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17. Community Health, Safety and Security

17.1 Introduction

This Chapter presents the baseline context related to community health, safety and security in the social study area. The topics covered in this section include health care services, the public health profile, and crime and social order. The Chapter reflects the concerns raised by the community during consultation.

17.1.1 Objectives

The specific objectives of this community health, safety and security impact assessment are to:

- Describe the national and local baseline, including neighbourhoods in the social study area.
- Identify the potential positive and negative impacts of Project;
- Develop attainable mitigation measures to enhance positive impacts and reduce or avoid negative impacts;
- Develop management and monitoring measures to be implemented throughout the life of the Project.

17.2 Summary Policy Context

See Chapter 13 for the policy context.

17.3 Scope and Assessment Methodology

See Chapter 13 for the scope and assessment methodology.

17.4 Baseline

17.4.1 Health Care and Standards[1]

National Level

Over the past decade, Turkey has implemented health-care reforms, achieving universal health coverage in 2003. Over the last five years, the introduction of the Health Transformation Programme (HTP) has merged health service providers. Health care is now provided by public, semi-public, private and philanthropic organisations. Health care institutions include the Ministry of Health (MOH), universities, the Ministry of Defence and private health professionals.

The HTP sought to address shortcomings of both low health expenditure, and a fragmented health insurance system. Definition of patient rights and enhancement to provider accountability was implemented through the Directive on Patient Rights (2003) and helped to operationalise the Patient Rights Legislation (enacted in 1998, but not implemented). The Directive defined patient rights to health insurance and health services, and specified provider obligations in relation to patient rights, information provision, confidentiality, and patient consent for health interventions, and also provided citizens with the right to choose health-care institutions, hospital doctors, and family physicians[2].

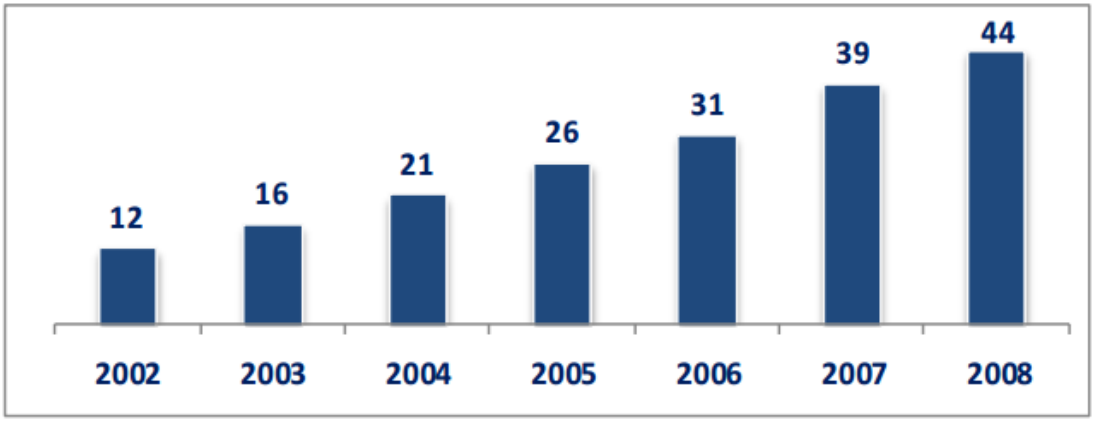
[1] This section focuses aspects of health care quality and the community health profile. Aspects of health infrastructure are covered in *Chapter 16: Infrastructure and Services*

2 Universal health coverage in Turkey: enhancement of equity (2013) Atun et al, Imperial College London, UK (http://dx.doi.org/10.1016/S0140-6736(13)61051-X)

Several reforms have been implemented to harmonise health benefits across the different health insurance schemes, including implementation of a low income Green Card[3] program. In 2007, legal measures mandated that all citizens of Turkey would have access to free primary health care, even if they are not covered under the social security system. These legislative changes unified the three different social security and health insurance schemes (SSK, Bağ-Kur and Emekli-Sandığı) into one unified social security institute, the Social Security Institute of Turkey. With an accompanying law, the Universal Health Insurance Fund was founded[4].

Payments to hospitals (particularly public hospitals) have increased over the last 15 years (Figure 17-1). However, payments are activity focused and poorly linked to outcomes and quality of care. The quality component that does exist in the hospital reimbursement process is weak (and self-assessed). Furthermore, there is little incentive for public hospitals to manage costs, since overspend is met with an increase in budget the following year[5].

Figure 17-1: Turkey Health Care Spending 2002-2008 (US$ billion per year)[6]



In 2012 Turkey spent 5.4% of GDP on health care. Although spending has increased year on year over the last 15 years, spending is still the lowest amongst the Organisation for Economic Co-operation and Development (OECD) Countries and is well below OECD average of 9.3%. In 2012, 77% of health spending was funded by public sources, a substantial increase from 63% in 2000, an increase linked to expansion in coverage of health services to citizens[7].

The country saw a year on year increase in the number of trained doctors and nurses between 2000 and 2010 alongside an increase in healthcare spending per GDP. However, the number of dentists has remained static (Figure 17-2). Despite this overall growth in healthcare professionals, the number of doctors per capita in Turkey is still low, rising from 1.0 doctor per 1,000 population in 2000, to 1.8 in 2012, the lowest rate among OECD countries and well below the OECD average of 3.2. The majority of doctors work within State hospitals (59%), while 20% work in private hospitals, the remaining 20% work between university health facilities and NGO health facilities.

3 Health care entitlements known as green cards are issued to Turkish citizens who cannot pay for health services. The pilot application of green card use began in January 1992. The Turkish National assembly passed the bill that is called the green card law. The purpose of the law is to meet the health expenditures of Turkish citizens whose total income level is one-third below the minimum wage. An economic coordination group was set up under the leadership of the state minister of economic relations in addition to the ministers of internal affairs, finance, labour, and social security. Based on the per capita health expenditures of green card holders, the coordination group meets to determine the amount of money needed in the government budget, and to coordinate with other government and private institutions to ensure that all green card holders receive the health care they need [retrieved from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1781919/; Date:30.06.2013, 12:00]

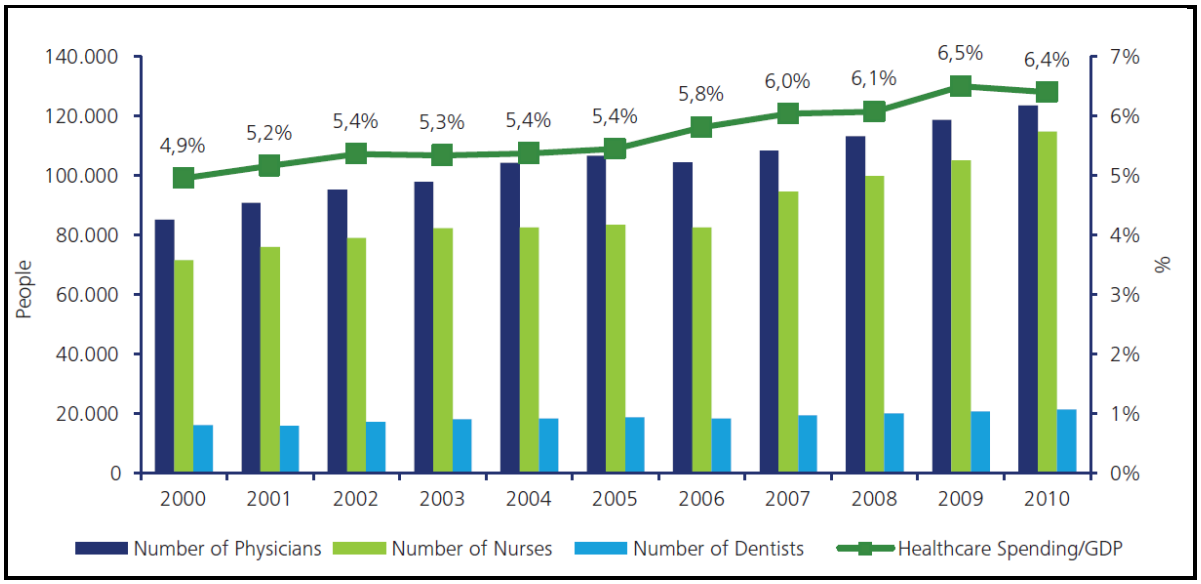
[4] OECD Reviews of Health Systems TURKEY Chapter 2, pp. 46-47

[5] OECD Reviews of Health Care Quality Turkey, November 2014.

[6] TurkStat, Health Statistics in Turkey Life Science and Health Care Report, 2012

[7] http://www.oecd.org/els/health-systems/Briefing-Note-TURKEY-2014.pdf

Figure 17-2: Number of health care professionals and public health spending in Turkey, 2000 - 2010[8]



Despite the increase in availability of health care in major centres in Turkey, standards of care have not matched overall growth of the Sector. The OECD Review of Health Care Quality: Turkey (2014) report found that Turkey rated low on care standards with mortality within 30 days of hospital admission for acute myocardial infarction in Turkey at 10.7 per 100 patients, 35% higher than the OECD average of 7.99. Similarly for stroke patients, case fatality within 30 days of hospital admission is the third highest in the OECD (11.8 per 100 patients), following Mexico and Slovenia.

Primary Healthcare

With the introduction of the HTP in 2005 came a family medicine-centred primary health-care model, with a focus on increased resources in three areas—physical resources, human resources, and human resource capacity. Each family doctor or family practice offers services to a maximum registered population of 4,000 citizens above that which was provided under the former model (of health houses or traditional primary health-care centres). By 2011, 6,250 new family centres had been established and infrastructure was upgraded and expanded (most of the health houses were kept and, along with health centres, refurbished or converted into family medicine centres). From 2005 onwards, family physicians were engaged in contracts to provide primary health-care services, with expanded preventive activities, and women and child health services. Additionally, they were responsible for providing mobile health services to people registered with them and living in rural areas, and homecare services for patients unable to travel to clinics, along with services to nursing homes, prisons, and child care centres through regular visits[10].

Provincial Health Directorates are responsible for health service planning and provision at the provincial level. Primary health care is administered at the Provincial level and provided to citizens through health centres, health posts, Maternal and Child Health, Family Planning Centres and tuberculosis dispensaries, located in Districts and neighbourhoods. The District Directorate of Health determines the needs of the health sector at the district level and the Provincial Directorate of Health approves the budget and decides whether the needs submitted by the district directorate are appropriate. Responsibility for administering and delivering environmental health and sanitation lies with Municipalities. The most recent initiative at the primary health care level has been the introduction of a family physician scheme. Family practitioners act as the first contact point for citizens

[8] TurkStat, Health Statistics in Turkey Life Science and Health Care Report, 2012
[9] http://www.oecd.org/els/health-systems/Review-of-Health-Care-Quality-Turkey_ExecutiveSummary.pdf
[10] Universal health coverage in Turkey: enhancement of equity (2013) Atun et al, Imperial College London, UK (http://dx.doi.org/10.1016/S0140-6736(13)61051-X)

in the health care system and are accessible at the community level. Treatment from a family practitioner is classed as Primary health care and is free for all Turkish citizens. Individuals are free to choose their family practitioner and can change their doctor if an alternative is available in the local area and is not fully subscribed with patients.

17.4.2 Public Health Profile

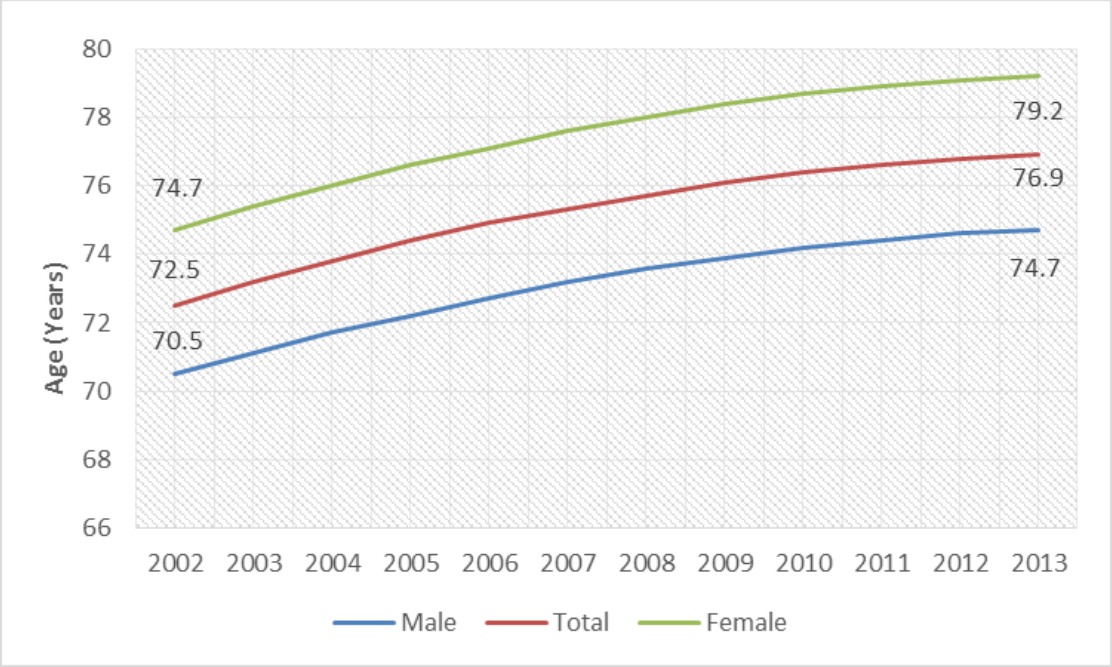
National Level

Life expectancy

Key health statistics for Turkey have shown improvements (in available indicators) in the period 2000 to 2013, with life expectancy increasing for both women and men.

In 2013, life expectancy at birth in Turkey was 76.9 years (Figure 17-3) with life expectancy increasing by 4.4 years between 2000 and 2013, a rate six months faster than the average across OECD countries[11]. This increase in life expectancy is partly due to the higher emphasis placed on prevention of diseases by public health centres and primary health care institutions in recent years.

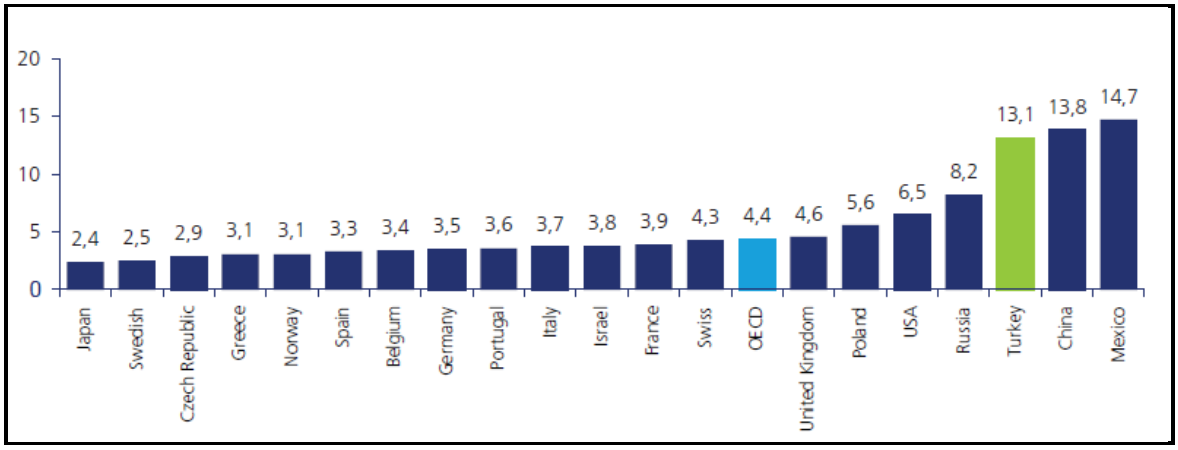
Figure 17-3: National Life Expectancy at Birth, by Years and Sex, (Year)[12]



Infant mortality rates (IMR)[13] in Turkey have decreased significantly in the last 15 years from 31.5 per 1,000 live births in 2002 to 7.8 in 2013. This decrease is attributed to widespread immunization programmes, with the rate of full vaccination coverage increasing from 78% in 2002 to 97% in 2011. Despite improvements in IMRs, Turkey is still ranked amongst the highest rates in comparison with other developed countries[14] (Figure 17-4).

[11] http://www.oecd.org/els/health-systems/Briefing-Note-TURKEY-2014.pdf
[12] Source: TURKSTAT (2013)
[13] The infant mortality rate is the number of deaths of children under one year of age in a given year, expressed per 1,000 live births.
[14] http://www.oecd-library.org/docserver/download/8109111ec010.pdf?expires=1441899869&id=id&accname=guest&checksum=9A6624AE04709686F4E7F6052147E45C

Figure 17-4: Infant Mortality Rate (number of infant deaths per 1000 live births)[15]



Disease

Diseases of the circulatory system (39.9 %), cancer (20.7 %) and diseases of the respiratory system (8.9 %) are the three most common causes of death in Turkey[16]. Perinatal conditions and ischemic heart disease are major causes of burden of diseases at national level[17].

Turkey has seen an increase in some types of infectious diseases over the last decade including rises in AIDS and Measles (Table 17-1).

Table 17-1: National Frequency of Infectious Diseases by Year[18]

		2002	2008	2009	2010	2011	2012	2013
AIDS	Local Case[19]	42	48	68	64	66	79	80
	Imported Case	6	1	7	6	14	10	13
	Total Cases	48	49	75	70	80	89	93
Measles	Local Case	7,810	0	0	0	0	318	6,731
	Imported Case	0	4	4	7	111	31	674
	Total Cases	7,810	4	4	7	111	349	7,045
Tuberculosis	Local Case	18,043	17,425	16,594	17,700	14,852	13,878	-
	Imported Case	0	175	163	179	202	261	-
	Total Cases	18,043	17,600	16,757	15,879	15,054	14,139	-
Malaria	Local Case	10,184	133	38	9*	4*	1*	34*
	Imported Case	40	49	46	78	128	375	251
	Total Cases	10,224	215	84	87	132	376	285

*2010, 2011, 2012 and 2013 all local malaria cases are “Relapsing malaria case” and local new case number is “0” (zero)

The increase in measles in the total population is partly attributed to the increase in refugees arriving in Turkey from Syria. A national immunisation programme is underway to vaccinate refugees entering

[15] Deloiite & yased (International Investors Association). Turkey Life Science and Health Care Report, June 2012.
[16] Turkish Statistical Institute, Cause of Death Statistics, 2009
[17] National Burden of Disease and Cost Effectiveness Study, 2003.
[18] Public Health Institution of Turkey
[19] ‘Local Case’ refers to incidence, infection or transmission amongst Turkish residents. ‘Imported Case’ refers to incidence from non-Turkish residents.

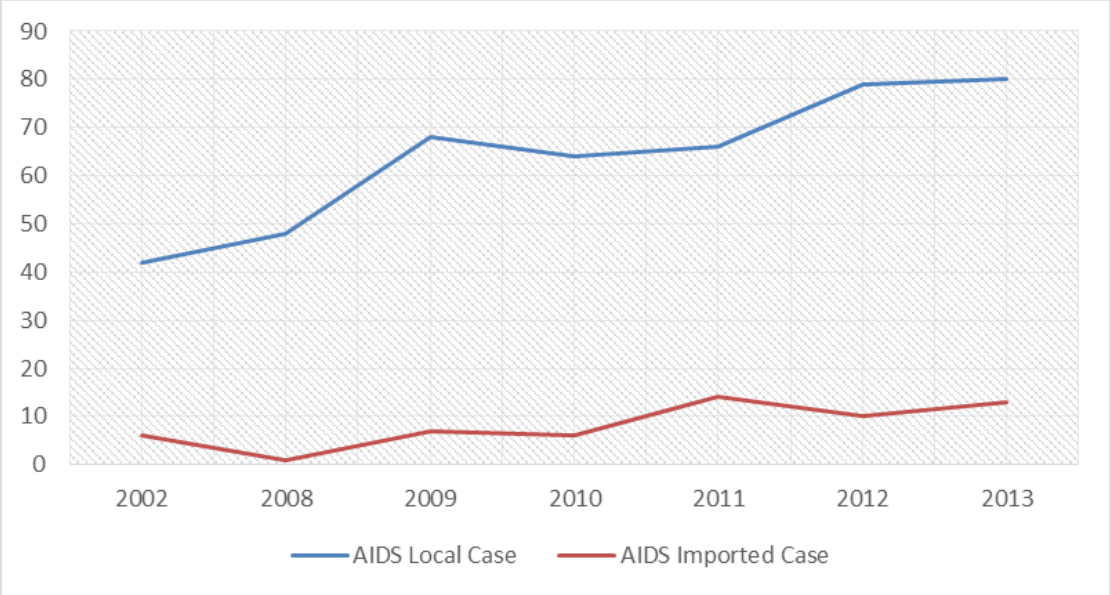
the country legally; however illegal refuges enter the country through unregulated border points and do not receive vaccinations.

The total reported new cases of AIDS have risen from 48 in 2002 to 93 in 2013. Local cases of AIDS far outweigh those from non-Turkish cases (Figure 17-5).

A study in 2012 explored the status of HIV/AIDs in Turkey and found that heterosexual relationships were the most common way of transmission and the majority of new cases were male. Transmission through IV drug use and blood transfusion decreased proportionally between 2002 and 2012. The highest numbers of cases were reported in 20-29 and 30-39 age groups; and the number of cases in 40 and over age groups had been increasing as the population ages. [20]

The increasing number of incidences of HIV/AIDS indicates the need for prioritising HIV control activities within Turkey, particularly promotion of safer sex practices.

Figure 17-5: National Frequency of AIDS by Year[21]



The prevalence of Tuberculosis has declined from more than 18,000 cases in 2002 to 14,000 over a 10 year period, however the trend of imported cases is increasing compared to the decline in local cases, again, suggesting refugee or other new arrivals are not fully accessing vaccination programs.

Health risk factors in Turkey include obesity, smoking and consumption of alcohol. Turkey has achieved significant progress in reducing tobacco consumption over the past decade, with the proportion of daily smokers among adults decreasing from 32% in 2003 to 24% in 2012[22]. Still, smoking rates among adults in Turkey remain higher than the OECD average of 20.7%.

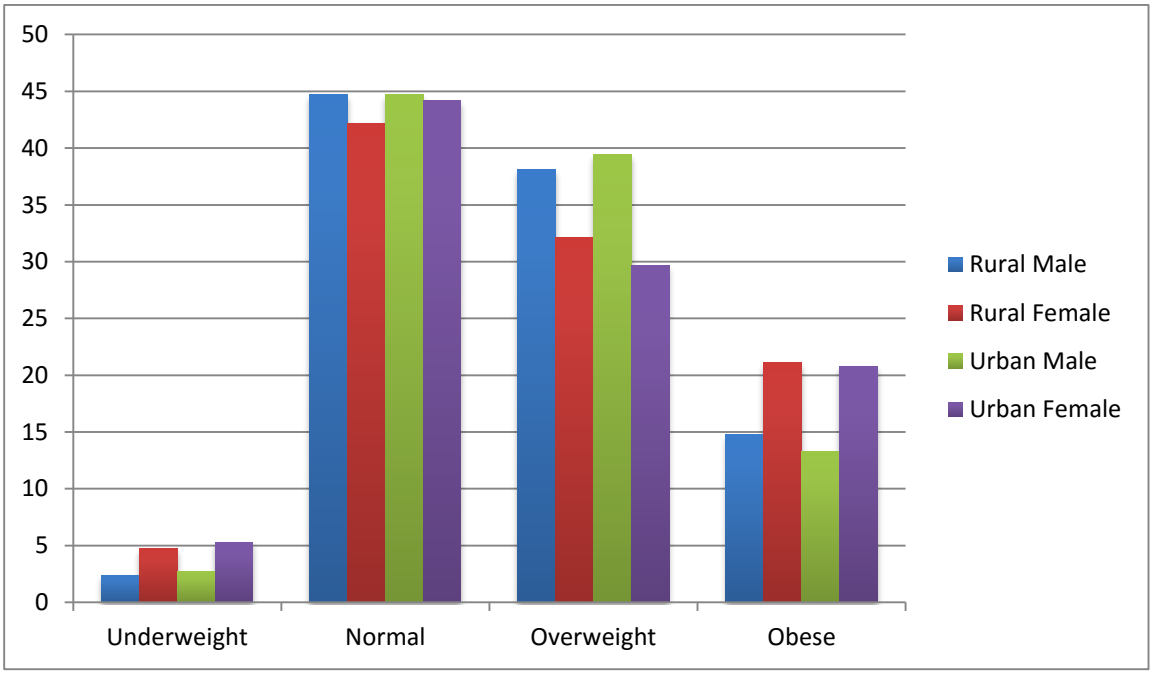
In 2012, almost one in five adults (17.2%) in Turkey was defined as being obese (based on actual measures of their height and weight)[23] (Figure 17-6). The growing prevalence of obesity foreshadows increases in the occurrence of health problems (such as diabetes and cardiovascular diseases), and higher health care costs in the future.

While the average citizen is of normal body weight, there are more males than females categorised as normal or overweight, and more females than males categorised as underweight or obese overall. However, the distribution by urban or rural residency and gender indicates that there are slightly more

[20] http://www.tip.hacettepe.edu.tr/actamedica/2012/sayi_1/ACTA12(003).pdf
[21] http://www.tip.hacettepe.edu.tr/actamedica/2012/sayi_1/ACTA12(003).pdf
[22] http://sbu.saglik.gov.tr/Ekutuphane/kitaplar/khrfai.pdf
[23] http://www.oecd.org/els/health-systems/Briefing-Note-TURKEY-2014.pdf

overweight and obese women in rural than urban areas, and there are more women categorised as being average weight in an urban setting than rural.

Figure 17-6: Distribution of Body Mass Index of individuals aged 15 and Over Aged, by Sex and Residence (2012)[24]

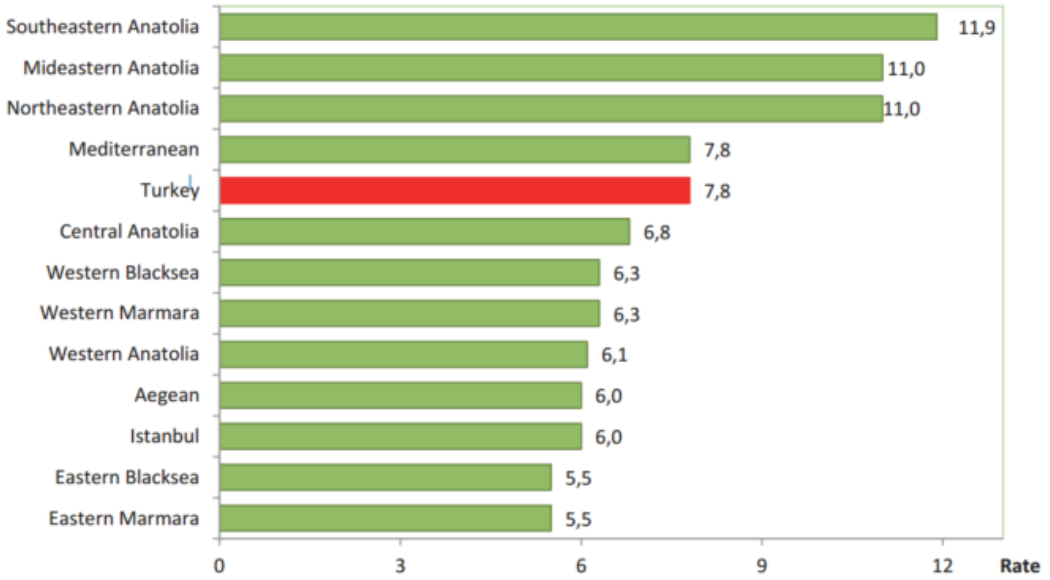


Provincial Level

Maternal and infant care in Kayseri Province is of a higher standard than national average. Infant mortality rates for Kayseri Province are not available, however the 2013 Health Statistics Yearbook reports that Central Anatolia (in which Kayseri is located) has a lower IMR rate (6.8) than the Turkish national average (7.8)[25] (Figure 17-7).

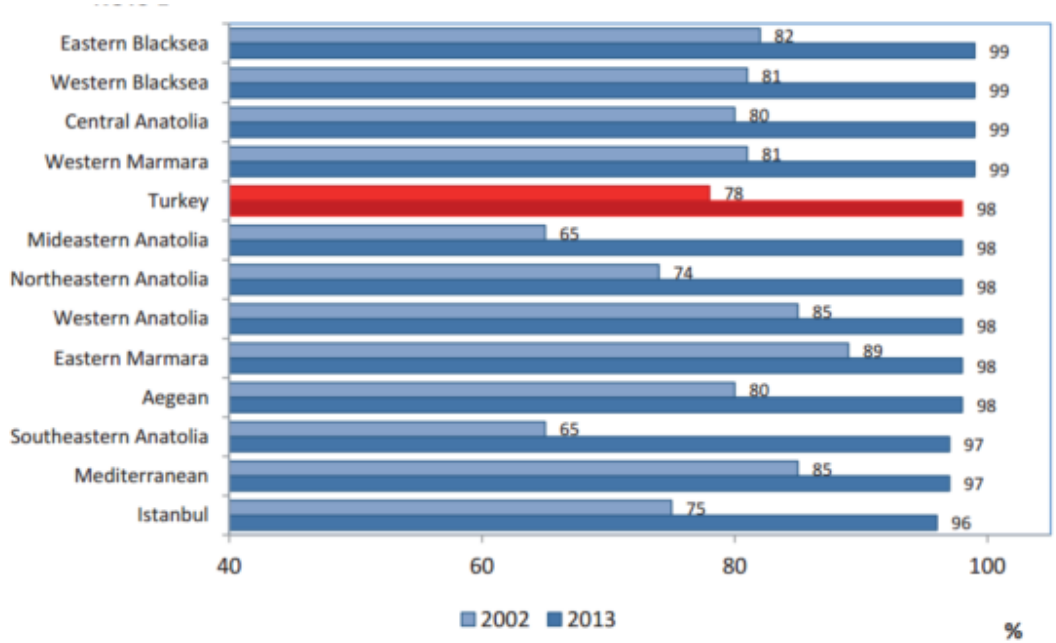
[24] TURKSTAT, Health Interview Survey 2012
[25] http://sbu.saglik.gov.tr/Ekutuphane/kitaplar/health_statistics_yearbook_2013.pdf

Figure 17-7: Regional Infant mortality rates (2013)[26]



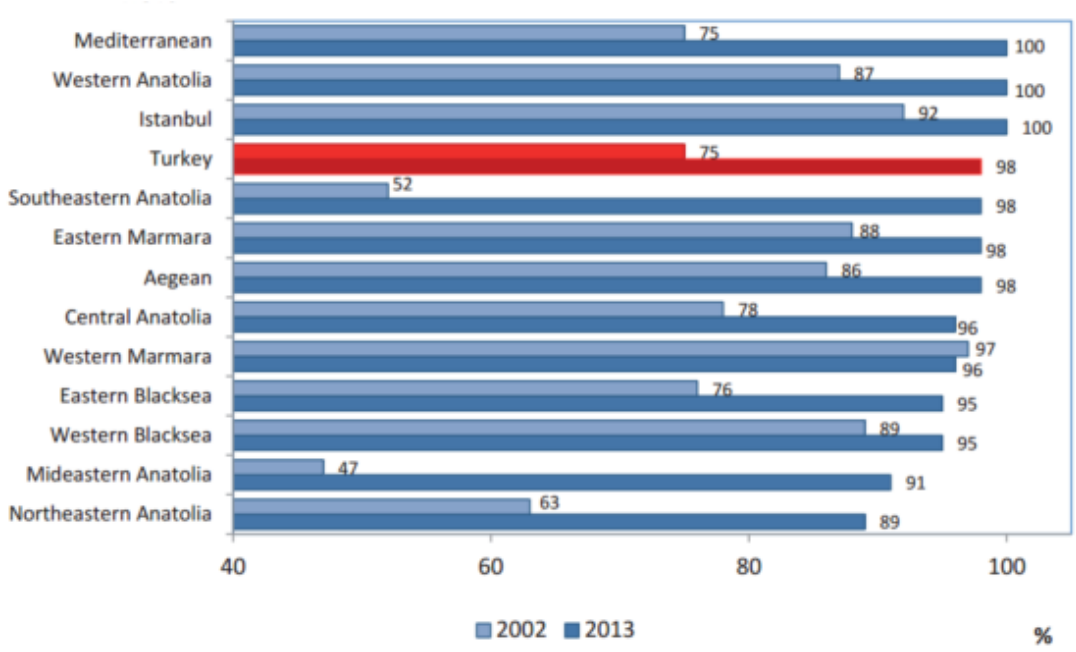
Central Anatolia's IMR has decreased since 2002 due to an increase in complete immunisations from 80% to 99% in 2012 and through improved access to health care (Figure 17-8). The number of births in a health care facility increased from 78% in 2002 to 96% in 2013 (Figure 17-9), thereby reducing the potential for deaths at childbirth.

Figure 17-8: Complete Immunisation Coverage by Region[27]



26 Public Health Institution of Turkey
27 Public Health Institution of Turkey

Figure 17-9: Proportion of Births in Health Care Facility, (%), 2002, 2013[28]



Neighbourhood Level

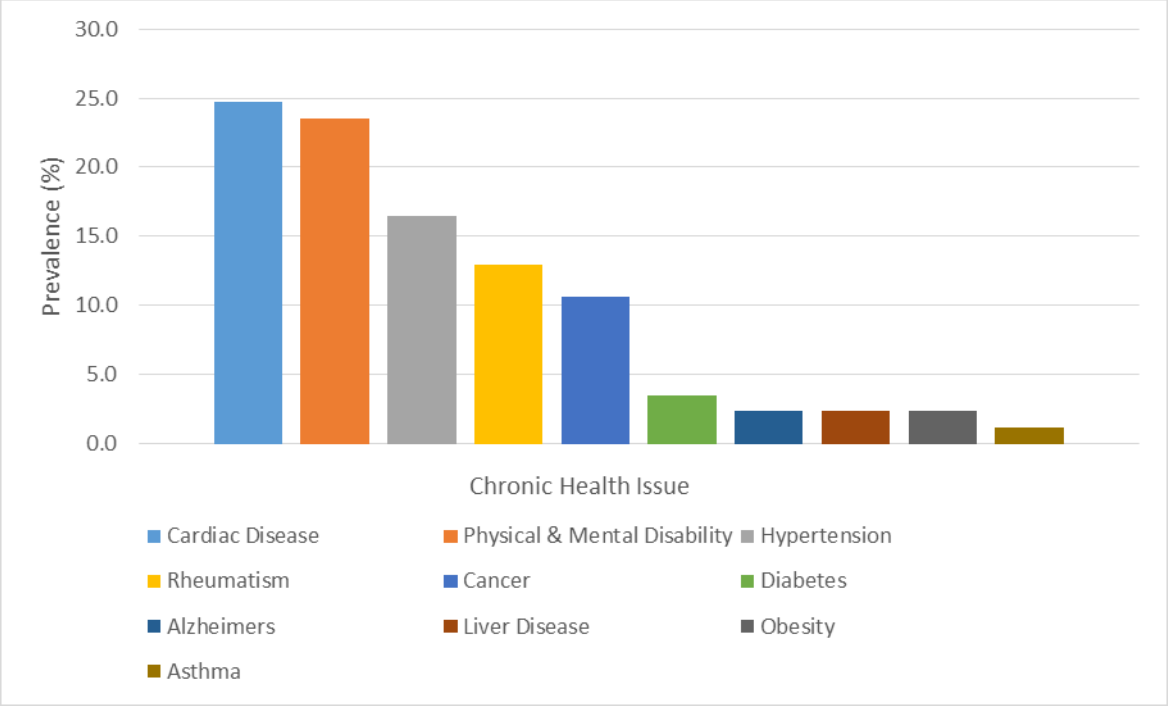
Interviews with the Develi District Management of Health Affairs, and the deputy chief physician of Develi Public Hospital noted that Develi Health Affairs has implemented a successful register and check programme for all refugees (legal and illegal) and there is no record of epidemics (including measles and polio) in the district.

In the focus group discussions, villagers within the study area reported that cardiac disease and physical and mental disability are the most prevalent health issues experienced (Figure 17-10). The high incidence of cardiac disease, diabetes and hypertension are often health effects of obesity and a high cholesterol diet and would indicate that poor diet and obesity are an issue in the study area. Rheumatism in women over 40 and other age related illnesses are also reported to be high.

The Develi Health Director reported that there are citizens confined to their beds in Develi and in rural village. One of the main side effects that these patients face is the development of bed sores due to lack of movement. A private company has been hired by the District and 12 specialist beds have been purchased to prevent the deterioration of these patients; however the distribution of the beds has been slow to date.

[28] Public Health Institution of Turkey

Figure 17-10: Reported Prevalence of Disease (%) in Social study area[29]

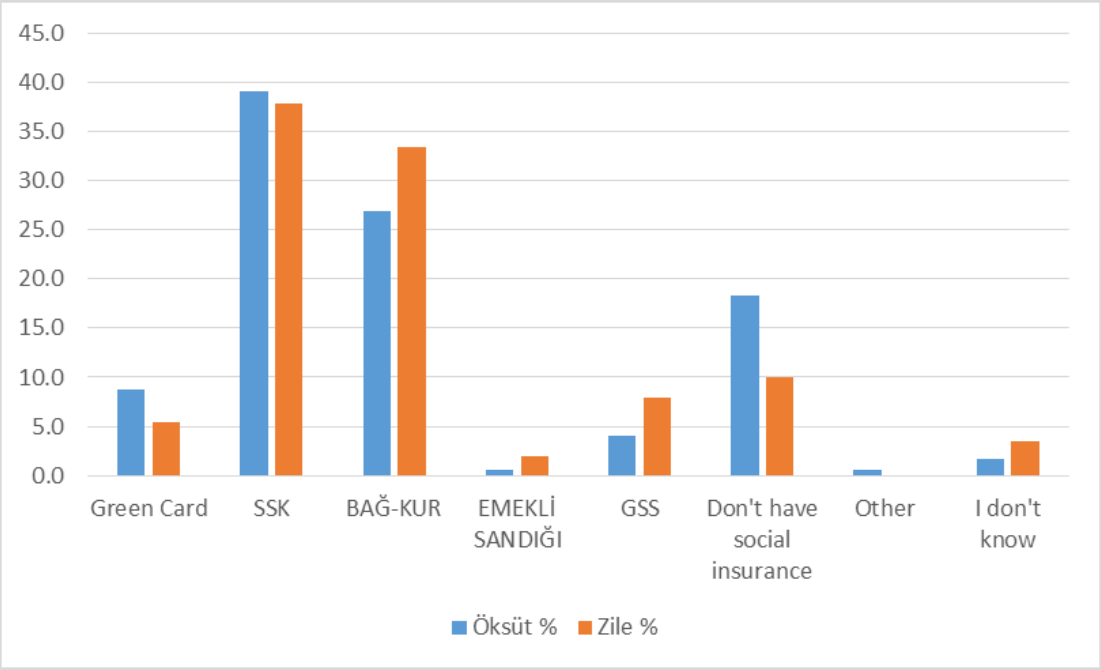


The Develi District Health Director reported that personal hygiene is poor in Develi District. He also noted that the only epidemic experienced in the region is seasonal diarrhoea. Diarrhoea cases are encountered widely, especially in the winter-summer season transition and summer-autumn season transition. In the summer of 2014, 970 cases were recorded in a 2 week period. The main cause of the epidemic is the contamination of drinking water from surface water flow and the subsequent consumption of unfiltered water.

All households within the social study area have access to free primary health care, which covers most health issues including operations, treatments, and pregnancy. The type of social insurance held by each household varies and a summary is provided in Figure 17-11 below. In Zile and Öksüt, less than 10% of respondents in the household survey accessed health care under the government funded green card. In Öksüt almost 20% of households reported that they currently do not have social insurance.

[29] Baseline research Dec 2014

Figure 17-11: Summary of Social Insurance, Zile and Öksüt[30]



Emekli Sandığı: A type of social insurance for civil servants
Green Card: The green card (Yeşil Kart) system, a state social scheme that ensures the provision of health services to the financially disadvantage.
Bağ-Kur: The social health insurance scheme for self-employed people, artisans, and organised groups.
GSS: General Health Insurance scheme, the newly established Social Security Institution which undertook the management of the Green Card scheme
SSK: Social insurance for the workers whether they are blue collar or white collar

In the baseline research focus group discussions, residents reported that they visit the health centres and Develi State hospital for routine check-ups and to fill prescriptions for pharmaceuticals, however if more detail medical examinations or tests are required they prefer to travel to the State hospital in Kayseri where medical service standards are higher.

17.4.3 Crime and Social Order

The District Gendarmerie Command, a military force charged with police duties among the civilian population, undertakes Law enforcement in the social study area. One of the reported key issues facing the District Gendarmerie is the lack of staff, particularly female officers. Female staff are generally provided from the Kayseri station when required. Due to the lack of female officers based permanently in the district and the conservative nature of the district, women are less likely to communicate with police, particularly on issues effecting women such as domestic violence.

Security Service Units of the District Gendarmerie are responsible for organising any regional social education events. They organise seminars in neighbourhood coffeehouses and inform local people about drugs, robbery, suspicious activity and stolen vehicles. According to the focus group discussions, incidents of robbery and burglary increase during the winter months when householders vacate their neighbourhood houses and return to their city homes. Gazi and Zile reported to be particularly affected by this type of crime due to the high vacancy rates of properties during winter in these neighbourhoods. The majority of theft and burglary is reported to be committed by young males aged between 17 and 25. According to the Develi Gendarmerie the most common items stolen are generally raw materials used mostly in construction including copper wire, iron, constructing materials

[30] Baseline Survey, December 2014

left outside and copper boilers. Domestic violence is common particularly by males over the age of 18 and is closely linked to gambling, alcohol and drug consumption. Violent acts at school are common in Soysallı, which is located just outside the study area, linked to drug use in the population aged over 15.

In the focus group discussions with the women and men in Gazi, it was reported that drug use by young people is a major issue and has increased since economic and employment opportunities have reduced.

According to the District Gendarmerie Command, the highest incidences of aggravated and violent crimes are reported to be in Develi, but there has been no increase in crime over the last five years. When asked specifically about the impact of Syrian refugees, there is no noticeable change as a result of the new comers, which have been estimated at 120 families over the last two years[31]. The male population in Develi were reported to have a reputation for fighting and the most frequent crimes are domestic violence, grievous bodily harm and occupational accidents.

17.4.4 Traffic and Transport Safety

The table below provides a statistical summary of traffic accidents and associated injuries and deaths over ten years. While accidents have substantially increased, the number of persons killed in traffic accidents has decreased since a high of just over 5,000 in 2007.

Table 17-2: Traffic Accidents, Injuries and Deaths Per Year[32]

Year	Total Accidents	Accidents Involving Only Material Loss	Accidents Involving Death and Injury	Number of Persons Killed	Number of Persons Injured
2005	620,789	533,516	87,273	4,505	154,086
2006	728,755	632,627	96,128	4,633	169,080
2007	825,561	718,567	106,994	5,007	189,057
2008	950,120	845,908	104,212	4,236	184,468
2009	1,053,346	942,225	111,121	4,324	201,380
2010	1,106,201	989,397	116,804	4,045	211,496
2011	1,228,928	1,097,083	131,845	3,835	238,074
2012	1,296,634	1,143,082	153,552	3,750	268,079
2013	1,207,354	1,046,048	161,306	3,685	274,829
2014	1,199,010	1,030,498	168,512	3,524	285,059

Statistics are available only to the Provincial level. Within Kayseri, 2013 included a total of 4,416 total accidents with 58 deaths and 7,084 injuries[33].

Neighbourhood Level

The Gendarmerie Traffic Department reported that animals create a significant risks on roads during summer time; herders use and cross roads to move between pasture areas, posing a potential accident risk to livestock, shepherds and those in vehicles.

The key complaints and causes of accidents within the neighbourhoods of Yazıbaşı, Gömedi and Epçe include:

- Speeding and reckless driving;

[31] Key informant interview, 26 January 2016.
[32] General Directorate of Public Security and General Command of Gendarmerie.
[33] Turkish Statistical Institute, Traffic Accident Statistics Road 2013.

- Overloading of vehicles and wide vehicles which are not appropriate for village use;
- Construction traffic for the Gümüşören Dam construction and associated dust and noise.

Village complaints are made by phone through the BİMER system (the "Right to Information" Act system of the Prime Ministry) while the Gendarmerie has the responsibility of responding to the complaints.

During the focus group discussions with the villagers in Yazıbaşı, Gömedi, and Epçe, it was noted that the existing road is very narrow and not safe for the passage of mine equipment and heavy vehicles, and that improvement of the road would be required if it were to be used for Project purposes[34].

According to the Traffic Branch of Develi Gendarmerie the 38-51 express way between Develi and the Yazıbaşı intersection has sufficient capacity to cope with Project-related traffic.

Statistics on road accidents in the study area were not available.

Project area traffic

Traffic Count data was collected over two 24 hour periods (17.00 on 14.07.2015 – 17.00 on 15.07.2015 and 18.00 on 17.09.2015 – 18.00 on 18.09.2015) in four locations.

- Count 1 is located in Epçe along the road with Gömedi to the north and Ayşepınar to the south
- Count 2 is located in Epçe at the branch road from the highway into Epçe (Figure 17-12)
- Count 3 is located in Yazıbaşı along the 38-32 National Road (with Develi to the west)

Count 4 is located in Yazıbaşı at the junction with the 38-32 National Road, and the road that goes to Yazıbaşı in the south (Figure 17-13).

Figure 17-12: Traffic Count 1 and 2 Locations[35]

[34] The road has been designed to avoid these impacts, see *Chapter 5: Project Description*
[35] Traffic count survey, 2015

Figure 17-13: Traffic Count 3 and 4 locations[36]

The traffic count survey results are presented in Table 17-3 below categorised into light vehicles (LV) (cars, vans, light goods vehicles) and heavy goods vehicles (HGV).

Table 17-3: Traffic Count Data Summary[37]

Vehicle Type	**Tuesday - Wednesday** 14/07/2015 at 17.00 hrs – 15/07/2015 at 17.00 hrs		**Thursday - Friday** 17/09/2015 at 18.00hrs – 18/09/2015 at 18.00hrs	
	Count 1 Epçe location 1	**Count 2** Epçe location 2	**Count 3** Yazıbaşı location 1	**Count 4** Yazıbaşı location 2
HGV	46	32	168	94
LV	328	300	456	287

The count data represents the busiest traffic days of Develi District. Develi holds the district public market every Tuesday and therefore this is traditionally the busiest day of the week with people visiting the district centre for shopping and doing business. The surveys were also undertaken to capture the 'rush hour' traffic including mobile school buses and commuters.

At counts 1 and 2 the highest flows were experienced between 17.00 and 19.00 at count one and two, with the lowest flows recorded at both sites between 21.45 and 23.45 (Table 17-4).

[36] Traffic count survey, 2015
[37] Traffic count survey, 2015

Table 17-4: High and Low Flow Summary, Count Locations 1 and 2[38]

Vehicle Type	Tuesday 14/07/2015 at 17.00 hrs – 19.00		Tuesday 14/07/2015 at 21.45 hrs – 23.45 hrs	
	Count 1 Epçe location 1	**Count 2** Epçe location 2	**Count 1** Epçe location 1	**Count 2** Epçe location 2
HGV	8	5	0	1
LV	54	39	12	17

At counts 3 and 4 the highest flows were experienced between 17.00 and 19.00 at count one and two, with the lowest flows recorded at both sites between 21.45 and 23.45 (Table 17-5).

Table 17-5: High and Low Flow Summary, Count Locations 3 and 4[39]

Vehicle Type	Friday 08.00hrs – 12.00 hrs		Friday 12.00 hrs – 16.00 hrs	
	Count 3 Yazıbaşı location 1	**Count 4** Yazıbaşı location 2	**Count 3** Yazıbaşı location 1	**Count 4** Yazıbaşı location 2
HGV	12	10	7	3
LV	104	97	74	36

17.4.5 Perceived Project-related Health Concerns

This section describes the perceived project related health concerns which were raised during the baseline surveys and focus group discussions. Issues reported in key informant interviews/focus group discussions regarding Project-induced health issues include:

- Protection of public health in use of cyanide;
- Potential for water and land contamination from all Project activities including use of cyanide;
- Health issues related to dust and noise from road construction;
- Disruption from blasting;
- Potential risk of cancer from Project activities;
- Potential drinking water contamination or loss from mine related activities, including drilling;
- Potential air pollution from mine related activities.

17.5 Impact Assessment

Scoped In

This section identifies and assesses impacts related to community health, safety and security for the Project construction, operations and closure phases. Anticipated impacts include:

- Change in traffic density impacting other road users;
- Change in community expectations related to cyanide use;
- Introduction of new security presence and security personnel;

[38] Traffic count survey, 2015
[39] Traffic count survey, 2015

- Increased potential for communicable diseases.

Scoped Out

Issues that have been scoped out of this assessment for this aspect are:

Threats to public safety from the use of hazardous materials in the EIA Permitted Area

- Access by the public to the site will be restricted, as discussed in *Chapter 5: Project Description*, through fencing, signage and access/egress through designated security posts. This will ensure protection of the public from any onsite activities, including through to Project Closure phase where key infrastructure will remain fenced to ensure ongoing public safety.

Threats to public safety from onsite activity including blasting in the EIA Permitted Area

- This impact is avoided as per that above.

17.5.1 Construction and Operations Phase Impacts and Mitigation Measures

Change in Traffic Density Impacting Other Roads Users

Impact Assessment

Impact	Change in traffic density impacting other road users
Receptor Sensitivity[40]	High
Impact Magnitude	Direct, long term, localised and certain to occur Medium impact magnitude
Significance	**Moderate adverse**

Project vehicles will increase the traffic load in the study area, in particular, heavy trucks during construction. Project vehicles will include OMAS vehicles travelling on public roads between Ankara and the site, supplier, staff transport and other contractor vehicles, as well as site-based vehicles.

Estimates of Project vehicle movements are estimated as follows in Table 17-6 (taken from *Chapter 5: Project Description)* with vehicles ranging from 1.5 to 40 tonnes in size.

Table 17-6: Estimate Project Vehicle movements

Project Phase	Weekly total vehicle movements	Monthly total vehicle movements
During The Construction Period	371	1,484
During The Operation Period	743	2,972

Data from Turkey on vehicle accidents and incidents linked to worker incidents is not available, however, estimates from Australia indicates that 30% of all worker fatalities are in truck-related incidents, as reported over the period from 2003 to 2012[41]. Truck-related fatalities:

- Include drivers of trucks killed in vehicle crashes as well as workers who are working on or around a truck at the time of the incident.

[40] Sensitivity for social impacts, unlike environmental impacts that are linked to the quality and rarity of the receptor, is linked to the consequence of a change and whether a change would impair (or benefit) quality of life. “Very high” would seriously impair (or substantially improve) quality of life. “Low” would be a change from baseline conditions, but not impair or change the quality of life.

[41] WorkSafe Australia (May 2014) Work-Related Fatalities Involving Trucks, Australia, 2003 to 2012. http://www.safeworkaustralia.gov.au/sites/SWA/about/Publications/Documents/854/Work-related-fatalities-involving-trucks.pdf

- Predominantly involve fatalities of workers in a crash on a public road (75% of cases).
- Impact members of the public in addition to the workers killed, with the majority of the bystander fatalities involving a person in a car being killed when hit by a truck (45% of cases)[42].

So indicatively for OMAS, this increase in vehicle traffic presents a risk to the local community of accidents that could result in anything from minor injury to serious injury or death. Existing roads in the Project area are minor roads with small, if any, shoulder between the roadside and homes and other infrastructure in the neighbourhoods. Current traffic volumes are low, and predominantly comprise light vehicles (73 – 90% of the traffic counts presented in the Baseline).

The duration that construction traffic will be using existing, public roads to access the site will be for a maximum of 12 months (Q2 2016- Q2 2017), that is, mid-term duration from commencement of clearance for the bypass and access roads, until these are completed, moving Project traffic from the existing roads.

Work on the bypass road and access road will be undertaken at the same time due to Project scheduling requirements, however, baseline data indicates peak periods on existing roads during the evenings and on Tuesdays (market day), which have the potential to increase receptor sensitivity at these times.

Receptor sensitivity is identified as high given that the result of increased density has the potential to increase accidents. The impact will be direct and long term, though peak during the construction phase. The impact will be localised and the changes are certain to occur. Considered together, the significance is considered to be of medium magnitude for a significance of moderate adverse.

Mitigation

The mitigation hierarchy has been applied in avoiding impacts as far as practicable, including design of the bypass road to avoid impacts to Yazıbaşı, Gömedi and Epçe for the operations and closure phases of the Project (see *Chapter 4: Alternatives Analysis*).

The Transport Management Plan (OMAS-ESMS-TMP-PLN-001) is the primary management document to address safety aspects related to the increase in traffic from OMAS and contractors. Mitigation during construction and operations include:

- Communicate transport routes and predicted schedule to communities where the transport routes run close to or through villages;
- Identify and install, in consultation with relevant authorities, all necessary warning signage on public roads that are used for Project transportation;
- Develop and implement a Traffic and Transport Hazards Training Programme for all employees and contractors addressing transport to site and traffic within the mine working areas;
- Identify and install all necessary traffic warning signage within the mine working areas;
- Prepare and deliver driver safety training for drivers and operators addressing both offensive and defensive driving skills. This will be mandatory for all OMAS and Principal Contractor drivers working at the site. Chemical Suppliers will provide evidence to OMAS of similar training for drivers;
- Develop and implement a Road Safety Awareness Programme for local communities;
- Support Construction and Operation staff in the planning and coordination of traffic management activities through finalisation of a Traffic Management Plan;
- Maintain delivery logs to manage the day-to-day delivery of materials and entry of vehicles onto the site;

[42] Australian data shows that 298 members of the public were killed in truck-related incidents in the 10 years 2003 to 2012, 98% of which occurred on a public road.

- Deploy “spotters” for plant and machinery operating in building construction areas;
- Require contractors to develop appropriate Emergency Response Plans for off-site activities in line with the OMAS Emergency Response Plan and Contractor Management Framework;
- Maintain vehicles in accordance with manufacturer guidelines and Turkish licensing requirements and periodic verification inspections will be undertaken;
- Set zero limit for alcoholic beverages and illegal drugs.

The access road will only be used for project traffic and vehicle volume at junctions is not considered sufficient to cause any hindrance to other vehicles. Speed limits and signs will be used to alert drivers to specific commonly used crossing points. The access road will not have security gates but will have signs stating that the road is a private road for mine vehicles only. Based on consultation with pastureland users, there will be designated crossing points for shepherds; drivers will be trained in safe driving techniques and speed levels will be imposed on the road.

Local residents will be given road safety awareness training. The training will target vulnerable groups such as children.

Residual Effects

With implementation of the mitigation measures it is anticipated that serious road accidents can be minimised through the life of the Project through engineering controls on the roads in the study area, driver awareness, public road safety awareness and appropriate incident response procedures in place. The residual effect is reduced to **minor adverse**.

Change in Community Expectations Related to Cyanide Use

Impact Assessment

Impact	Change in community expectations related to cyanide use
Receptor Sensitivity	High
Impact Magnitude	Direct, long term, localised and likely to occur Medium impact magnitude
Significance	**Moderate adverse**

Community expectations related to cyanide is an impact related to perceptions and the potential for cyanide related impacts, even if those impacts are unlikely due to project design. Cyanide use and management was a reoccurring topic through early engagement and was raised in baseline research meetings with local residents. The Project’s transport, storage, use, and disposal of cyanide is currently not well understood in the neighbourhoods. Levels of concern on cyanide impacts to health and the environment are very high in Turkey, and to a lesser extent, are community concerns about other hazardous materials. An ongoing objective for Centerra is to balance concerns and understanding in the community about cyanide with its potential hazards, including emergency preparedness in neighbouring communities in the event of cyanide mismanagement.

Receptor sensitivity is thus identified as high reflecting the level of concern in communities about cyanide. Changes in expectations are a direct impact as they are linked to the information received. The impact is long term, localised and likely to occur. Overall impact magnitude is medium and the significance is moderate adverse.

Mitigation

As a Centerra-owned business, OMAS will conform to the International Cyanide Management Code (ICMC) and will be independently certified and audited. OMAS, in conjunction with its cyanide

supplier[43], will develop a Cyanide Management Plan which includes worker safety, emergency response, employee and contractor training and transportation. Prior to completion of the Cyanide Management Plan, a Cyanide Management Framework (OMAS-ESMS-CN-PLN-001) has been prepared by OMAS setting out key approaches and commitments related to cyanide management. The Management Plan will be in place prior to operations and the first shipment of cyanide. Cyanide will be stored in a closed building to which access will be restricted, while reagents will be delivered in bulk, depending on which supplier is selected, and stored in a sheltered and bunded area adjacent to the ADR Plant (as described in *Chapter 5: Project Description*).

The requirements audited compliance with the Code, will be a key mitigation measure. This includes complying with the standards of practice under the Code relating to stakeholder participation in emergency preparedness, and ongoing dialogue with stakeholders to respond to their issues of concern on cyanide. This requires specific stakeholder engagement measures, which will be applied by OMAS for all engagement aspects relating to all hazardous materials management (cyanide and also reagents); including training, drills, and other preparedness and communications procedures (see also the Emergency Response Plan).

OMAS has commenced stakeholder engagement with relevant emergency response agencies to conduct drills and training for emergency preparedness, and has additionally presented information to communities to facilitate understanding within the community about cyanide and other hazardous materials.

Mitigation measures relating to inadequate communications and emergency preparedness to spills outside containment of hazardous materials include:

- Develop Cyanide Management Plan prior to first shipment of cyanide in line with International Cyanide Management Code requirements;
- Develop appropriate emergency response strategies and capabilities with potentially affected stakeholders to ensure protection of communities, prior to the first shipment of cyanide;
- Selection of experienced and appropriately qualified suppliers and transport contractors of chemicals and fuels;
- Undertake regular Emergency Preparedness training and drills, including stakeholder participation in their development and implementation;
- Ongoing review and update of Emergency Response procedures to ensure they are up to date;
- Community-level trainings on the Cyanide Management Plan.

Residual Effects

Ongoing familiarisation with emergency preparedness activities throughout the life of the Project is anticipated to improve community awareness of cyanide risks and company management measures. This is achieved through developing a better understanding of cyanide and the potential hazards associated with its transport, use, and management, and the actions that communities should undertake in the event of any emergency. With the commitment to follow and managed cyanide in accordance with international best practice and with associated communication on cyanide management, the significance is reduced to **minor adverse.**

[43] All cyanide suppliers being considered by OMAS are ICMC certified.

Introduction of New Security Presence Leading to Conflict

Impact Assessment

Impact	Introduction of new security presence leading to conflict
Receptor Sensitivity	High
Impact Magnitude	Direct, long term, localised and unlikely to occur Medium impact magnitude
Significance	**Moderate adverse**

Security of the site will be provided through security personnel, perimeter fence (including patrols) and a CCTV system[44]. As is implemented across all Centerra operations, be hired through a well-known and reputable security provider. OMAS is currently evaluating potential Turkish registered security contractors.

The consequences of security conflict with local residents, the sensitivity is considered high. The impact is direct, is possible through the life of the project and therefore is long term localised, affecting only people coming in direct contact with security at the Project site. The impact is considered unlikely with an overall impact magnitude of medium. The significance is moderate adverse.

Mitigation

Centerra is not a direct signatory, but has committed to aligning its management of security personnel in accordance with the Voluntary Principles on Security and Human Rights. This requires a risk assessment prior to the appointment security personnel. This risk assessment must identify security risks, potential for violence, the human rights record of the provider.

OMAS will develop and implement a Security Management Plan and a Community Conflict and Resolution Policy (OMAS-HSEC-POL-003) in accordance with Turkish legislations and the Voluntary Principles on Security and Human Rights during construction and operation. Within the Community Conflict and Resolution Policy is a set of actions related to Emergency Prevention / Conflict Resolution and intended to prevent issues can conflict. Actions are based on close cooperation between the Community Relations Manager and Security Manager. In the event of a potential conflict with aggrieve individuals, the Security Manager is responsible for making sure workers are kept away from an incident and informing persons of the grievance procedures. No OMAS security personnel are allowed to come into physical contact with members of the public, nor become involved in verbal or physical arguments. It is expected that the responsibly state security personnel would manage such incidents.

All incidents involving the local community will be reported by the Security Manager to the Project / Mine Operations Manager in writing and these will be investigated. Daily security meetings will take into account previous incidents in an effort to maintain the security of the Project.

Mitigation for any potential social conflict creation through security staff presence includes:

- Appointment of an appropriately qualified and licenced security contractor. OMAS will require international certification (e.g., International Code of Conduct for Private Security Providers (ICoC);
- Conduct reference checks to ensure candidates do not have criminal records or a record of abuse of violation of human rights;
- No firearms with the EIA Permitted Area, except in the explosives magazine;
- Training in the Code of Conduct specific to security personnel, which outline appropriate conduct, engagement and appropriate use of force, and audits of the application of the Voluntary Principles on Security and Human Rights;

[44] Feasibility Study 24 April 2015

- Training on conflict resolution, crowd management, restraint and cautious exercise of security activity, proportional use of force and human rights;
- Implementation and wide distribution of the Grievance Procedure ((OMAS-HSEC-PRC-005);
- Stakeholder engagement to ensure that neighbourhood citizens are aware of how to raise a grievance about any security contractor behaviour, should this be necessary;
- Ongoing monitoring of contractor performance in accordance with the Contractor Management Framework (OMAS-ESMS-CM-PLN-001).

Residual Effects

Security presence with appropriate screening, training and reputable experience, as well as monitoring and reporting to communities, will reduce the potential impacts leading to **a minor adverse** residual effect.

Increased Potential for Communicable Diseases

Impact Assessment

Impact	Increased potential for communicable diseases
Receptor Sensitivity	High
Impact Magnitude	Indirect, long term, localised and unlikely to occur Medium impact magnitude
Significance	**Moderate adverse**

An increase in communicable diseases could reasonably occur in the study area as a result of the Project. This could result from factors including: an increase in in-migrants to the study area living with undetected diseases, living conditions, poor food hygiene or other social ills that come with an already mobile population.

Baseline data recognises the need for promotion of safer sex practices in Turkey nationally. Baseline data did not reveal whether there is an existing presence of sex workers in the study area; however it is clear that transient migrant workers can increase the risk of infection and prevalence of HIV/AIDS and STDs. Consultation with local population indicates that the area is socially conservative with a low likelihood that commercial sex would be possible. Other diseases that could additionally increase due to the movement of workers between cities and the study area are diarrhoea and influenza. Baseline conditions also indicate an increasing prevalence of measles.

Mitigation

Mitigation for the potential spread of communicable disease in the study area through the Project workforce includes:

- Pre-employment health screening for employees and contractors and on a periodic basis throughout their employment/contract;
- As part of health and safety induction for workers, provide awareness training on STIs and other communicable disease prevention, and provide refresher training periodically from the Project onsite medical team and/or with support of local public health providers;
- Identify opportunities to support local public health campaigns that focus on prevention of communicable diseases and STIs;
- Provide education awareness rising on healthy lifestyles focusing on: alcohol, personal and food hygiene, communicable diseases (including STIs, sexual and reproductive health) and non-communicable diseases; minimising risky behaviours and seeking medical treatment if required.

Residual Effects

The mobility of the workforce and local study area population facilitates the spread of communicable disease. Following implementation of the mitigation actions, the residual effect is anticipated to be **moderate adverse** as risky behaviours will be more difficult to monitor and enforce outside a camp accommodation environment yet retain the potential health impacts to worker performance at site.

17.5.2 Summary of Impacts and Mitigation Measures

A summary of potential impacts and proposed mitigation measures as described above are summarised in Table 17-7 below.

Table 17-7: Construction and Operation Phase Impacts and Mitigation Measures

Impact	Receptor	Receptor Sensitivity	Impact Categorisation	Magnitude of Impact	Potential Effect Significance	Design and Mitigation Measures	Management Plans, Policies and Procedures	Residual Effect Significance
Change in traffic density impacting other road users	All neighbourhoods	High	Direct Long term Localised Certain to occur	Medium	Moderate adverse	▪ Communicate transport routes and predicted schedule to communities. ▪ Identify and install all necessary warning signage on public roads. ▪ Develop and implement a Traffic and Transport Hazards Training Programme for all employees and contractors. ▪ Identify and install all necessary traffic warning signage within the mine working areas. ▪ Prepare and deliver driver safety training for drivers and operators. ▪ Develop and implement a Road Safety Awareness Programme for local communities. ▪ Support Construction and Operation staff in the planning and coordination of traffic management activities through finalisation of a Traffic Management Plan. ▪ Maintain delivery logs to manage the day-to-day entry of vehicles onto the site. ▪ Deploy “spotters” for plant and machinery operating in building	Transport Management Plan Stakeholder Engagement Plan Grievance Procedure Emergency Response Plan	**Minor adverse**

Impact	Receptor	Receptor Sensitivity	Impact Categorisation	Magnitude of Impact	Potential Effect Significance	Design and Mitigation Measures	Management Plans, Policies and Procedures	Residual Effect Significance
						construction areas. ▪ Require contractors to develop appropriate Emergency Response Plans for off-site activities. ▪ Maintain vehicles in periodic verification inspections will be undertaken. ▪ Set zero limit for alcoholic beverages and illegal drugs.		
Change in community expectations related to cyanide use	All neighbourhoods	High	Direct Long term Localised Likely to occur	Medium	Moderate adverse	▪ Conform to the International Cyanide Management Code (ICMC). ▪ Develop emergency response strategies prior to first shipment. ▪ Selection of qualified suppliers. ▪ Undertake regular emergency preparedness training and drills. ▪ Conduct community-level trainings on the Cyanide Management Plan.	Cyanide Management Plan Stakeholder Engagement Plan Grievance Procedure	**Minor adverse**
Introduction of new security presence leading to conflict	All neighbourhoods	High	Direct Long term Localised Unlikely to occur	Medium	Moderate adverse	▪ Align with the Voluntary Principles on Security and Human Rights. ▪ Conduct risk assessment prior to the appointment of security personnel. ▪ Conduct reference checks on candidates. ▪ Training in the Code of Conduct specific to security personnel. ▪ Training on conflict resolution, crowd management, restraint and cautious	Security Management Plan Community Conflict and Resolution Policy Grievance Procedure Contractor Management Framework	**Minor adverse**

Impact	Receptor	Receptor Sensitivity	Impact Categorisation	Magnitude of Impact	Potential Effect Significance	Design and Mitigation Measures	Management Plans, Policies and Procedures	Residual Effect Significance
						exercise of security activity and appropriate use of force. ▪ Monitoring of contractor performance.		
Increased potential for communicable diseases	All neighbourhoods	High	Indirect Long term Localised Unlikely to occur	Medium	Moderate adverse	▪ Pre-employment health screening. ▪ Training on STIs. ▪ Support local public health campaigns. ▪ Awareness-raising on health lifestyles.	Community Health, Safety and Security Management Plan Stakeholder Engagement Plan Grievance Procedure	**Moderate adverse**

17.6 Monitoring Requirements

Monitoring requirements for this aspect are specified in Table 17-8.

Table 17-8: Community Health, Safety and Security Monitoring Requirements

Source Document	Monitoring Location	Parameters	Frequency
Stakeholder Engagement Plan OMAS-ESMS-SEP-PLN-001 and Grievance Procedure OMAS-HSEC-PRC-005	▪ CR Office ▪ Communities	▪ Stakeholder Engagement Register including records of notifications to neighbourhoods, air quality and noise monitoring record reporting ▪ Grievance register ▪ Commitments audit records ▪ Survey results with key stakeholders	▪ Ongoing and monthly reviews ▪ Six monthly reporting to communities for Construction and Operations phases
Community Health, Safety and Security Management Plan OMAS-ESMS-CHSS-PLN-001	▪ CR Office ▪ Communities ▪ Procurement ▪ Project medical office ▪ Human Resources	▪ Stakeholder Engagement Register, including records of community emergency preparedness and training, road safety and notification on vehicle movements ▪ Materials on cyanide transport, use, management ▪ Records of monitoring feedback to stakeholders ▪ Health screening summary records ▪ Training materials and records on health induction and refresher training, including public health partnership information ▪ Reports on any dismissal for inappropriate conduct (solicitation) ▪ Driver awareness training records ▪ Community road safety campaign records	▪ Ongoing and monthly reviews ▪ Six monthly reporting to communities for all Project phases

Source Document	Monitoring Location	Parameters	Frequency
Emergency Response Plan **OMAS-ESMS-ERP-PLN-001**	▪ Procurement ▪ CR Office ▪ Project Operations Office	▪ Stakeholder engagement with Turkish Crisis Brigade and other emergency response organisations ▪ Project risk review reports	▪ Ongoing and monthly reviews ▪ Six monthly reporting to communities for all Project phases
Contractor Management Framework **OMAS-ESMS-CM-PLN-001**	▪ OMAS offices ▪ Contractor offices ▪ Site ▪ Communities	▪ Records of security contractor selection ▪ Training records for Voluntary Principles on Security and Human Rights ▪ Records of contractor selection for cyanide transport ▪ Security stakeholder engagement records Grievance Records including response	▪ Ongoing and monthly reviews ▪ Annual reporting for life of mine
Air Emissions Management Plan **OMAS-ESMS-AE-PLN-00**	(see *Chapter 7: Air Quality*)		
Noise and Vibration Management Plan **OMAS-ESMS-NV-PLN-001**	(see *Chapter 11: Noise & Vibration*)		