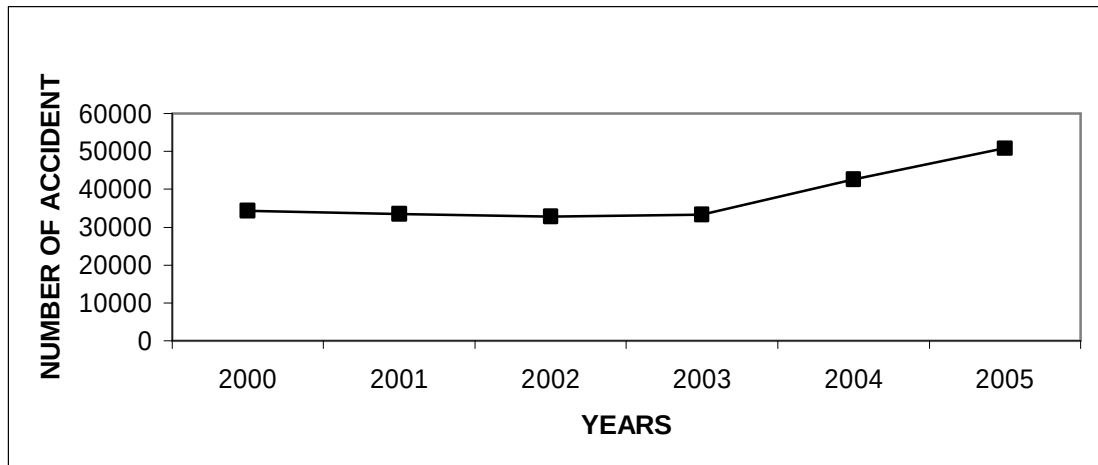


Figure 5.6. Total Number of Accidents between years 2000 and 2005 in Gendarmerie zones of Turkey

Figure 5.7 indicates the number of dead between years 2000 and 2005 in Gendarmerie zones of Turkey. The total number of dead in Gendarmerie zones of Turkey is decreased instead of the total number of accident in between years 2000 and 2003. There is a slightly increased in 2004 after that slight decrease in 2005 when the number of vehicles and accidents are increased, because of better emergency aid and medical treatments in Turkey. Also increased safety equipments in the vehicles (ABS, Airbag etc) and drivers getting more conscious are the main reasons of this conflict.

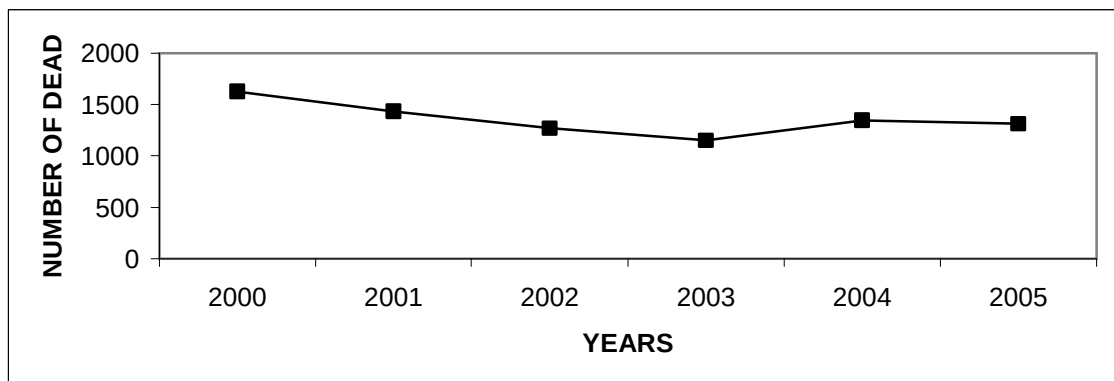


Figure 5.7. Numbers of Dead between years 2000 and 2005 in Gendarmerie Zones of Turkey

Figure 5.8 shows that the number of injuries in Gendarmerie zones of Turkey between years 2000 and 2005.

From figure 5.6 and figure 5.8 it is clear that there are similar trends between number of injuries and the total number of accidents.

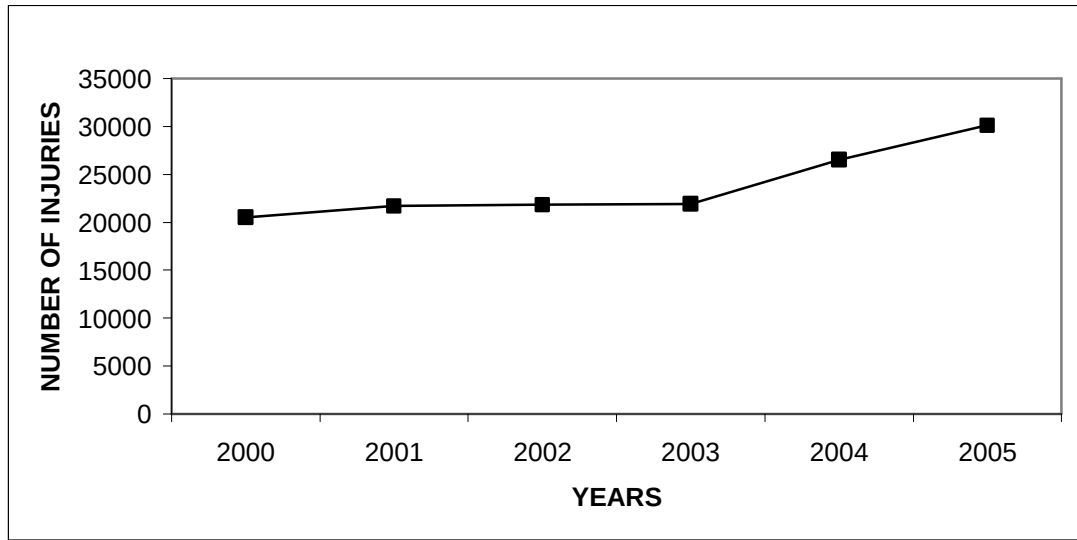


Figure 5.8. Number of Injuries in Gendarmerie zones of Turkey between 2000 and 2005

Figure 5.9 illustrates that the number of drives fined in the Gendarmerie zones of Turkey between years 2000 and 2005. In 2000, Turkish Government pressurized on the fine policy to discourage the drivers. Therefore, the number of fined drivers made a peak in 2000. The Government lifted the pressure on the fine policy, the number of fined drivers is decreased between year 2001 and 2003. There is again a sharp increase in year 2004 and slight decrease in year 2005.

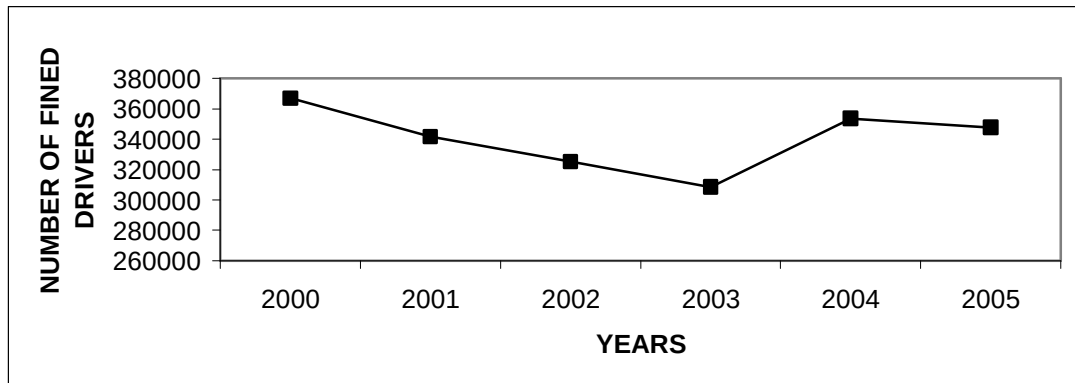


Figure 5.9. Number of Drivers Fined in Gendarmerie Zones of Turkey between 2000 and 2005

Figure 5.10 shows the total fines issued in Gendarmerie zones of Turkey between 2000 and 2005. Recently fines have gone up dramatically and it started to affect the drivers in a positive way. However fines were either too low and were collect in the past. But with the new fine regulations, even tough the fines are increased, Turkish Government developed a new fine collection scheme, when someone would like to sell his/her car, they have to pay all fines before the trade. Therefore amount of fines collected is increased steadily year by year.

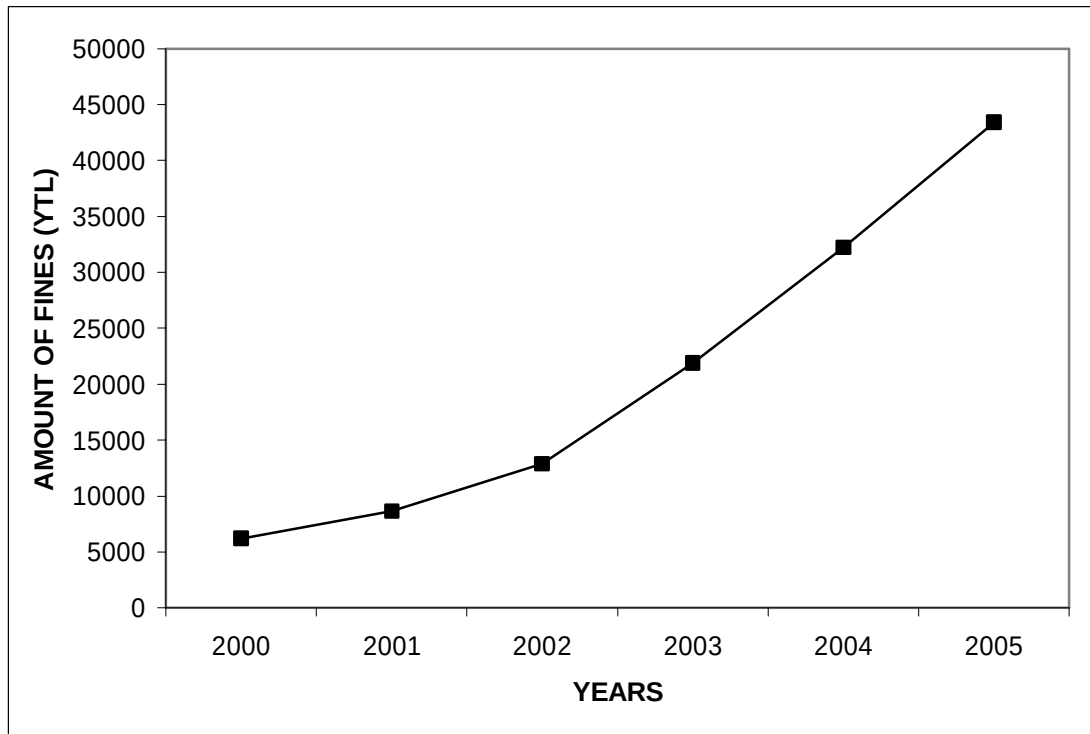


Figure 5.10. Amount of Fines Applied in the Gendarmerie Zones of Turkey between 2000 and 2005

Figure 5.11 demonstrates the number of drivers banned from traffic in the Gendarmerie zones of Turkey between years 2000 and 2005. Number of drivers banned from traffic in the Gendarmerie zones of Turkey is almost constant between years 2000 and 2005, but sudden increase in year 2005 with excessive control.

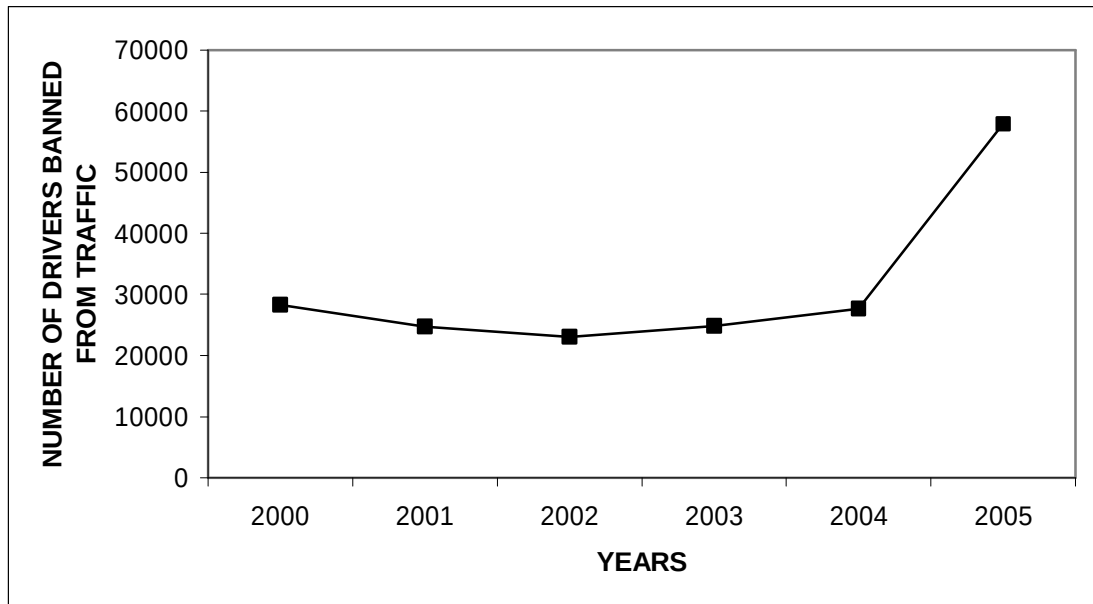


Figure 5.11. Number of Drivers Banned from Traffic in the Gendarmerie Zones of Turkey between 2000 and 2005

Figure 5.12 illustrates number of drivers licence revoked in the Gendarmerie zones of Turkey between 2000 and 2005. There is a sharp, increase for revoked driver license in Gendarmerie zones of Turkey between 2000 and 2002. There is a slight decrease in year 2003 constantly in between years 2003 and 2005. In between 2000 and 2002, new regulations were effected and driver licenses have started to revoke for DUI driver.

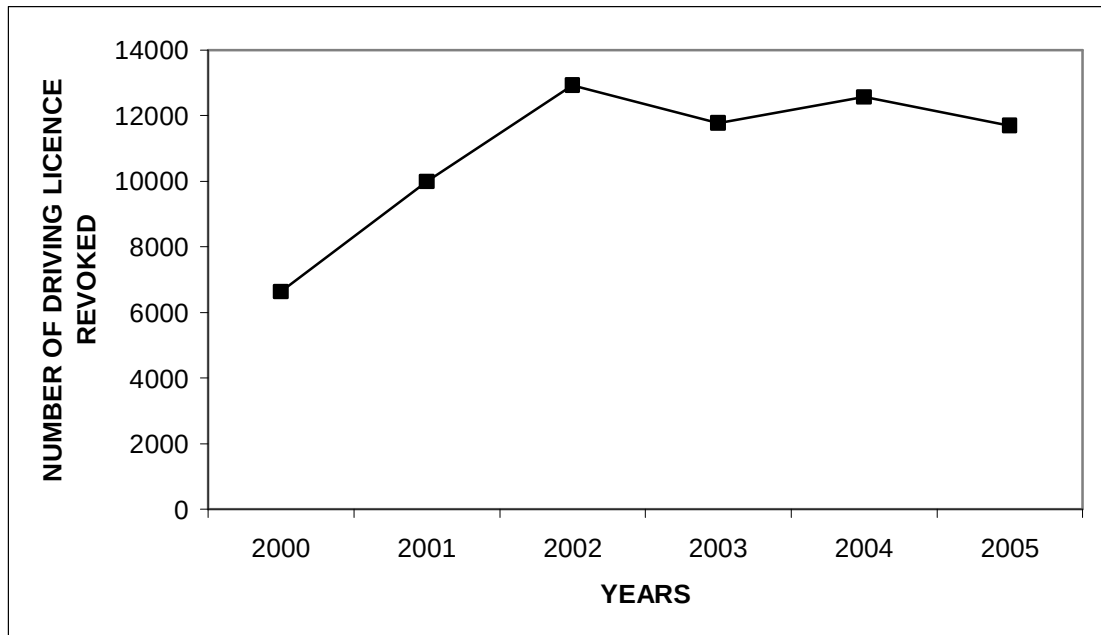


Figure 5.12. Number of Driver License revoked in the Gendarmerie zones of Turkey between 2000 and 2005

Figure 5.13 shows that the total accident reasons in Gendarmerie zones of Turkey between 2000 and 2005. As seen from the figure that, the most important reason for the accidents is the drivers' carelessness. Excessive speed, faulty overtakes and drunk driver is the other important reasons. On the contrast to the general opinion, technical problem have a little share to the traffic accidents.

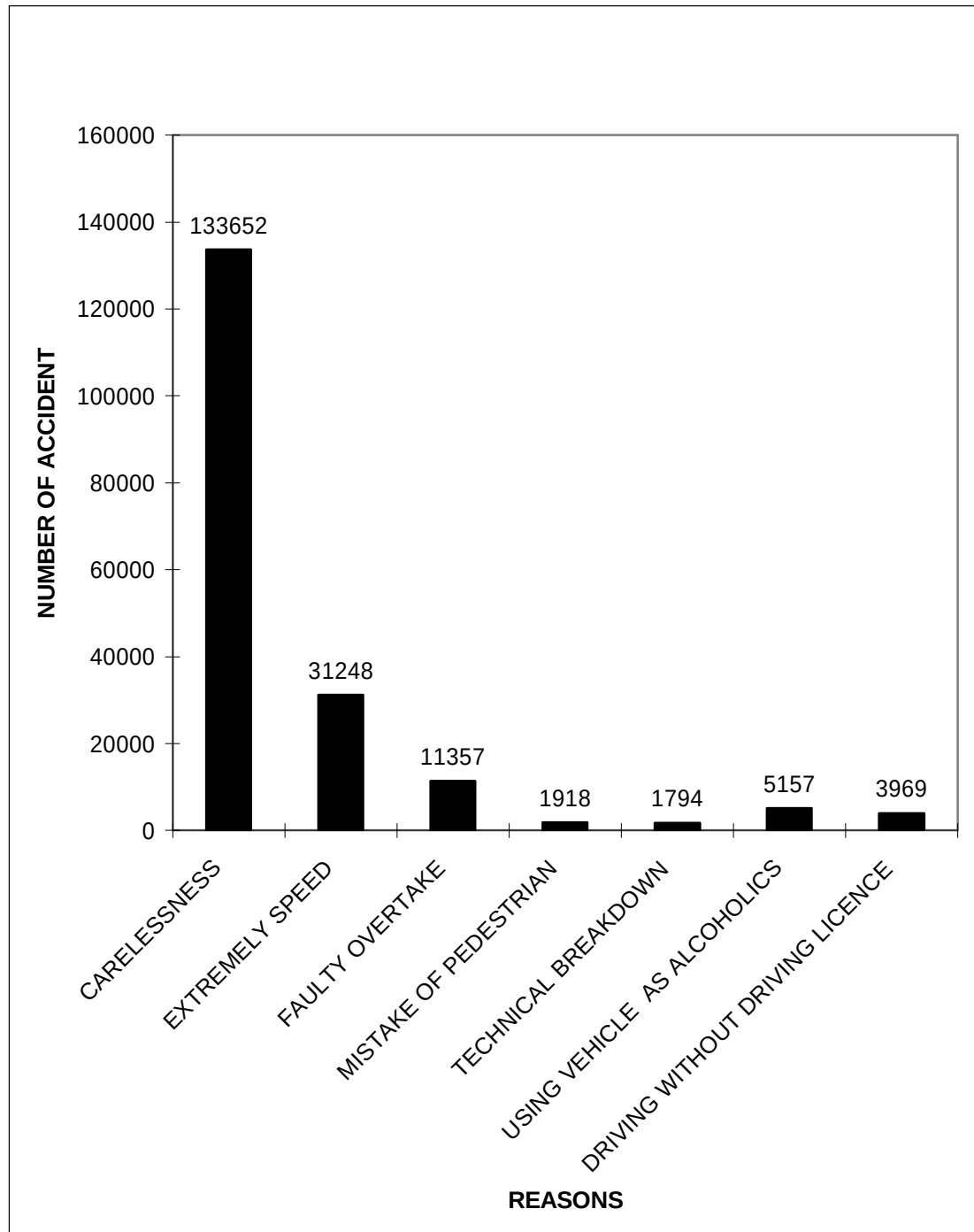


Figure 5.13. Total Accidents Reasons in Gendarmerie Zones of Turkey between 2000 and 2005

Figure 5.14 indicates the number of accidents happened in Gendarmerie

zones of Turkey in year 2005. As seen from the figure that, the number of accidents is increased in summer period of time because of heavy traffic in holiday season, as well as using and moving all types of agricultural machineries because of cultivation period of agricultural products.

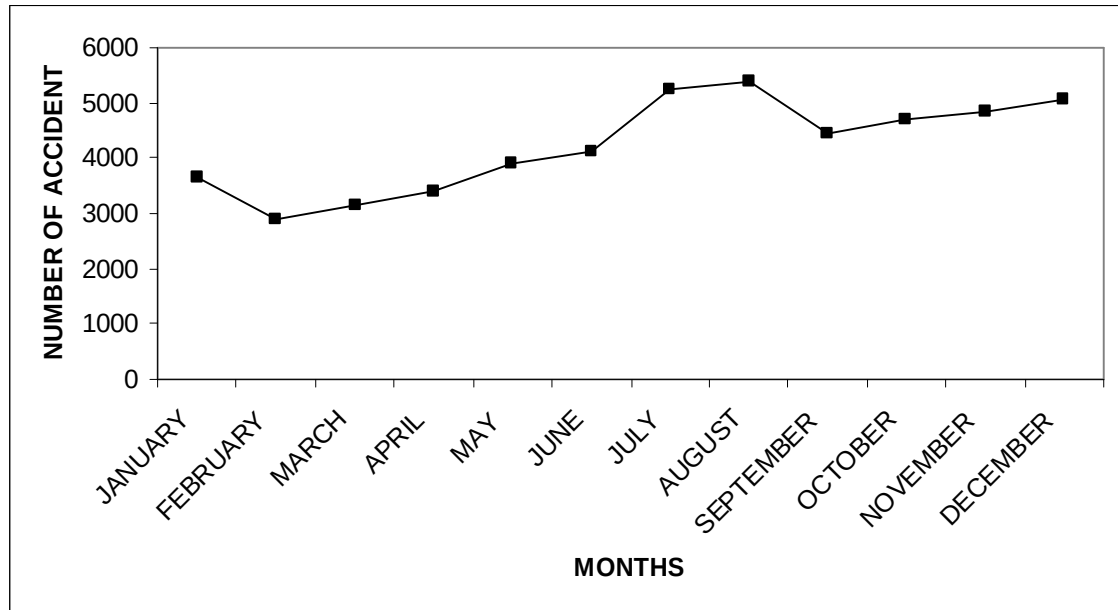


Figure 5.14. Number of Accidents in Gendarmerie Zones of Turkey in year 2005

Figure 5.15 demonstrates the number of dead in the Gendarmerie zones of Turkey in year 2005. As seen from the figure, number of casualties is increased in summer time again due to the increase in number of accidents.

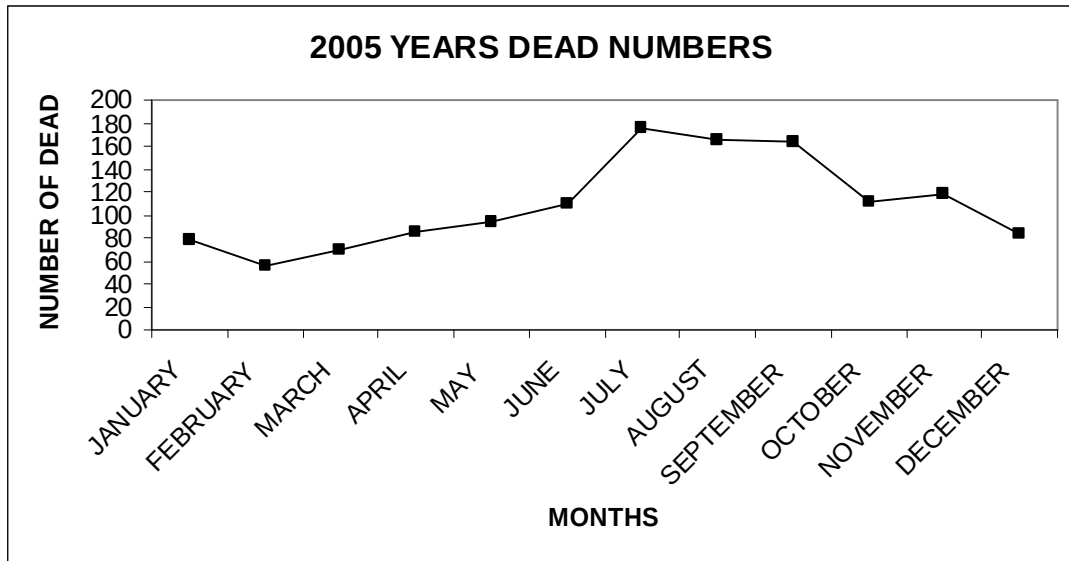


Figure 5.15. Number of Deads in Gendarmerie Zones of Turkey in 2005

Figure 5.16 illustrates the number of injuries in Gendarmerie Zones of Turkey in year 2005. As seen from the figure that, number of injuries shows similar trends with the number of dead and increase in summer time again due to the increase in number of accidents.

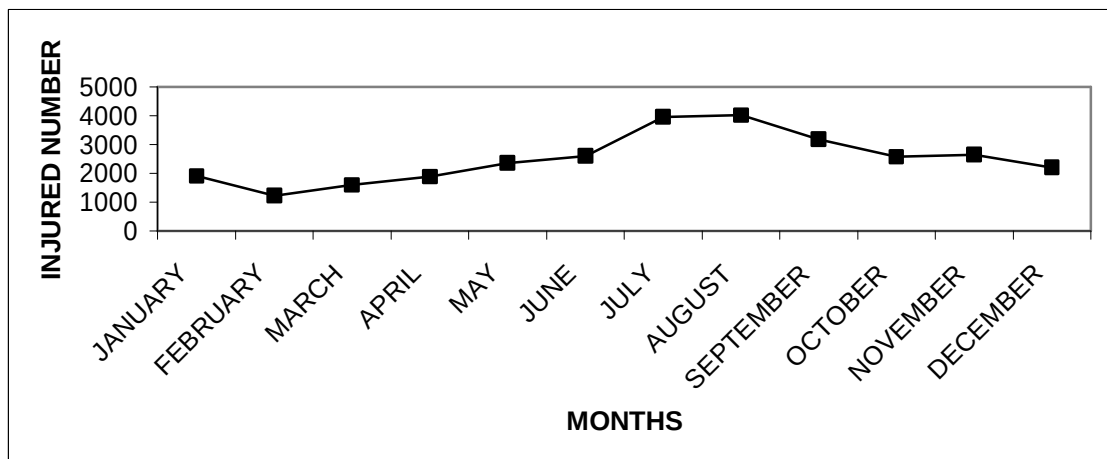


Figure 5.16. Number of Injuries in Gendarmerie Zones of Turkey in 2005

Figure 5.17 shows the amount of material damage in Gendarmerie Zones of

Turkey in year 2005. It is expected that the cost of physical damage is increased with the increased number of accidents. Again the cost of physical damage is increased especially in summer time.

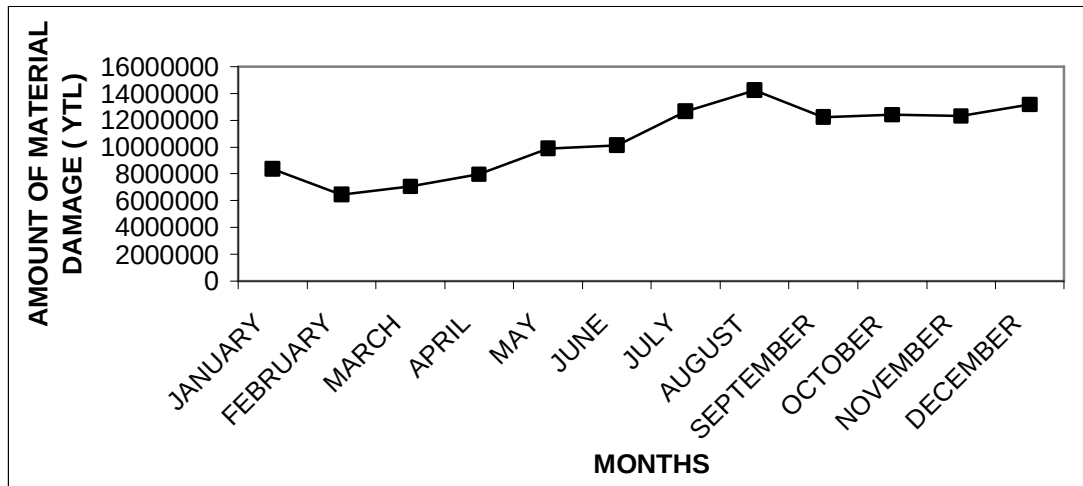


Figure 5.17. Amount of Material Damage in Gendarmerie Zones of Turkey in 2005

Figure 5.18 indicates types of faults occurred in Gendarmerie Zones of Turkey in year 2005.

Similar trends like general in Turkey have been observed in Gendarmerie zones. Driver's faults are the major issue and other faults have little share on general distribution. This result medicates that drivers in Turkey are not well educated in the driving courses.

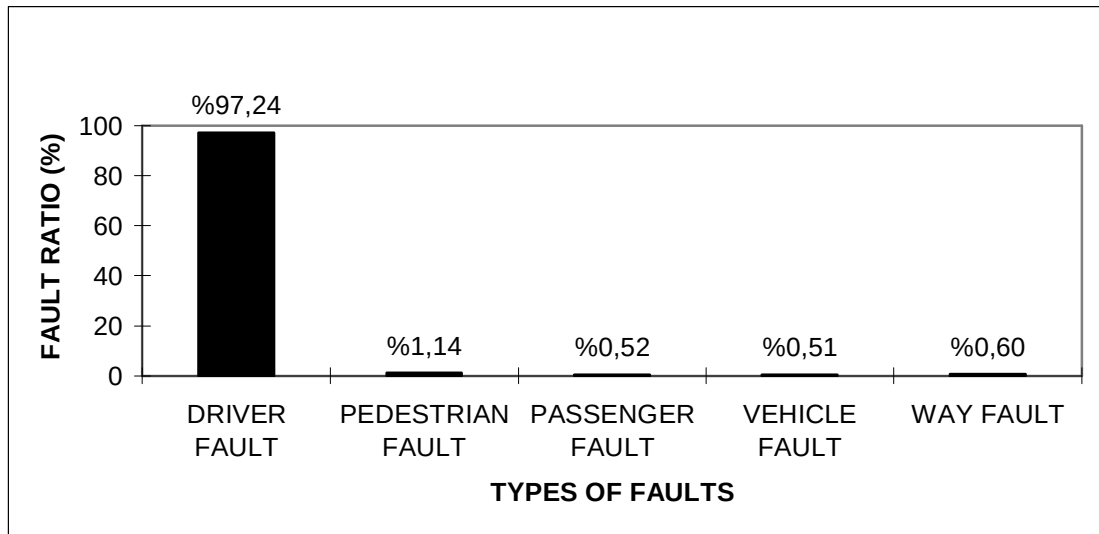


Figure 5.18. Fault Types of Faults Ratios in Gendarmerie Zones of Turkey in 2005

Figure 5.19 indicates the number of accidents in big cities happened in Gendarmerie zones of Turkey in year 2005. The most of accidents have accurate in İstanbul. Because of densely populated and vehicle city in big cities attributing to densely populated and vehicle the number of accidents increase. Due to high population and vehicle density in big cities, these results seem normal.

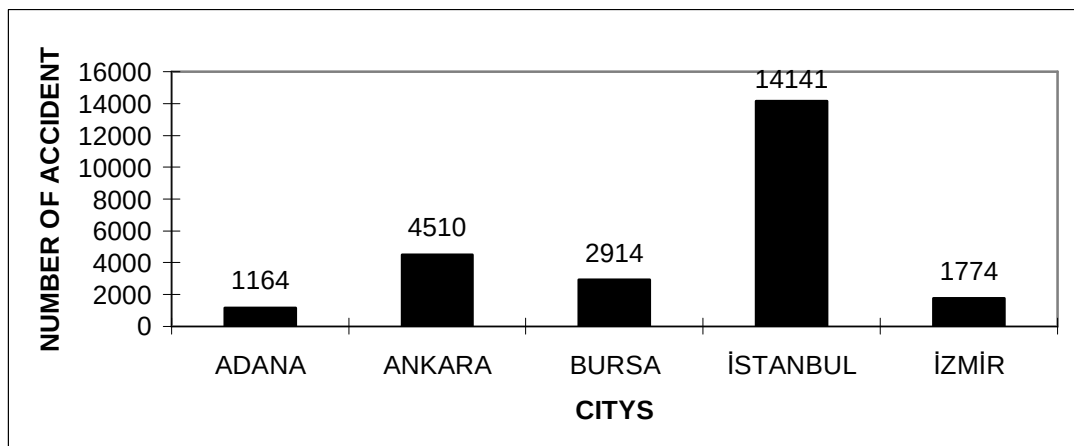


Figure 5.19. Accident Numbers in big cities in Gendarmerie zones of Turkey in 2005

Figure 5.20 indicates the number of deads in Gendarmerie zones of Turkey in year 2005. It was expected that İstanbul would have been on the top of the list.

However, Adana has the 1st rank and İzmir is the 2nd rank. Especially in summer months tractor and agriculture machines are involved in the accidents, the proportional of deaths increase it brought about the increasing the proportional of the deaths in Adana.

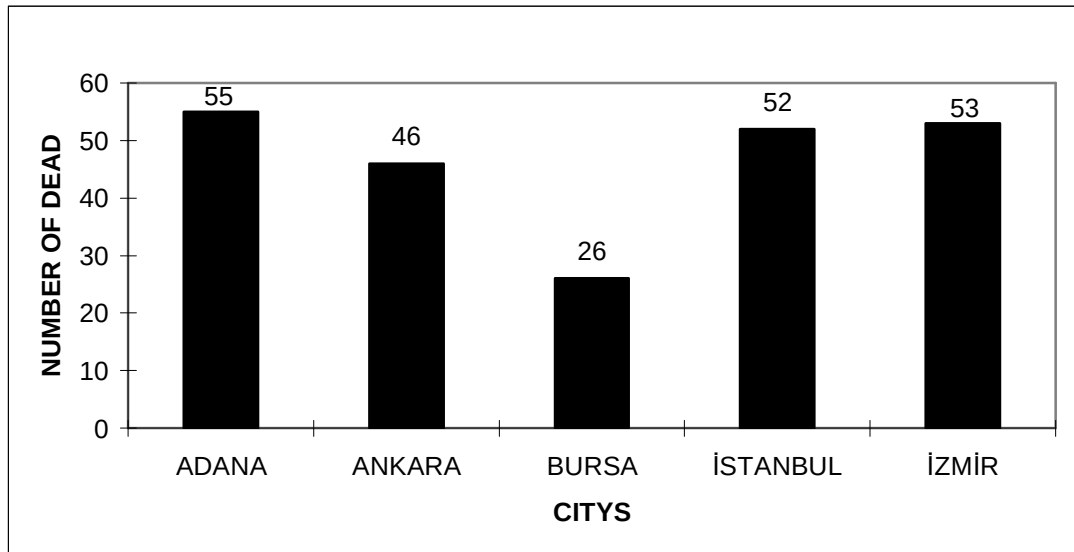


Figure 5.20. Dead Numbers in Big Cities in Gendarmerie zones of Turkey in 2005

Figure 5.21 illustrates the number of injuries in big cities in Gendarmerie Zones of Turkey in year 2005. It is observed that there is a correlation with the total number of accidents in the Gendarmerie zones of Turkey.

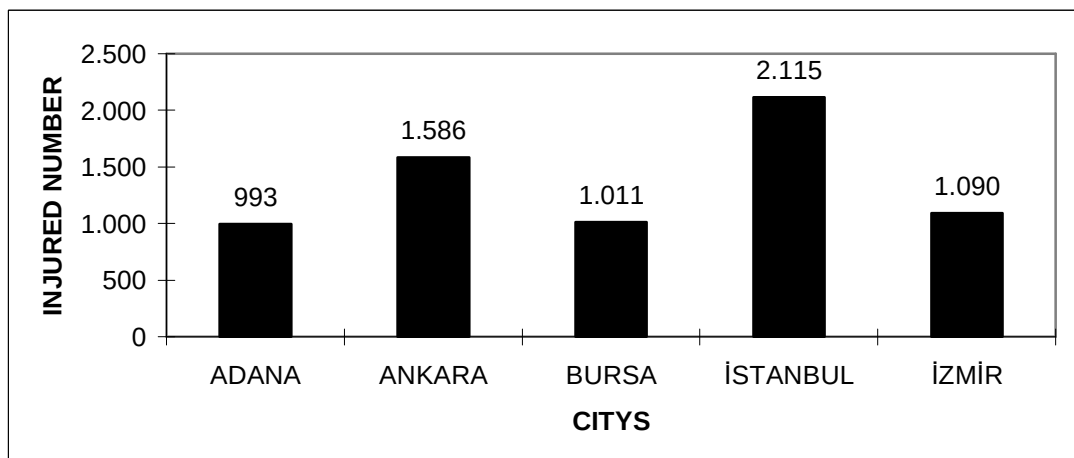


Figure 5.21. Injured Numbers in Big Cities in Gendarmerie Zones of Turkey in 2005

Figure 5.22 illustrates the number of materially damaged accident in big cities in Gendarmerie zones of Turkey in year 2005. The number of material damage is proportional whit the number of accidents. Because of this, the numbers of material damage in big cities are similar to the number accident graph.

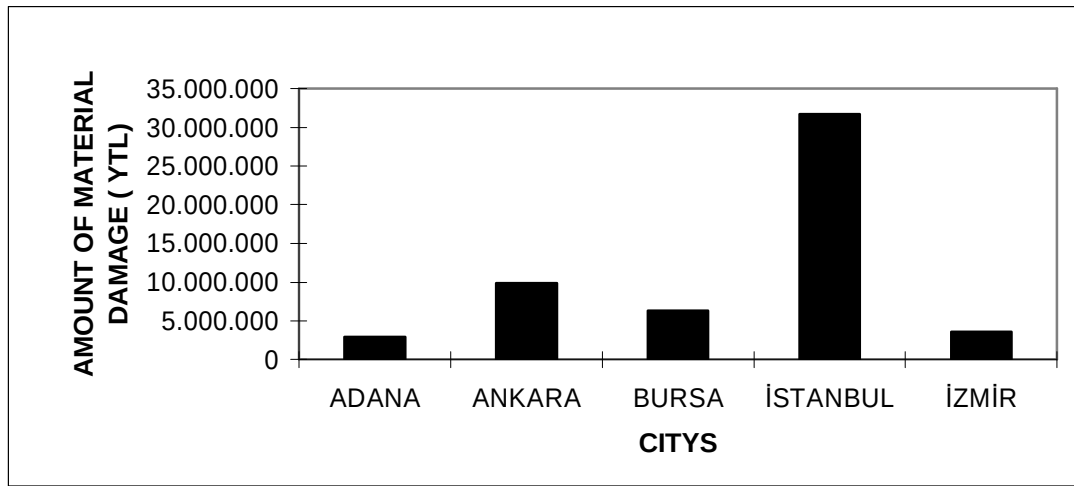


Figure 5.22. Amount of Material Damage in Big Cities in Gendarmerie Zones of Turkey in 2005

Figure 5.23 illustrates number of driving licenses revoked DUI in big cities in Gendarmerie zones of Turkey in 2005. The driving licences are taken back for driving car while drunk. Considering this, a plenty of the entertainment place and holiday territories are proportional of the traffic accidents. Because this, İzmir, İstanbul and Bursa list in the first three order.

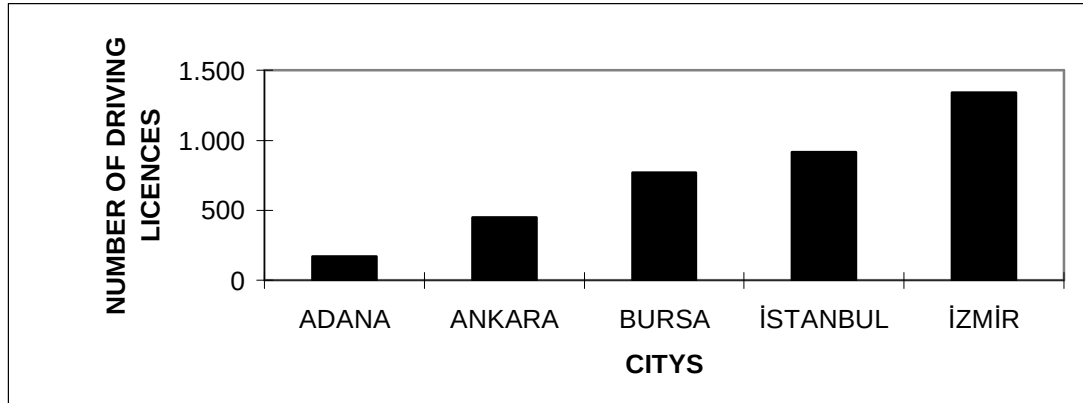


Figure 5.23. Number of Driving Licenses revoked DUI in big cities in Gendarmerie zones of Turkey in 2005

Figure 5.24 illustrates number of drivers licence revoked in big cities in the Gendarmerie zones of Turkey. In 2005, the number of driving licences were taken back are discussed the number of the former graph similarity.

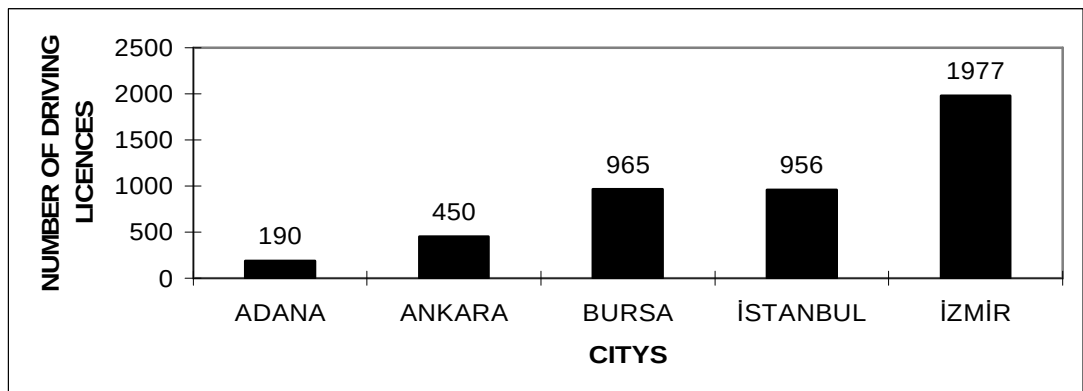


Figure 5.24. Number of Driving Licenses revoked in big cities in Gendarmerie zones of Turkey in 2005

5.2. Correlation Analyses

Table 5.1. Police Region (Inside of City)

		Correlations				
		YEAR	ACCIDENT	DEAD	INJURED	P.DAMAGE
YEAR	Pearson Correlation	1	,705	-,751	,334	,819*
	Sig. (2-tailed)		,118	,086	,518	,046
	N	6	6	6	6	6
ACCIDENT	Pearson Correlation	,705	1	-,092	,898*	,957**
	Sig. (2-tailed)	,118		,863	,015	,003
	N	6	6	6	6	6
DEAD	Pearson Correlation	-,751	-,092	1	,345	-,325
	Sig. (2-tailed)	,086	,863		,503	,529
	N	6	6	6	6	6
INJURED	Pearson Correlation	,334	,898*	,345	1	,756
	Sig. (2-tailed)	,518	,015	,503		,082
	N	6	6	6	6	6
P.DAMAGE	Pearson Correlation	,819*	,957**	-,325	,756	1
	Sig. (2-tailed)	,046	,003	,529	,082	
	N	6	6	6	6	6

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation in the table 5.1 shows a high level positive relations $r = 0.705$ on intersection cell of year row and accident column, a high level negative relations $r = -0.751$ on intersection cell of year row and dead column, a middle level positive relations $r = 0.334$ on intersection cell of year row and injured column, a important high level positive relations $r = 0.819^*$ on intersection cell of year row and material damage column at table 5.1.

The correlation in the table 5.1 demonstrates an important high level positive relations $r = 0.898^*$ between accident and injured numbers, a very important high level positive relations $r = 0.957^*$ between accident and material damage.

Table 5.2. Police Region (Outside of City)

		Correlations				
		YEAR	ACCIDENT	DEAD	INJURED	P.DAMAGE
YEAR	Pearson Correlation	1	,391	-,121	,375	,745
	Sig. (2-tailed)	,	,444	,819	,464	,089
	N	6	6	6	6	6
ACCIDENT	Pearson Correlation	,391	1	,811	,988**	,901*
	Sig. (2-tailed)	,444	,	,050	,000	,014
	N	6	6	6	6	6
DEAD	Pearson Correlation	-,121	,811	1	,857*	,551
	Sig. (2-tailed)	,819	,050	,	,029	,257
	N	6	6	6	6	6
INJURED	Pearson Correlation	,375	,988**	,857*	1	,895*
	Sig. (2-tailed)	,464	,000	,029	,	,016
	N	6	6	6	6	6
P.DAMAGE	Pearson Correlation	,745	,901*	,551	,895*	1
	Sig. (2-tailed)	,089	,014	,257	,016	,
	N	6	6	6	6	6

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

The correlation in the table 5.2 illustrates a middle level positive relations $r = 0.391$ on intersection cell of year row and accident column, a low level negative relations $r = -0.121$ on intersection cell of year row and dead column, a middle level positive relations $r = 0.375$ on intersection cell of year row and injured column, a high level positive relations $r = 0.745$ on intersection cell of year row and material damage column at table 5.2.

The correlation in the table 5.2 shows a very important high level positive relations $r = 0.988^*$ between accident and injured numbers, an important high level positive relations $r = 0.901^*$ between accident and material damage, an important high level positive relations $r = 0.857^*$ between dead and injured numbers, an important high level positive relations $r = 0.895^*$ between injured and amount of material damage.

Table 5.3. Police Region (Total)

		Correlations				
		YEAR	ACCIDENT	DEAD	INJURED	P.DAMAGE
YEAR	Pearson Correlation	1	,666	-,433	,364	,797
	Sig. (2-tailed)	,	,149	,392	,478	,058
	N	6	6	6	6	6
ACCIDENT	Pearson Correlation	,666	1	,348	,932**	,958**
	Sig. (2-tailed)	,149	,	,499	,007	,003
	N	6	6	6	6	6
DEAD	Pearson Correlation	-,433	,348	1	,664	,188
	Sig. (2-tailed)	,392	,499	,	,150	,722
	N	6	6	6	6	6
INJURED	Pearson Correlation	,364	,932**	,664	1	,836*
	Sig. (2-tailed)	,478	,007	,150	,	,038
	N	6	6	6	6	6
P.DAMAGE	Pearson Correlation	,797	,958**	,188	,836*	1
	Sig. (2-tailed)	,058	,003	,722	,038	,
	N	6	6	6	6	6

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

The correlation in the table 5.3 demonstrates a middle level positive relations $r = 0.666$ on intersection cell of year row and accident column, a middle level negative relations $r = -0.433$ on intersection cell of year row and dead column, a middle level positive relations $r = 0.364$ on intersection cell of year row and injured column, a high level positive relations $r = 0.797$ on intersection cell of year row and material damage column at table 5.3.

It shows a very important high level positive relations $r = 0.932^{**}$ between accident and injured numbers, a very important high level positive relations $r = 0.958^{**}$ between accident and amount of material damage, an important high level positive relations $r = 0.836^{*}$ between injured and amount of material damage.

Table 5.4. Gendarmerie Region (Total)

		Correlations				
		YEAR	ACCIDENT	DEAD	INJURED	P.DAMAGE
YEAR	Pearson Correlation	1	,807	-,645	,895*	,938**
	Sig. (2-tailed)	,	,052	,167	,016	,006
	N	6	6	6	6	6
ACCIDENT	Pearson Correlation	,807	1	-,095	,980**	,943**
	Sig. (2-tailed)	,052	,	,858	,001	,005
	N	6	6	6	6	6
DEAD	Pearson Correlation	-,645	-,095	1	-,264	-,368
	Sig. (2-tailed)	,167	,858	,	,613	,473
	N	6	6	6	6	6
INJURED	Pearson Correlation	,895*	,980**	-,264	1	,965**
	Sig. (2-tailed)	,016	,001	,613	,	,002
	N	6	6	6	6	6
P.DAMAGE	Pearson Correlation	,938**	,943**	-,368	,965**	1
	Sig. (2-tailed)	,006	,005	,473	,002	,
	N	6	6	6	6	6

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation in the table 5.4 shows a high level positive relations $r = 0.807$ on intersection cell of year row and accident column, a middle level negative relations $r = -0.645$ on intersection cell of year row and dead column, an important high level positive relations $r = 0.895^*$ on intersection cell of year row and injured column, a very important high level positive relations $r = 0.938^{**}$ on intersection cell of year row and material damage column at table 5.4.

The correlation in the table 5.4 illustrates very important high level positive relations $r = 0.980^{**}$ between accident and injured numbers, a very important high level positive relations $r = 0.943^{**}$ between accident and amount of material damage. Briefly decreases in dead numbers are showed very slowly.

Table 5.5. General Total (Police and Gendarmerie)

		Correlations				
		YEAR	ACCIDENT	DEAD	INJURED	P.DAMAGE
YEAR	Pearson Correlation	1	,683	-,507	,516	,821*
	Sig. (2-tailed)	,	,135	,304	,295	,045
	N	6	6	6	6	6
ACCIDENT	Pearson Correlation	,683	1	,260	,976**	,955**
	Sig. (2-tailed)	,135	,	,619	,001	,003
	N	6	6	6	6	6
DEAD	Pearson Correlation	-,507	,260	1	,463	,059
	Sig. (2-tailed)	,304	,619	,	,355	,911
	N	6	6	6	6	6
INJURED	Pearson Correlation	,516	,976**	,463	1	,892*
	Sig. (2-tailed)	,295	,001	,355	,	,017
	N	6	6	6	6	6
P.DAMAGE	Pearson Correlation	,821*	,955**	,059	,892*	1
	Sig. (2-tailed)	,045	,003	,911	,017	,
	N	6	6	6	6	6

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation in the table 5.5 show to be a middle level positive relations $r = 0.683$ on intersection cell of year row and accident column, a middle level negative relations $r = -0.507$ on intersection cell of year row and dead column, a middle level positive relations $r = 0.516$ on intersection cell of year row and injured column, an important high level positive relations $r = 0.821^*$ on intersection cell of year row and material damage column at table 5.5.

The correlation in the table 5.5 demonstrates very important high level positive relations $r = 0.976^{**}$ between accident and injured numbers, a very important high level positive relations $r = 0.955^{**}$ between accident and amount of material damage, an important high level positive relations $r = 0.892^*$ between injured and amount of material damage.

Table 5.6. Gendarmerie According to Cities

ACCIDENT	Pearson Correlation Sig. (2-tailed) N	ACCIDENT	DEAD	INJURED	NDP	NDSLC	NVFT	NDLTB	TP	CP	VP	TV	AN
		1	,591** ,000 81	,814** ,000 81	,939** ,000 81	,744** ,000 81	,711** ,000 81	,738** ,000 81	,386** ,000 81	,366** ,001 81	,363** ,001 81	,963** ,000 81	,976** ,000 81
DEAD													
	Pearson Correlation Sig. (2-tailed) N		,591** ,000 81	,904** ,000 81	,711** ,000 81	,868** ,000 81	,722** ,000 81	,679** ,000 81	,519** ,000 81	,456** ,000 81	,678** ,000 81	,703** ,000 81	,611** ,000 81
INJURED													
	Pearson Correlation Sig. (2-tailed) N		,814** ,000 81	,904** ,000 81	,887** ,000 81	,913** ,000 81	,807** ,000 81	,797** ,000 81	,526** ,000 81	,474** ,000 81	,622** ,000 81	,877** ,000 81	,821** ,000 81
NDP													
	Pearson Correlation Sig. (2-tailed) N		,939** ,000 81	,711** ,000 81	1 ,000 81	,865** ,000 81	,883** ,000 81	,877** ,000 81	,427** ,000 81	,392** ,000 81	,465** ,000 81	,963** ,000 81	,953** ,000 81
NDSLC													
	Pearson Correlation Sig. (2-tailed) N		,744** ,000 81	,868** ,000 81	,865** ,000 81	1 ,000 81	,885** ,000 81	,853** ,000 81	,454** ,000 81	,393** ,000 81	,623** ,000 81	,821** ,000 81	,742** ,000 81
NVFT													
	Pearson Correlation Sig. (2-tailed) N		,711** ,000 81	,722** ,000 81	,807** ,000 81	,883** ,000 81	1 ,000 81	,942** ,000 81	,371** ,001 81	,320** ,004 81	,514** ,000 81	,793** ,000 81	,741** ,000 81
NDLTB													
	Pearson Correlation Sig. (2-tailed) N		,738** ,000 81	,679** ,000 81	,797** ,000 81	,877** ,000 81	,942** ,000 81	1 ,000 81	,322** ,003 81	,288** ,009 81	,391** ,000 81	,802** ,000 81	,761** ,000 81
TP													
	Pearson Correlation Sig. (2-tailed) N		,386** ,000 81	,519** ,000 81	,526** ,000 81	,427** ,000 81	,371** ,001 81	,322** ,003 81	1 ,000 81	,991** ,000 81	,692** ,000 81	,462** ,000 81	,419** ,000 81
CP													
	Pearson Correlation Sig. (2-tailed) N		,366** ,001 81	,456** ,000 81	,392** ,000 81	,393** ,000 81	,320** ,004 81	,288** ,009 81	,991** ,000 81	1 ,000 81	,590** ,000 81	,433** ,000 81	,401** ,000 81
VP													
	Pearson Correlation Sig. (2-tailed) N		,353** ,001 81	,678** ,000 81	,465** ,000 81	,623** ,000 81	,514** ,000 81	,391** ,000 81	,692** ,000 81	,590** ,000 81	1 ,000 81	,454** ,000 81	,370** ,001 81
TV													
	Pearson Correlation Sig. (2-tailed) N		,963** ,000 81	,703** ,000 81	,877** ,000 81	,821** ,000 81	,793** ,000 81	,802** ,000 81	,462** ,000 81	,433** ,000 81	,454** ,000 81	1 ,000 81	,989** ,000 81
AN													
	Pearson Correlation Sig. (2-tailed) N		,976** ,000 81	,611** ,000 81	,821** ,000 81	,742** ,000 81	,741** ,000 81	,761** ,000 81	,419** ,000 81	,401** ,000 81	,370** ,001 81	,989** ,000 81	1 ,000 81

**. Correlation is significant at the 0.01 level (2-tailed).

Abbreviations: accident number (ACCIDENT), dead number (DEAD), injured number (INJURED), number of drivers which are punished (NDP), number of drivers which are sent law court (NDSLCL), number of vehicles which are forbidden from traffic (NVFT), number of driving licences which are taken back (NDLTB), total population (TP), city population (CP), village population (VP), total vehicle (TV), auto number (AN).

The correlation in the table 5.6 demonstrates very important high level positive relations $r = 0.591^{**}$ on intersection cell of accident row and dead column, a very important high level positive relations $r = 0.814^{**}$ on intersection cell of accident row and injured column, a very important high level positive relations $r = 0.939^{**}$ on intersection cell of accident row and, number of drivers which are punished, a very important high level positive relations $r = 0.744^{**}$ on intersection cell of accident row and number of drivers which are sent law court, a very important high level positive relations $r = 0.711^{**}$ on intersection cell of accident row and number of vehicles which are forbidden from traffic column, a very important high level positive relations $r = 0.738^{**}$ on intersection cell of accident row and number of driving licenses which are taken back column, a very important middle level positive relations $r = 0.386^{**}$ on intersection cell of accident row and total population numbers column, a very important high level positive relations $r = 0.963^{**}$ on intersection cell of accident row and total vehicle numbers column at table 5.6.

The correlation in the table 5.6 illustrates very important middle level positive relations $r = 0.519^{**}$ between total population and dead numbers, a very important middle level positive relations $r = 0.611^{**}$ between automobile numbers and dead numbers a very important high level positive relations $r = 0.981^{**}$ between total accident numbers and injured accidents, an important high level positive relations $r = 0.841^{*}$ between total population numbers and injured accident, a very important high level positive relations $r = 0.989^{**}$ between total vehicle number and injured accidents, a wonderful level positive relations $r = 0.999^{**}$ between total accident numbers and amount of material damage, a very important high level positive relations $r = 0.981^{**}$ between total accident numbers and injured accidents, a very important high level positive relations $r = 0.980^{**}$ between total accident numbers

and injured numbers, a very important high level positive relations $r = 0.981^{**}$ between total accident numbers and total vehicle numbers. When we look dead numbers row, in general decrease in dead numbers are showed very slowly. If row which comprises total population and vehicle numbers are determined, a positive relation is showed for only injured numbers.

Table 5.7. Gendarmerie According to Years

Correlations													
	YEARS	NMA	NIA	NMDA	TAN	DN	IN	NDP	AP	POP	TV	AUTO	
YEARS	Pearson Correlation	1											
	Sig. (2-tailed)	.769	.881*	.786	.807	.645	.895*	.196	.973**	.992**	.899*	.921**	
	N	6	6	6	6	6	6	6	6	6	6	6	
NMA	Pearson Correlation		1										
	Sig. (2-tailed)	.769	.435	.309	.329	.879*	.451	.659	.669	.790	.470	.502	
	N	6	6	6	6	6	6	6	6	6	6	6	
NIA	Pearson Correlation			1									
	Sig. (2-tailed)	.881*	.435	.969**	.981**	.238	.999**	.235	.946**	.841*	.989**	.990**	
	N	6	6	6	6	6	6	6	6	6	6	6	
NMDA	Pearson Correlation				1								
	Sig. (2-tailed)	.786	.309	.969**	.999**	.064	.969**	.386	.900*	.740	.975**	.955**	
	N	6	6	6	6	6	6	6	6	6	6	6	
TAN	Pearson Correlation					1							
	Sig. (2-tailed)	.807	.329	.981**	1	.095	.980**	.362	.911*	.762	.981**	.966**	
	N	6	6	6	6	6	6	6	6	6	6	6	
DN	Pearson Correlation						1						
	Sig. (2-tailed)	.645	.879*	.309	.095	.879*	.254	.870*	.469	.659	.251	.301	
	N	6	6	6	6	6	6	6	6	6	6	6	
IN	Pearson Correlation							1					
	Sig. (2-tailed)	.895*	.451	.969**	.980**	.264	1	.212	.956**	.856*	.992**	.993**	
	N	6	6	6	6	6	6	6	6	6	6	6	
NDP	Pearson Correlation								1				
	Sig. (2-tailed)	.196	.659	.386	.362	.870*	.212	1	.000	.208	.232	.189	
	N	6	6	6	6	6	6	6	6	6	6	6	
AP	Pearson Correlation									1			
	Sig. (2-tailed)	.973**	.669	.946**	.911*	.489	.956**	.000	.955**	.969**	.969**	.975**	
	N	6	6	6	6	6	6	6	6	6	6	6	
POP	Pearson Correlation										1		
	Sig. (2-tailed)	.992**	.790	.841*	.762	.659	.856*	.208	.955**	1	.870*	.897**	
	N	6	6	6	6	6	6	6	6	6	6	6	
TV	Pearson Correlation											1	
	Sig. (2-tailed)	.899*	.470	.989**	.981**	.251	.992**	.232	.969**	.870*	1	.996**	
	N	6	6	6	6	6	6	6	6	6	6	6	
AUTO	Pearson Correlation												1
	Sig. (2-tailed)	.921**	.502	.990**	.966**	.301	.993**	.189	.975**	.897*	.986**	.996**	
	N	6	6	6	6	6	6	6	6	6	6	6	

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Abbreviations: number of mortal accident (NMA), number of injured accident (NIA), number of material damage accident (NMDA), total accident number (TAN), dead number (DN), injured number (IN), number of drivers which are punished (NDP), amount of punishment (AP), total population (POP), total vehicle (TV), auto number (AUTO).

The correlation in the table 5.7 illustrates high level negative relations $r = -0.769$ on intersection cell of year row and mortal accident column, a high level positive relations $r = 0.881^*$ on intersection cell of year row and injured accident column, a high level positive relations $r = 0.786$ on intersection cell of year row and material damage column, a high level positive relations $r = 0.807$ on intersection cell of year row and total accident column, a middle level negative relations $r = -0.645$ on intersection cell of year row and dead column, an important high level positive relations $r = 0.895^*$ on intersection cell of year row and injured column, a low level negative relations $r = -0.196$ on intersection cell of year row and number of drivers which are punished column, a very important high level positive relations $r = 0.973^{**}$ on intersection cell of year row and amount of punishment column, a very important high level positive relations $r = 0.922^{**}$ on intersection cell of year row and total population column, an important high level positive relations $r = 0.899^*$ on intersection cell of year row and total vehicles column, a very important high level positive relations $r = 0.921^{**}$ on intersection cell of year row and automobile numbers column at table 5.7.

The correlation in the table 5.7 shows an important high level positive relations $r = 0.879^*$ between mortal accidents and dead numbers, a very important high level positive relations $r = 0.969^{**}$ between injured accident and amount of material damage, a very important high level positive relations $r = 0.981^{**}$ between total accident numbers and injured accidents, an important high level positive relations $r = 0.841^*$ between total population numbers and injured accident, a very important high level positive relations $r = 0.989^{**}$ between total vehicle number and injured accidents a wonderful level positive relations $r = 0.999^{**}$ between total accident numbers and amount of material damage, a very important high level positive relations $r = 0.981^{**}$ between total accident numbers and injured accidents,

a very important high level positive relations $r = 0.980^{**}$ between total accident numbers and injured numbers, a very important high level positive relations $r = 0.981^{**}$ between total accident numbers and total vehicle numbers.

5.3. Regression Analysis

Table 5.8. Estimate of Gendarmerie Region Accidents with Regression Analysis

Variables Entered/Removed^b

Model	Variables Entered	Variables Removed	Method
1	NDP ^a , POP, TV		Enter

a. All requested variables entered.

b. Dependent Variable: TAN

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2,65E+08	3	88311894,59	4726,640	,000 ^a
	Residual	37367,727	2	18683,863		
	Total	2,65E+08	5			

a. Predictors: (Constant), NDP, POP, TV

b. Dependent Variable: TAN

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	112589,6	9589,565		11,741	,007
	TV	9,583E-03	,000	1,449	43,960	,001
	POP	-2,20E-03	,000	-,516	-15,746	,004
	NDP	-2,85E-02	,006	-,082	-4,908	,039

a. Dependent Variable: TAN

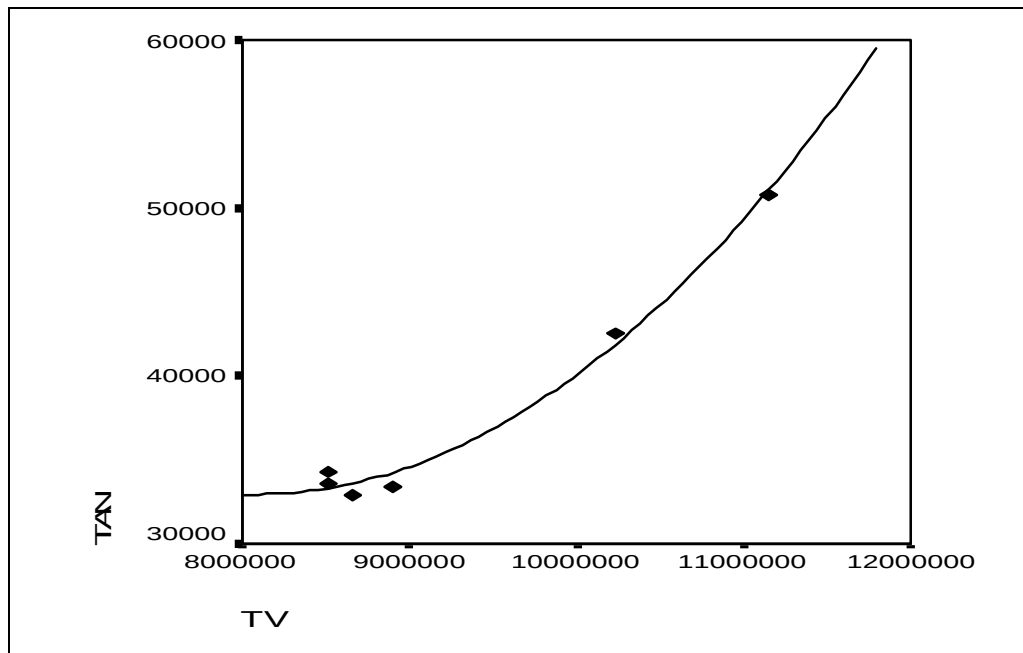


Figure 5.25. Relationships between Total Vehicle (TV) and Total Accident Number (TAN)

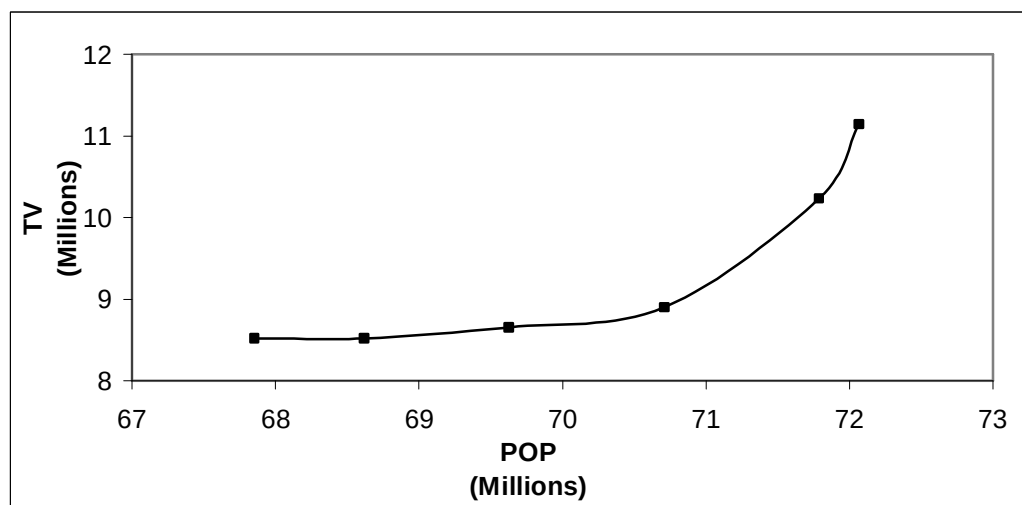


Figure 5.26. Relationships between Population (POP) and Total Vehicle (TV)

At table 5.8, SPSS statistic program gives R and R^2 which pertain to model, straightened R^2 and standard failure (Model Summary) regression analyses table (ANOVA) and coefficient guess. According to this guess equation as follows

$$Y = 112,589.6 - 0.0285X_1 - 0.0022X_2 + 0.0096X_3$$

Dependent variable Y is to represent accident numbers. X_1 which is defined as independent variable is to represent number of drivers which are punished. X_2 is to represent total populations. X_3 is to represent total vehicle numbers.

Table 5.9. Estimate of Gendarmerie Region Deaths with Regression Analysis

Variables Entered/Removed^b

Model	Variables Entered	Variables Removed	Method
1	POP, NDP, TAN, AUTO ^a		Enter

a. All requested variables entered.

b. Dependent Variable: DN

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	130911,8	4	32727,952	122,032	,068 ^a
	Residual	268,191	1	268,191		
	Total	131180,0	5			

a. Predictors: (Constant), POP, NDP, TAN, AUTO

b. Dependent Variable: DN

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1191,722	2084,899		,572	,669
	TAN	1,100E-02	,011	,495	1,037	,488
	NDP	6,168E-03	,001	,795	7,814	,081
	AUTO	-2,25E-04	,000	-,760	-,955	,515
	POP	-1,79E-05	,000	-,188	-,479	,716

a. Dependent Variable: DN

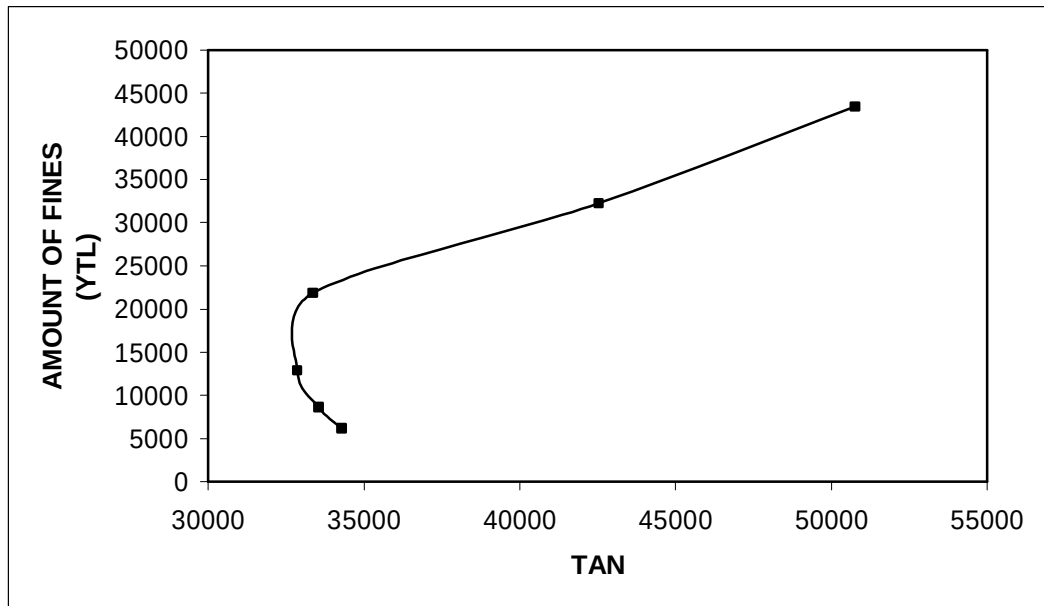


Figure 5.27. Relationships between Total Accident Number (TAN) and Amount of Fines

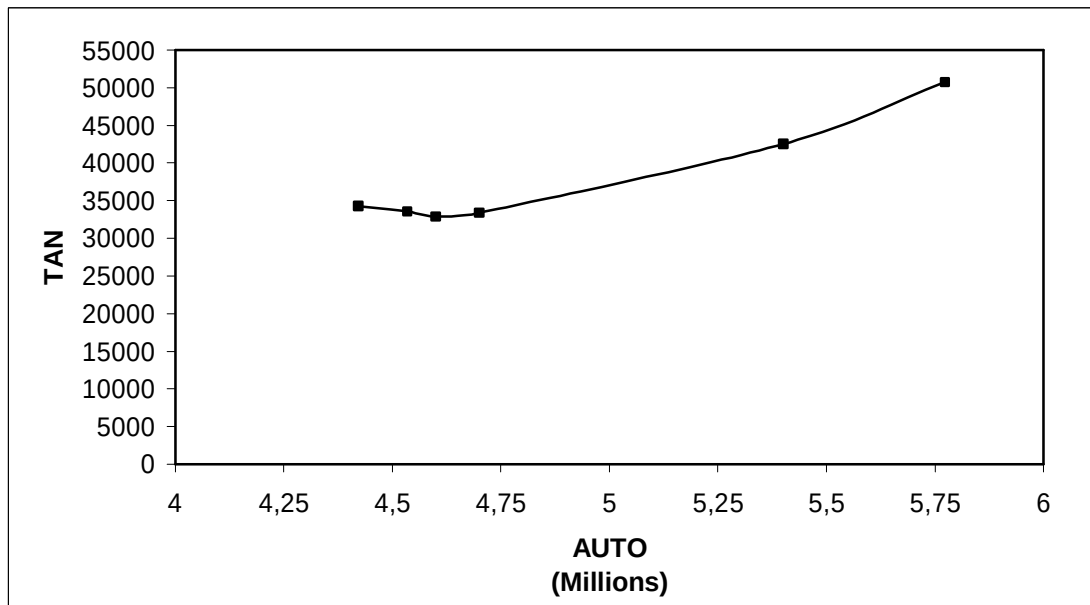


Figure 5.28. Relationships between Auto Number (AUTO) and Total Accident Number (TAN)

At Table 5.9, SPSS statistic program gives R and R^2 which pertain to model, straightened R^2 and standard failure (Model Summary) regression analyses table (ANOVA) and coefficient guess. According to this guess equation as follows

$$Y = 1191,722 + 0.011X_1 + 0.0062X_2 - 1.79*10^{-5}X_3 - 2.25*10^{-4} X_4$$

Our dependent variable Y is to dead numbers. X_1 which is defined as independent variable is to represent accident numbers. X_2 is to represent number of drivers which are punished. X_3 is to represent total population. X_4 is to represent automobile numbers.

6. CONCLUSION

In this search, it is tried to reach some results using the data taking from the Gendarmerie General Commandership. If the data covers 15-20 years, it is possible that more accurate results should be reached.

The number of people killed in the traffic accidents of Turkey in general can be shown against per 100 accidents as follows; in year 2000 dead ratio is 1.11, in year 2001 dead ratio is 0.99, in year 2002 dead ratio is 0.95, in year 2003 dead ratio is 0.87, in year 2004 dead ratio is 0.82 and in year 2005 dead ratio is 0.73. These results indicate that despite the increase in the number of accidents, there is a steady decrease in the number of deaths. The reason for the decrease is improvements of vehicle safety systems and as well as the better treatments in the emergency units of Turkey. The percentage of deaths is decreased each year and this is wonderful result for Turkey.

The number of people injured in the traffic accidents of Turkey in general can be shown against per 100 accidents as follows; in year 2000 injury ratio is 27.24, in year 2001 injury ratio is 26.23, in year 2002 injury ratio is 26.37, in year 2003 injury ratio is 25.73, in year 2004 injury ratio is 25.35, and in year 2005 injury ratio is 24.80. There is a small decrease in number of injured people in last 6 years.

The number of deaths between 2000-2005 in Gendarmerie zones of Turkey per 100 accidents can be concluded as follows; in year 2000 dead ratio is 4.74, in year 2001 dead ratio is 4.26, in year 2002 dead ratio is 3.86, in year 2003 dead ratio is 3.44, in year 2004 dead ratio is 3.16 and in year 2005 dead ratio is 2.58. There is a substantial amount of decrease in the number of people killed in the per 100 accidents in the Gendarmerie zones, however it this data is compared with the general data of Turkey, dead ratio is still very high in Gendarmerie zones, because of Gendarmeries are responsible the tourist areas of Turkey and during the summer periods, dead ratio is very high in these regions.

The other reasons for the decrease in the number of deaths are the increased number of traffic controls in Turkey and drivers have become more conscious. As the controls are done more frequently and the fine rates have been increased, the fine

rates also has been increased in Gendarmerie territories in between 2000-2005.

The accidents occurred mostly in July and August. As it is holiday period time, the traffic is the densest in these months. As a result, the number of accidents, the number of deaths and the number of injuries have reached its top level in these months.

The number of injuries between 2000-2005 in Gendarmerie zones of Turkey per 100 accidents can be concluded as follows, in year 2000 injury ratio is 59.88, in year 2001 injury ratio is 64.65, in year 2002 injury ratio is 66.41, in year 2003 injury ratio is 65.76, in year 2004 injury ratio is 62.41 and in year 2005 injury ratio is 59.31. When these results are considered, there has been neither increase nor decrease in the number of injuries.

When the accidents which occurred in the Gendarmerie territory between years 2000 and 2005 are considered, the number of people dead in the traffic accidents of 5 big cities of Turkey can be summarized against per 100 accidents as follows: in Adana dead ratio is 5.67, in Ankara dead ratio is 1.18, in Bursa dead ratio is 1.84, in İstanbul death ratio is 0.58 and İzmir dead ratio is 3.5. According to these results, Adana and İzmir have the highest death rates. Therefore more traffic control and more attentions must be done in these regions.

When the reasons for the accidents which occurred in the Gendarmerie territories, between 2000 and 2005 are examined, there has been increase in carelessness, imprudence and alcoholic driving whereas there has been decrease in speed exceeding and careless overtaking.

In the analysis conducted in SPSS (figure 5.25), according to the 6 years data relating to the total number of cars and accidents, there has been great increase in the last 2 years whereas there has been no changes in the first 4 years.

There has been consistent increase in population and the number of cars (figure 5.26).

The relation between the number of cars and the total number of accidents (figure 5.28) shows that the total numbers of accidents increases as the number of cars increases. If the factors that directly and indirectly affect the accidents are listed and specified and studied deeply and take the precautions as a result, it is certain that

the accidents will drastically decrease. The list of subject that should be discussed and studied is as follows:

- Ø How to be a good driver and who should be allowed to be a driver? The responsibilities for individuals, for public; law topics, the sufficiency of the authority given to police and gendarmerie.
- Ø The present condition of the roads in our country, the condition that it should be, standardization studies, engineering activities.
- Ø How should a conscious pedestrian be like? How can this condition be improved? The expectations from conscious pedestrians and how should a conscious pedestrian be educated? What should be the contributions of the media and the education activities?
- Ø The present conditions of the vehicles in our country, their sufficiency, standards and the affectivity and authority of the associations and establishments in charge.
- Ø The organization' and the charged units' structures and the authorities of thee units, authority confusions.
- Ø The effectiveness, compliance, authorization, organization of traffic polices.
- Ø Proceeding and planning of short and long term projects.
- Ø Necessary and special precautions for weather conditions.
- Ø Wide spreading and implementing of speed cameras.
- Ø Efficiency and effectiveness of sanctions on drunken-driving.
- Ø Necessary precautions and sanctions against excessive speeding.
- Ø Adequate technical equipment and equipments of Police and Gendarmerie.
- Ø Regulations about psychological condition, educational background and age.

- Ø Gaining the present standards and existent conditions about health and first aid activities.
- Ø Legal regulations and sanctions about unplanned urbanization and infrastructure.
- Ø Activities that increases the control and security.
- Ø Deterrence of punishment and existence condition.

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