

MODELING ELIGIBILITY FOR HUMANITARIAN AID DISTRIBUTION: THE CASE
OF SYRIAN PEOPLE UNDER TEMPORARY ASSISTANCE IN TURKEY



AYŞE BEGÜM YONTUCU

JULY 2019

MODELING ELIGIBILITY FOR HUMANITARIAN AID DISTRIBUTION: THE CASE OF
SYRIAN PEOPLE UNDER TEMPORARY ASSISTANCE IN TURKEY

A THESIS SUBMITTED TO
THE GRADUATE SCHOOL OF SOCIAL SCIENCES
OF
IZMIR UNIVERSITY OF ECONOMICS

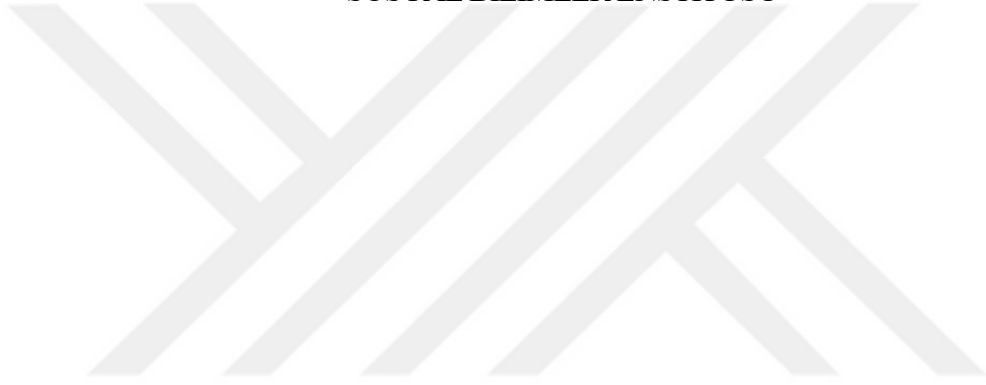
BY

AYŞE BEGÜM YONTUCU

JULY 2019

İNSANİ YARDIM DAĞITIMI İÇİN NİTELİK MODELİ: TÜRKİYE'DEKİ GEÇİCİ KORUMA
ALTINDAKİ SURİYELİ KİŞİLERİN VAKASI

İZMİR EKONOMİ ÜNİVERSİTESİ
SOSYAL BİLİMLER ENSTİTÜSÜ



AYŞE BEGÜM YONTUCU

Temmuz 2019

Approval of the Graduate school of Social Science.



Prof. Dr. Mehmet Efe BİRESSELİOĞLU
Director

I certify that this thesis satisfies all the requirements as a thesis for the degree of Master of Science.



Assoc. Prof. Dr. Muhittin Hakan DEMİR
Head of Department

This is to certify that we have read this thesis and that in our opinion it is fully adequate, in scope and quality, a thesis for the degree of Master of Science.



Assoc. Prof. Dr. Muhittin Hakan DEMİR
Supervisor

Examining Committee Members

Prof. Dr. Okan TUNA

Assoc. Prof. Dr. Muhittin Hakan DEMİR

Assoc. Prof. Dr. Bengü OFLAÇ



ABSTRACT

MODELING ELIGIBILITY FOR HUMANITARIAN AID DISTRIBUTION: THE CASE OF SYRIAN PEOPLE UNDER TEMPORARY ASSISTANCE IN TURKEY

Yontucu, Ayşe Begüm

Logistics Management

Supervisor: Assoc. Prof. Muhittin Hakan DEMİR

July 2019

This study is about the assistance given to Syrian guests who live in Turkey. Nowadays, many wars and natural disasters occur all over the world. Since March 2011, millions of people have been forced to migrate to other countries to escape the civil war in Syria. Jordan, Lebanon, Iraq, and Egypt people under temporary protection in neighboring countries such as Turkey and North Africa have taken their country. Many people were injured and died during this migration. About 4 million Syrians receive temporary assistance in Turkey. Some Syrians under temporary assistance prefer to stay in camps while others live outside the camp.

The purpose of this thesis is to help Syrian guests living in Turkey; cash distribution and individual criteria. Five different scenario models were created for this purpose, which are; the number of children in the family is high, the number of elderly in the family is high, the number of unemployed in the family is high, the number of disabled in the family is high and the structure of the existing family. Four different criteria were determined, such as; the number of elderlies in the family, the number of children in the family, the number of unemployed in the family and the number of

disabled people in the family. A total of 30 families, 130 people and a budget of 10.000 TL were assumed, and mathematical models were established. Also, qualifications use, and distribution elements are considered when distributing assistance. As a result, it was seen that the four different criteria were given but mostly two criteria were used. At the same time, it was revealed that people who distribute aid can make more informed decisions and what criteria they should use. So, they can manage their business better and they will also be able to get different results using different variables and scenarios.

Keywords: Syrian guests, Cash Distribution, Qualification, Utility, Distribution, Criteria

ÖZET

İNSANİ YARDIM DAĞITIMI İÇİN NİTELİK MODELİ: TÜRKİYE'DEKİ GEÇİCİ KORUMA ALTINDAKİ SURİYELİ KİŞİLERİN VAKASI

YONTUCU, Ayşe Begüm

Lojistik Yönetimi

Tez yöneticisi: Doç. Dr. Muhittin Hakan DEMİR

Temmuz 2019

Bu çalışma, Türkiye'de yaşayan Suriyeli misafirlere yapılan yardımlar hakkındadır. Günümüzde dünya çapında birçok farklı savaş ve doğal afetler meydana gelmektedir. Mart 2011'den bu yana Suriye'de çıkan iç savaştan kaçmak için milyonlarca insan buldukları yerden başka ülkelere göç etmek zorunda kalmışlardır. Ürdün, Lübnan, Irak, Mısır, Türkiye ve Kuzey Afrika gibi komşu ülkelerde geçici koruma altındaki kişileri kendi ülkelerine almışlardır. Bu göç sırasında da birçok kişi yara almış ve hayatını kaybetmiştir. Türkiye'de yaklaşık 4 milyon Suriyeli yaşamaktadır. Bazı geçici koruma altındaki Suriye'li kişiler kamplarda yaşamayı tercih ederken bazıları da kamp dışında ikamet etmektedir.

Bu tez, Türkiye'de yaşayan Suriyeli misafirlere yapılan yardımların; nakit dağıtımını ve kişilerin kriterlerini içermektedir. Bu amaçla birbirinden farklı beş adet senaryo modeli oluşturuldu ki bunlar; ailedeki çocuk sayısının fazla olduğu, ailedeki yaşlı sayısının fazla olduğu, ailedeki işsiz sayısının fazla olduğu, ailedeki engelli sayısının fazla olduğu ve mevcut durumdaki ailenin yapısı. Dört farklı kriter belirlendi bunlar; ailedeki yaşlı sayısı, ailedeki çocuk sayısı, ailedeki işsiz sayısı ve ailedeki engelli sayısı. Toplam 30 aile, 130 kişi ve 10.000 TL bütçe olduğu varsayıldı ve matematik

model kuruldu. Ayrıca, yardım dağıtımını yaparken nitelik, yararlılık ve dağıtım elementleri de göz önünde bulunduruldu. Sonuç olarak belirlenen dört farklı kriterin, daha çok iki kriterine ağırlık verildiği görüldü. Aynı zamanda yardımı dağıtan kişilerin daha hedef odaklı kararlar verebilecekleri ve hangi kriterleri kullanmaları gerektiği de ortaya çıkarıldı. Böylece işlerini daha iyi yönetebileceklerdir. Ayrıca, farklı değişkenler ve farklı senaryolar kullanarak daha farklı sonuçlar da alabileceklerdir.

Anahtar Kelimeler: Suriyeli Misafirler, Nakit Dağıtımı, Nitelik, Yararlılık, Dağıtım, Kriter



To My Parents

ACKNOWLEDGEMENT

In the realization of this study, I would first like to thank my thesis advisor Assoc. Prof. Muhittin Hakan DEMİR of the Institute of Social Sciences in the Department of Logistics Management at the Izmir University of Economics who supported and trusted in the undergraduate and postgraduate to me with his professional knowledge and patient. Also, his office is always open whenever I ran into a trouble spot or had a question about my research, my thesis, my lessons or my writing. He not only helped about my academic life but also we talked about my life. When I felt bad, he helped every time. I know that his door will be stayed open every time to me. If I come to these days, this situation is under favor of Assoc. Prof. Muhittin Hakan DEMİR. I would also like to thank my committee members Prof. Dr. Okan TUNA and Assoc. Prof. Bengü OFLAÇ to support me to complete accomplished.

Finally, I must express my very profound gratitude to my all friends and my dear mother Ferah YONTUCU, my dear father İbrahim YONTUCU and my dear sister Beyza YONTUCU for providing me with unfailing support and continuous encouragement throughout my years of study and through the process of researching and writing this thesis. Shortly, I owe my family a debt of gratitude from the moment I was born to every moment I grew up. This accomplishment would not have been possible without them. Thank you very much for everything.

Ayşe Begüm YONTUCU

İzmir

2019

TABLE OF CONTENTS

ABSTRACT.....	iii
ÖZET.....	v
ACKNOWLEDGEMENT	viii
TABLE OF CONTENTS	ix
LIST OF TABLES	xi
LIST OF FIGURES	xii
ABBREVIATIONS	xiii
VITA	xiv
1. INTRODUCTION	1
1.1. About Syrian and Refugees.....	1
1.2. Syrian Refugees in Turkey.....	5
1.3. The Case with Syrian Refugees in Turkey: A Comperative Analysis	15
1.4. Residence Permits	18
1.5. Methodology	18
1.5.1. Research Design.....	19
1.5.2. Data Collection.....	20
1.5.3. Sample.....	21
1.5.4. Data Analysis	23
1.6. Aid Dispersion	24
1.6.1. Definition of Cash and In-kind	26
1.6.2. Discussion about Cash Distribution and In-kind Aid	27
2. LITERATURE REVIEW AND THEORETICAL BACKGROUND	31
3. PROCESS	40
3.1. The Case of Red Crescent Card	44
3.2. Eligibility Criteria for Using Red Crescent Card.....	45

3.3. Application Process.....	47
3.4. Discussion about Eligibility	48
3.4.1. Disabled Status.....	48
3.4.2. Employment Status	49
3.4.3. Numbers of Children.....	51
3.4.4. Numbers of Elderly	51
4. MATHEMATICAL MODEL AND ANALYSIS.....	52
4.1. Mathematical Modelling.....	52
4.2. Analysis of Results.....	54
5. SUMMARY OF THE FINDINGS AND CONCLUSION	56
5.1. Contribution to Theory of the Study	57
5.2. Managerial Contribution of the Study.....	58
5.3. Practical Contribution of the Study.....	58
5.4. Limitation of the Study	59
5.5. Further Study.....	60
REFERENCES.....	62

LIST OF TABLES

Table 1.2.1. The Number of Syrians in Turkey by Provinces, 2017.....	6
Table 1.2.2. Reasons for choosing Turkey	8
Table 1.2.3. Age Distribution of Syrian Refugees (camp setting and non-camp setting) in Turkey	9
Table 1.2.4. Gender Distribution of Syrian Refugees in Turkey	10
Table 1.2.5. Population Distribution of Refugee Camps in Turkey, 2018.....	11
Table 1.2.6. Number of Syrians Under Temporary Protection in Turkey	13
Table 3.4.1. Disability Status Distribution of Syrian Refugees by the Provinces and Gender	49
Table 3.4.2a. Employment Statuses of Syrian Refugees by the Provinces and Gender (out of camp)	50
Table 3.4.2b. Employment Statuses of Syrian People by the Provinces and Gender (in camp)	51
Table 5 Summary of Scenario Results	57
Table 5.3. Implantations of the Study	59

LIST OF FIGURES

Figure 1.1.1. Total Persons of Concern	3
Figure 1.1.2. Regional Demographic Breakdown.....	4
Figure 1.1.3. Distribution of Ages (In-camp).....	4
Figure 1.1.4. Distribution of Ages (Out of camp).....	5
Figure 1.2.1. Provincial Breakdown of Syrian Refugees in Turkey	7
Figure 1.2.2. Reasons for choosing Turkey	7
Figure 1.2.3. Age Distribution of Syrian Refugees in Turkey	8
Figure 1.2.4. Gender Distribution of Syrian Refugees in Turkey	9
Figure 1.2.5. The Most Intensive Cities in Turkey	10
Figure 1.2.6. Syrian Refugees (Top 10 Provinces).....	12
Figure 1.5.1. Methodological Design of the Thesis	20
Figure 1.5.3a. The scenario with based scenario	22
Figure 1.5.3b. The scenario with the most seniors	22
Figure 1.5.3c. The scenario with the most number of children	22
Figure 1.5.3d. The scenario with the most unemployed	23
Figure 1.5.3e. The scenario with the most disabled	23
Figure 1.6.2. Cash or in-kind aid by country.....	30
Figure 3 Modeling	40
Figure 3.2. Criteria of Red Crescent Card	46
Figure 3.3. Application Process about Red Crescent Card.....	47

ABBREVIATIONS

3RP	-	Regional Refugee and Resilience Plan
AFAD	-	Afet ve Acil Durum Yönetimi Başkanlığı - Disaster and Emergency Management Authority
ATM	-	Automatic Teller Machine
DGMM	-	Directorate General of Migration Management
ESSN	-	Emergency Social Safety Net
GAMS	-	General Algebraic Modeling System
GNI	-	Gross National Income
ICT	-	Information and Communication Technologies
MoFSP	-	The Turkish Ministry of Family and Social Policies
POS	-	Point Of Sales Terminal
SASF	-	Foundation of Social Help and Solidarity
SGK	-	Sosyal Güvenlik Kurumu - Social Security Institution
TRC	-	Turkish Red Crescent
UN	-	United Nations
UNCHR	-	The United Nations High Commissioner for Refugees
WFP	-	World Food Programme

VITA

Ayşe Begüm Yontucu received her 2016 degree in the Department of Logistics Management from the Izmir University of Economics.



CHAPTER 1

1. INTRODUCTION

Millions of people were obliged to migrate from their homeland to other locations because of wars or disasters. The ongoing conflict in Syria which is placed in the eastern end of the Mediterranean Sea, south of Turkey covers of 185.6 thousand-kilometer squares since March 2011, tens of thousands of refugees have lost their lives and have been injured. On 15 March 2011, the conflict that began in the hard interference of the Syrian security units against anti-regime started in Deraa city. In the month of April 2011, this conflict spread speedily through the country.

1.1. About Syrian and Refugees

According to the World Bank data (World Bank, 2019), between four hundred thousand and four hundred seventy thousand people have died. Other sources announced almost five hundred thousand death and 1.2 million people injured up until today. 6.2 million Syrian people are relegated internally (subsuming 2.5 million Syrian children) and more than 5.6 million Syrian people are officially registered as refugees.

Now into the eighth year of clashes, UNHCR Syria Emergency (UNHCR Syria Emergency, 2018) estimates that more than 6.3 million people are directly affected and internally displaced, along with 13.5 million people including 6 million children are in need of humanitarian assistance in Syria and 4.7 million people in hard-to-reach and besieged

areas. This conflict brings along various negative situations such as; social and economic impacts, health care, education, housing, food, harboring, unemployment and even poverty.

Besides, this situation has occurred slump in oil revenues. So, the rate of trade has deteriorated and international reserves began to run out quickly. The main reason for the conflict was the Arab people's demand on democracy, freedom and human rights. Conflicts occurred between government forces and regime opponents at the outset, but since May 2013 there have been conflicts in different ethnic and religious belief groups, especially in the territory of Turkey. The point at which conflicts arise is that as soon as the military operation begins to be discussed as an option, neighboring countries from Syria have led to the again acceleration of the asylum-seeker mobility.

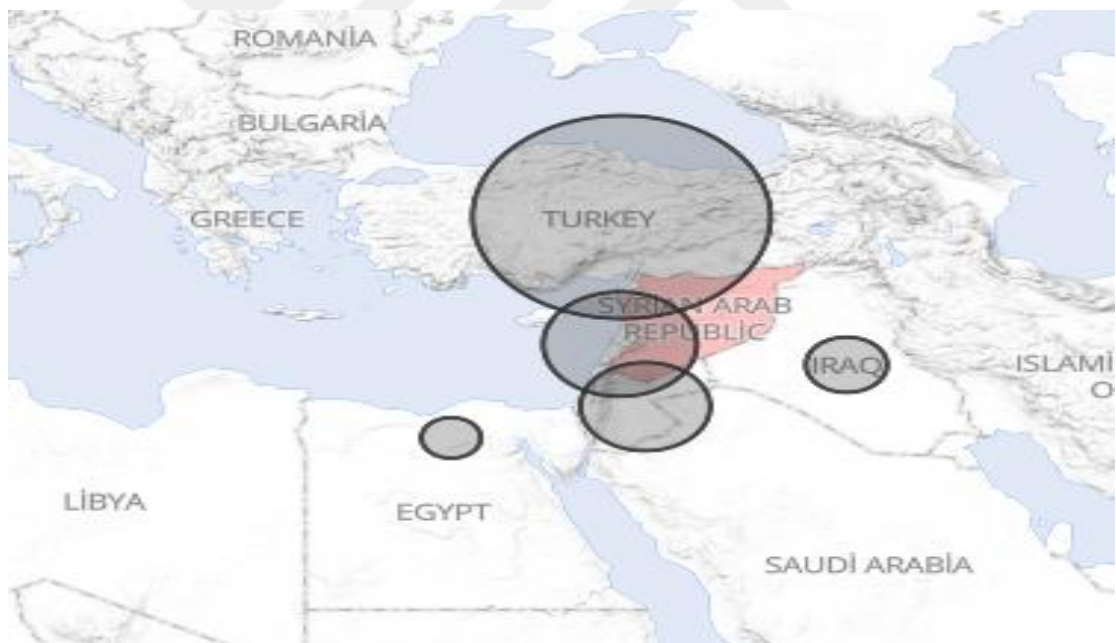
So, millions of Syria Guests must migrate from their hometown to other locations due to the wars and they started to live other places leaving traces of war behind them. According to AFAD 2017 Report (AFAD Report, 2017), nearly 70 % of Syrian Guests' houses were damaged. In 70 % damaged part. 29 % was completely damaged. This means they couldn't maintain their life in the remaining places. Moreover, 16 percent of Syrian Guests didn't know about their houses and 15 percent of Syrian Guests were stated not damaged their houses. So, a million refugees have to desert their hometown and they want to live a secure place. Jordan, Lebanon, Iraq, Egypt, Turkey, and North Africa are the main countries where the refugees go.

AFAD (Afet ve Acil Durum Yönetimi Başkanlığı - Disaster and Emergency Management Authority) is one of the legal authority responsible for developing necessary strategies and providing humanitarian assistance like; housing, healthcare, education, and psychological support to Syrian refugees in the refugee camps by cooperating with a range of government institutions and non-governmental organizations.

According to The United Nations High Commissioner for Refugees (UNHCR, 2019) data; 5.631.155 (This number was 5.055.732 in May 2017.) Syrian Refugees are registered as of Jun 03, 2017. In addition, the related data suggest the geographical breakdown in Figure 1.1.1. as follows:

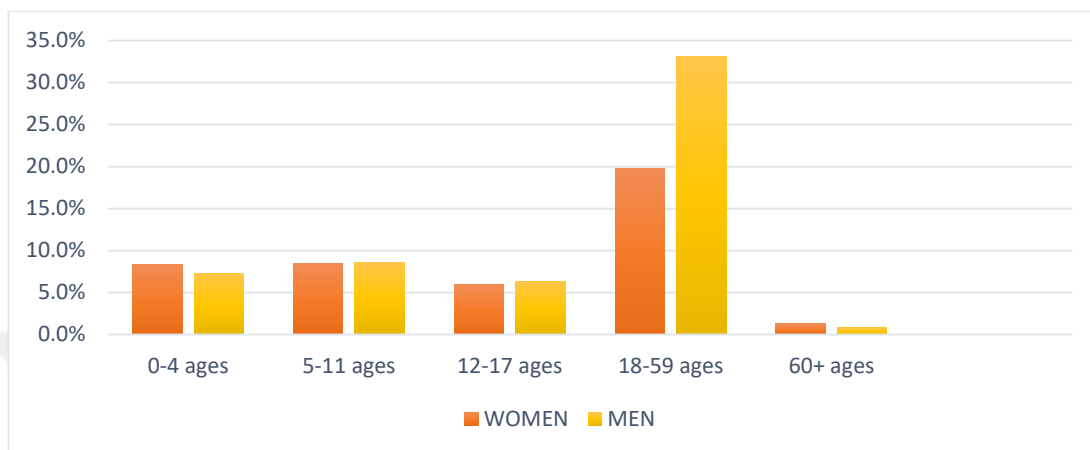
- 938.531 Syrians registered by UNHCR Lebanon
- 664.330 Syrians registered by UNHCR Jordan
- 253.371 Syrians registered by UNHCR Iraq
- 132.473 Syrians registered by UNHCR Egypt
- More than 35.000 Syrian refugees registered by UNHCR in North Africa
- 3.606.737 Syrians registered by the Government of Turkey

Figure 1.1.1: Total Persons of Concern (Source: Operational Portal Refugee Situation, 2019)



UNHCR data also high points the regional demographic breakdown based on the available data from Egypt, Iraq, Jordan, and Lebanon. Figure 1.1.2 shows the age range of women and men. The highest age interval of 18-59 as shown below.

Figure 1.1.2: Regional Demographic Breakdown (Source: Operational Portal Refugee Situation, 2019)



Moreover, in the UNHCR figures about in-camp and out-of-camp population, it is also notable that only 0,06 % of the refugees (343.894 people) (See figure 1.1.3.) are living in the camps and temporary refugee centers; while the rest of 99,94 % of the refugees (5.287.261 people) (See figure 1.1.4.) would rather live in urban, peri-urban and rural areas. This fact also draws attention to the necessity of a detailed examination of the life ongoing outside the camps with its motivation and consequences.

Figure 1.1.3: Distribution of Ages (In-camp) (Source: Operational Portal Refugee Situation, 2019)

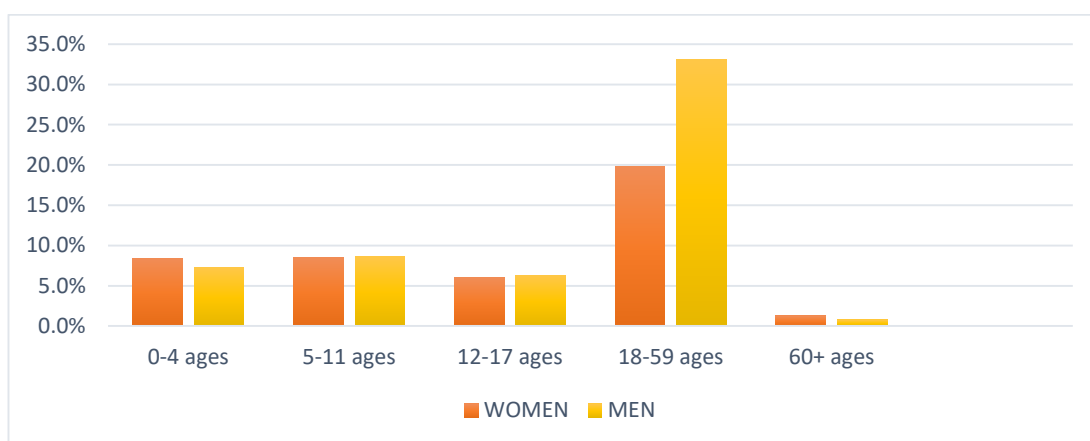
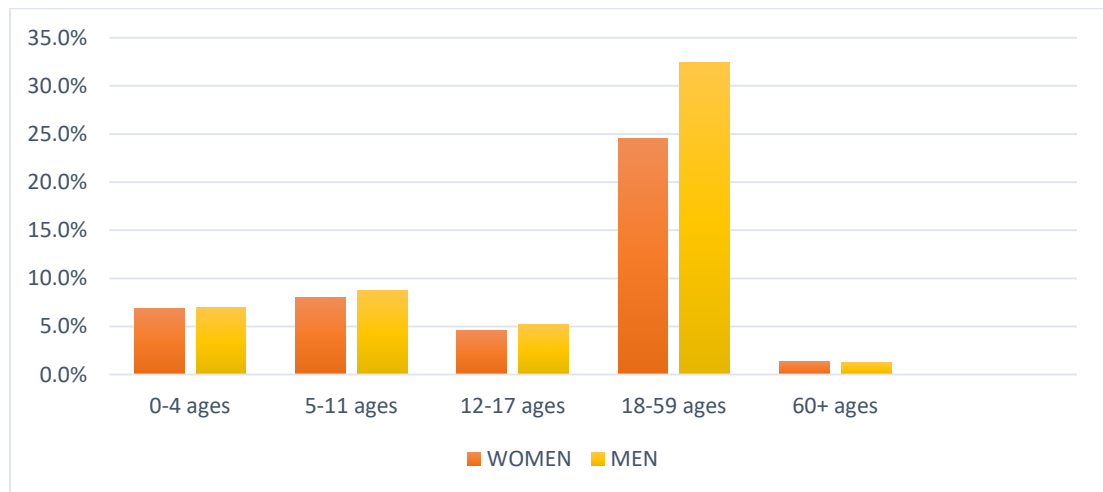


Figure 1.1.4: Distribution of Ages (Out of camp) (Source: Operational Portal Refugee Situation, 2019)



1.2. Syrian Refugees in Turkey

Development Initiatives, 2016, a U.K. based platform monitoring humanitarian aid across the world, released a report on The Global Humanitarian Assistance in 2016. In that report, Turkey, devoting 0,37 % of its GNI (Gross National Income) to humanitarian assistance, announced as "the Most Generous Country in the World. According to the same report, Turkey was the second-largest humanitarian donor in the world after the U.S. in the year of 2015.

Turkey has over 4 million refugees and it is also the host country with the largest refugee population in the world. According to the estimates of the UN (United Nations, 2017), Turkey spent more than 2 billion dollars on the Syrian crisis since 2011. It is known that about 90 percent of Syrian refugees in the country remain outside of camp settings with limited access to basic services and under very challenging circumstances with depleted resources. The UN Country Team also supports government efforts to respond to the Syria crisis within the framework of the 3RP (Regional Refugee and Resilience Plan).

According to AFAD Report 2 (AFAD Report, 2017) total Syrian Refugee population in Turkey is 3.020.654. Some refugees live in the camps although high numbers of refugees live in the out of camps because of some different reasons like finding a job and to work. Table 1.2.1 includes the number of Syrians in Turkey by provinces.

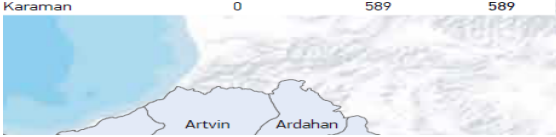
Table 1.2.1: The Number of Syrian Refugees in Turkey by Provinces, 2017 (Source: AFAD Report 2)

Province	Camp Setting	Non-Camp Setting	Total	Province	Camp Setting	Non-Camp Setting	Total
Istanbul	0	483,490	483,490	Balıkesir	0	2,480	2,480
Şanlıurfa	104,809	319,522	424,331	Trabzon	0	2,336	2,336
Hatay	18,374	369,898	388,272	Van	0	2,285	2,285
Gaziantep	37,880	293,531	331,411	Kırklareli	0	2,165	2,165
Adana	555	159,214	159,769	Çorum	0	1,948	1,948
Mersin	0	149,563	149,563	Aksaray	0	1,588	1,588
Kilis	33,651	92,017	125,668	Uşak	0	1,527	1,527
Bursa	0	110,889	110,889	Bolu	0	1,288	1,288
Izmir	0	110,656	110,656	Hakkâri	0	1,041	1,041
Mardin	2,919	91,909	94,828	Kastamonu	0	1,033	1,033
Kahramanmaraş	18,359	73,819	92,178	Ağrı	0	987	987
Ankara	0	76,130	76,130	Kırşehir	0	886	886
Konya	0	75,185	75,185	Muş	0	884	884
Kayseri	0	60,342	60,342	Tokat	0	870	870
Osmaniye	10,480	34,625	45,105	Kırıkkale	0	844	844
Kocaeli	0	33,375	33,375	Bitlis	0	788	788
Diyarbakır	0	30,195	30,195	Düzce	0	780	780
Adıyaman	9,532	16,974	26,506	Ordu	0	729	729
Malatya	10,077	12,195	22,272	Erzurum	0	722	722
Batman	0	20,010	20,010	Bingöl	0	714	714
Şırnak	0	14,885	14,885	Rize	0	670	670
Muğla	0	10,022	10,022	Bilecik	0	570	570
Sakarya	0	8,467	8,467	Karabük	0	501	501
Denizli	0	8,246	8,246	Antalya	0	412	412
Aydın	0	8,234	8,234	Çankırı	0	406	406
Burdur	0	8,099	8,099	Kütahya	0	373	373
Tekirdağ	0	6,986	6,986	Zonguldak	0	354	354
Manisa	0	6,797	6,797	Amasya	0	282	282
Nevşehir	0	6,719	6,719	Erzincan	0	185	185
Isparta	0	6,594	6,594	Kars	0	181	181
Edirne	0	6,557	6,557	Giresun	0	144	144
Elazığ	0	6,005	6,005	Ardahan	0	113	113
Afyonkarahisar	0	4,771	4,771	Tunceli	0	98	98
Samsun	0	4,432	4,432	Iğdır	0	84	84
Çanakkale	0	3,829	3,829	Sinop	0	82	82
Niğde	0	3,685	3,685	Gümüşhane	0	80	80
Siirt	0	3,417	3,417	Artvin	0	43	43
Yozgat	0	3,370	3,370	Bayburt	0	42	42
Yalova	0	2,985	2,985	Bartın	0	34	34
Sivas	0	2,667	2,667				
Eskişehir	0	2,574	2,574				
Karaman	0	589	589				

246,636 Camp Setting

2,774,018 Non-Camp Setting

3,020,654 Total



Mostly refugees settle down in provinces nearby the Syrian border then move to the other cities like Istanbul and Izmir. According to UNHCR data, Turkey has 2.992.567 numbers of Syrian refugees as of the date of April 27, 2017. Figure 1.2.1 shows the provincial settlement of Syrian Refugees in Turkey with detail.

Figure 1.2.1: Provincial Breakdown of Syrian Refugees in Turkey (Source: UNHCR Syria Regional Refugee Response, 2017)



There are some different reasons which are; religion similarly, better condition compared to the other countries, trust in Turkey and accessibility for choosing Turkey. The highest number's reason is easy to transport (Turkey pretty is nearby Syrian border.) and the second highest number's reason is confidence in Turkey. Reasons for choosing Turkey are given with detail in figure 1.2.2 and table 1.2.2.

Figure 1.2.2: Reasons for choosing Turkey (Source: AFAD Report 2)

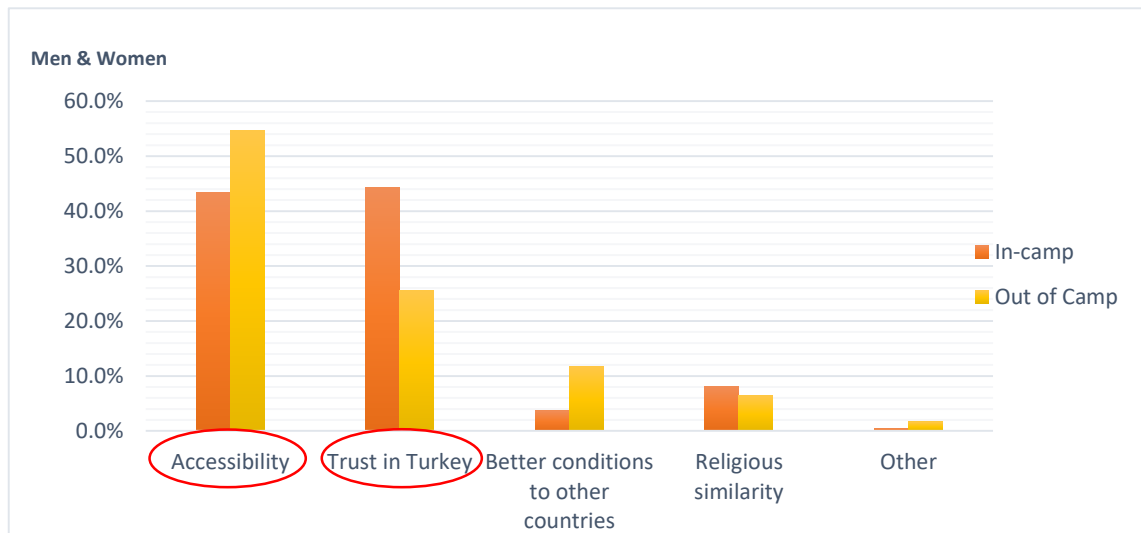


Table 1.2.2: Reasons for choosing Turkey (Source: AFAD Report 2)

The Reasons for Choosing Turkey	Camp Setting		Non-Camp Setting		Total	
	Number	%	Number	%	Number	%
Accessibility	95	43.40	1,227	54.70	1,322	53.70
Trust in Turkey	97	44.30	571	25.50	668	27.10
Better conditions compared to other countries	8	3.70	262	11.70	270	11.00
Religious similarity	18	8.20	144	6.40	162	6.60
Other	1	0.50	38	1.70	39	1.60
Total	219	100	2,242	100	2,461	100

Selected gender is between 18 and 59 years old (See figure 1.2.3) and table 1.2.3 indicates age distribution inside and outside of the camp. The workers are placed mostly in selected group.

Figure 1.2.3: Age Distribution of Syrian Refugees in Turkey (Source: UNHCR Syria Regional Refugee Response, 2017)

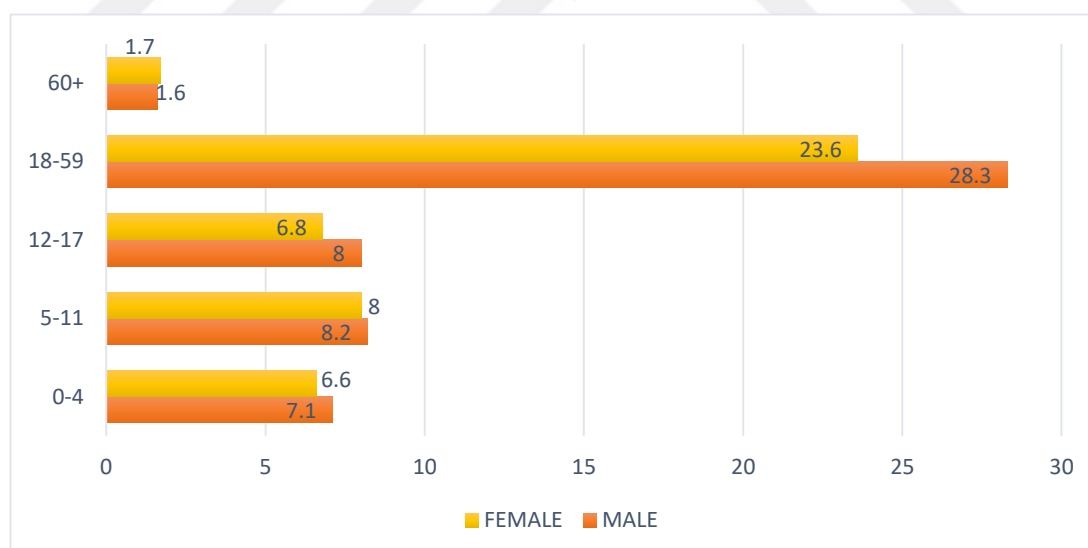


Table 1.2.3: Age Distribution of Syrian Refugees (Camp setting and non-camp setting) in Turkey (Source: AFAD Report 2)

Age Range	Camp Setting		Non-Camp Setting		Total	
	Number	%	Number	%	Number	%
0 - 12 years of age	472	38.70	2,918	30.30	3,390	31.30
13 - 18 years of age	168	13.80	1,249	13.00	1,417	13.10
19 - 54 years of age	524	42.90	5,020	52.20	5,544	51.20
55 - 64 years of age	33	2.70	312	3.20	345	3.20
65 years of age and older	24	2.00	118	1.20	142	1.30
Total	1,221	100	9,617	100	10,838	100

According to UNHCR Syrian Regional Refugee Response data, there is not a considerable difference in number between female and male, figure 1.2.4 and table 1.2.4 shows the highest number of men.

Figure 1.2.4: Gender Distribution of Syrian Refugees in Turkey (Source: AFAD Report 2)

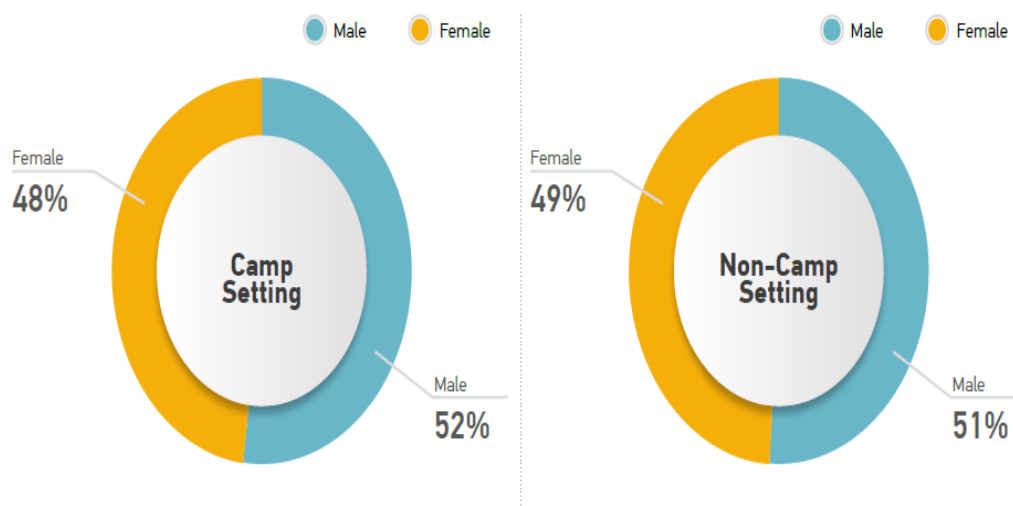


Table 1.2.4: Gender Distribution of Syrian Refugees in Turkey (Source: AFAD Report 2)

Gender	Camp Setting (%)	Non-Camp Setting (%)	Total (%)
Male	51.80	50.80	50.90
Female	48.20	49.20	49.10
Total Percentage	100	100	100
Total Number	1,221	9,617	10,838

AFAD Report 1 (AFAD Report, 2013) determined the region where the refugees mostly settled and the refugees are generally live in Şanlıurfa, Gaziantep, Kilis, Hatay, Kahramanmaraş, Adıyaman, Adana, Osmaniye, Malatya, and Mardin which are located mostly in southeastern of Anatolia figure 1.2.5 shows the numbers of camps in different provinces.

Figure 1.2.5: The most intensive cities in Turkey (Source: AFAD Report 1)

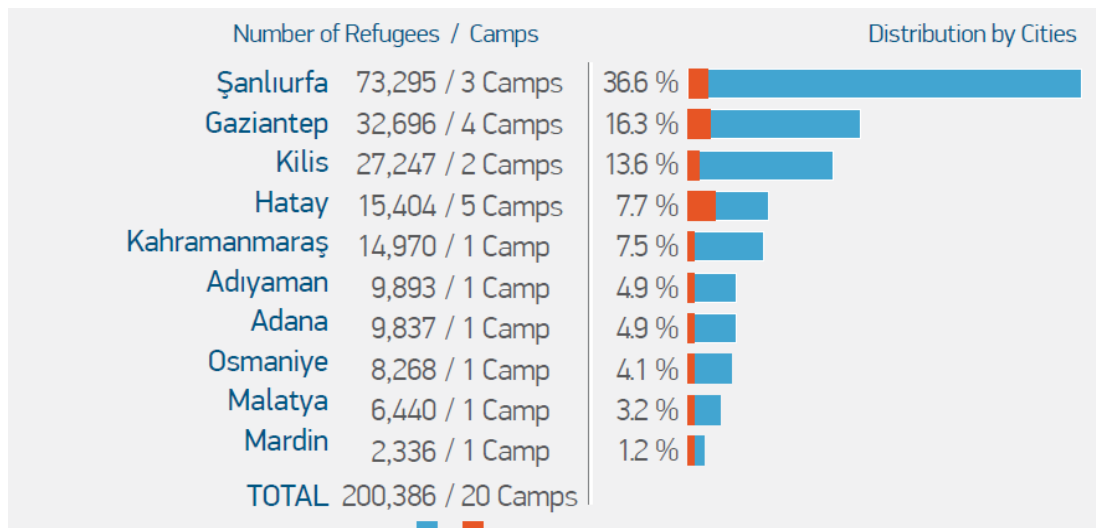


Table 1.2.5: Population Distribution of Refugee Camps in Turkey, 2018 (Source: AFAD Temporary Housing Center,2018)

City	Name	Shelter Type	Number of Shelters	Population	Total Population
Hatay	Altınözü	Container	2,056	8,179	16,894
	Yayladağı	Container	776	3,670	
	Apaydın	Container	1,181	5,045	
	Güveççi <i>(It was temporarily closed)</i>	Tent	824	0	
Gaziantep	İslahiye <i>(It was temporarily closed)</i>	Tent	1,552	0	3,732
	Karkamış <i>(It was temporarily closed)</i>	Tent	1,578	0	
	Nizip 1 <i>(It was temporarily closed)</i>	Tent	1,873	0	
	Nizip 2	Container	908	3,732	
Şanlıurfa	Ceylanpınar	Tent	4,972	17,100	64,432
	Akçakale	Tent	6,461	21,057	
	Harran	Container	2,069	9,729	
	Suruç	Tent	7,028	16,546	
Kilis	Öncüpınar	Container	3,089	9,898	24,164
	Elbeyli Beşiriye	Container	3,586	14,266	
Mardin	Midyat <i>(It was temporarily closed)</i>	Tent	1,053	0	0
Kahramanmaraş	Merkez	Container	5,008	16,309	16,309
Osmaniye	Cevdetiye	Container	3,352	13,585	13,585
Adıyaman	Merkez <i>(It was temporarily closed)</i>	Tent	2,302	0	0
Adana	Sarıçam	Container	6,136	26,176	26,176
Malatya	Beydağı	Container	1,977	8,964	8,964

However, in 2018 camps of some provinces are closed (because of being insufficient, being out of demand, being too small, etc.). For example; while in 2013 Hatay has five camps, in 2017 the province has only three camps except for one camp; which is Güveççi (it is temporarily closed). While Gaziantep has four camps in 2013, 3 of camps of this province are temporarily closed in 2017 and it has just one camp, which is Nizip two camps of some provinces are opened. For example; while in 2013 Şanlıurfa has three camps, in 2017 the province has four camps. Camps of some provinces are temporarily closed like; Mardin, and Adıyaman. Camps of some provinces are same numbers such as; Kahramanmaraş, Adana, Osmaniye, Kilis, and Malatya.

AFAD Temporary Housing Center, 2018, has been coordinating Turkey’s response to the humanitarian crisis in ten cities and fourteen refugee camps – eleven containers, three tents – temporary housing facilities equipped with schools, hospitals, and athletic facilities as well. According to AFAD, the number of Syrian nationals in refugee centers is 174.256. Table 1.2.6 involves the distribution of the overall population of refugee camps in Turkey as of October 15, 2018.

Figure 1.2.6: Syrian Refugees (Top 10 Provinces) (Source: DGMM Migration Statistics – Temporary Protection, 2018)

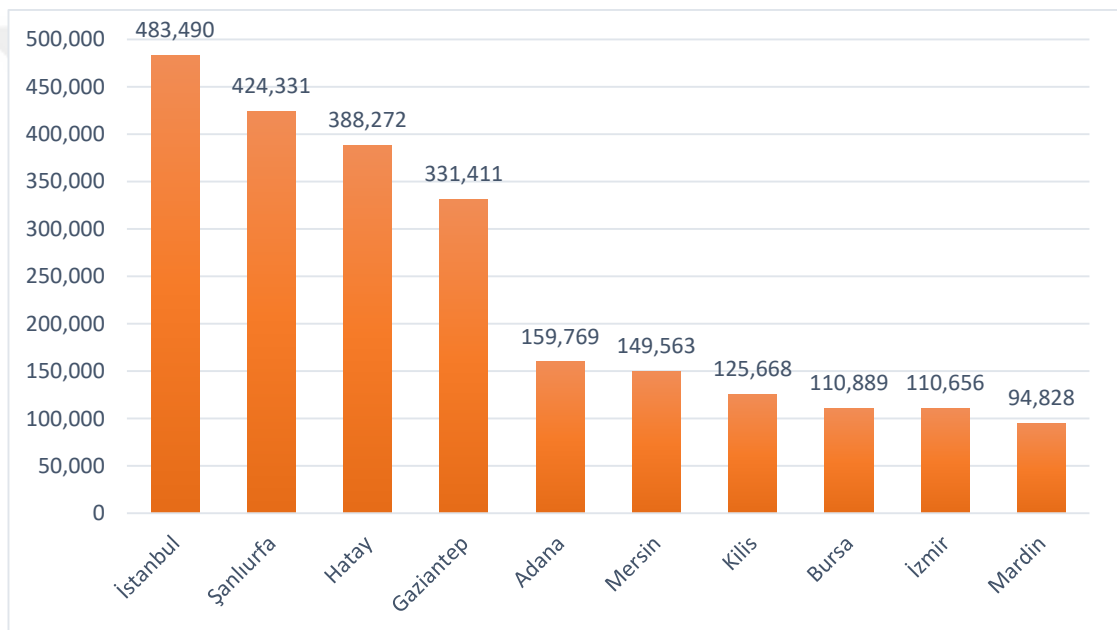


Table 1.2.6: Number of Syrians Under Temporary Protection in Turkey (05.25.2017) (Source: DGMM Migration

Statistics – Temporary Protection, 2017)

No	Province	Number of Registered Syrians	Total Population	Percentage of Registered Syrians in Province	No	Province	Number of Registered Syrians	Total Population	Percentage of Registered Syrians in Province
1	ADANA	159,769	2,201,670	6.80	42	KAHRAMANMARAŞ	92,178	1,112,634	7.99
2	ADYAMAN	26,506	610,484	4.15	43	KARABÜK	501	242,347	0.18
3	AFYONKARAHİSAR	4,771	714,523	0.63	44	KARAMAN	589	245,610	0.23
4	AĞRI	987	542,255	0.17	45	KARS	181	289,786	0.06
5	AKSARAY	1,588	396,673	0.34	46	KASTAMONU	1,033	376,945	0.23
6	AMASYA	282	326,351	0.07	47	KAYSERİ	60,342	1,358,980	4.25
7	ANKARA	76,130	5,346,518	1.33	48	KIRIKKALE	844	277,984	0.28
8	ANTALYA	412	2,328,555	0.02	49	KIRKLARELİ	2,165	351,684	0.60
9	ARDAHAN	113	98,335	0.10	50	KIRŞEHİR	886	229,975	0.34
10	ARTVİN	43	168,068	0.02	51	KİLİS	125,668	130,825	94.69
11	AYDIN	8,234	1,068,260	0.73	52	KOCAELİ	33,375	1,830,772	1.63
12	BALIKESİR	2,480	1,196,176	0.18	53	KONYA	75,185	2,161,303	3.35
13	BARTIN	34	192,389	0.02	54	KÜTAHYA	373	573,642	0.06
14	BATMAN	20,010	576,899	3.40	55	MALATYA	22,272	781,305	2.78
15	BAYBURT	42	90,154	0.04	56	MANİSA	6,797	1,396,945	0.44
16	BİLECİK	570	218,297	0.24	57	MARDİN	94,828	796,237	11.82
17	BİNGÖL	714	269,560	0.26	58	MERSİN	149,563	1,773,852	8.18
18	BİTLİS	788	341,225	0.21	59	MUĞLA	10,022	923,773	0.97
19	BOLU	1,288	299,896	0.37	60	MUŞ	884	406,501	0.21
20	BURDUR	8,099	261,401	3.07	61	NEVŞEHİR	6,719	290,895	2.11
21	BURSA	110,889	2,901,396	3.64	62	NİĞDE	3,685	351,468	0.96
22	ÇANAKKALE	3,829	519,793	0.69	63	ORDU	729	750,588	0.09
23	ÇANKIRI	406	183,880	0.20	64	OSMANİYE	45,105	522,175	8.24
24	ÇORUM	1,948	527,863	0.35	65	RİZE	670	331,048	0.20
25	DENİZLİ	8,246	1,005,687	0.76	66	SAKARYA	8,467	976,948	0.80
26	DİYARBAKIR	30,195	1,673,119	1.77	67	SAMSUN	4,432	1,295,927	0.33
27	DÜZCE	780	370,371	0.16	68	SİİRT	3,417	322,664	1.03
28	EDİRNE	6,557	401,701	1.62	69	SİNOP	82	205,478	0.04
29	ELAZIĞ	6,005	578,789	0.95	70	SİVAS	2,667	621,224	0.39
30	ERZİNCAN	185	226,032	0.08	71	ŞANLIURFA	424,331	1,940,627	21.38
31	ERZURUM	722	762,021	0.08	72	ŞIRNAK	14,885	483,788	2.97
32	ESKİŞEHİR	2,574	844,842	0.27	73	TEKİRDAĞ	6,986	972,875	0.64
33	GAZİANTEP	331,411	1,974,244	16.47	74	TOKAT	870	602,662	0.14
34	GİRESUN	144	444,467	0.03	75	TRABZON	2,336	779,379	0.27
35	GÜMÜŞHANE	80	172,034	0.04	76	TUNCELİ	98	82,193	0.11
36	HAKKARİ	1,041	267,813	0.35	77	UŞAK	1,527	358,736	0.36
37	HATAY	388,272	1,555,165	24.56	78	VAN	2,285	1,100,190	0.16
38	İĞDIR	84	192,785	0.05	79	YALOVA	2,985	241,665	1.17
39	ISPARTA	6,594	427,324	1.48	80	YOZGAT	3,370	421,041	0.74
40	İSTANBUL	483,490	14,804,116	3.18	81	ZONGULDAK	354	597,524	0.05
41	İZMİR	110,656	4,223,545	2.48	TOTAL		3,020,654	79,814,871	3.66

According to the AFAD Report 2, the main motivation behind preferring to live in the camps is the economic reasons with a high share of almost 40 %. Besides, security and accommodation conditions are the other two reasons with 25 and 24 percent respectively. According to DGMM statistics again, İstanbul, Şanlıurfa, and Hatay are the top three provinces that Syrian refugees prefer to live either in or outside camps.

In the web site of “Mülteciler Derneği, 2019”, on June 13, 2019, the Ministry of Interior Directorate General of Migration Management shows that numbers of Syrian people living in Turkey reach 3.613.644 people. In Turkey, 46 % of Syrians are 0-18 age range. As of 13 June 2019, the number of Syrians staying in the temporary accommodation centers was 109.262. Accordingly, since the beginning of 2018, the number of Syrians living in camps decreased by 118.989 people. Only 3 % of Syrians live in camps. As of June 13, 2019, the number of Syrians living in the cities was 3.504.382 people. The number of Syrians living in cities increased by 23.581 people compared to last month. 97 % of Syrians live in cities. Currently, only new Syrian registrations are being taken to Adana, Canakkale, Diyarbakir, Elazig, Gaziantep, Hatay, Kayseri, Kocaeli, Mardin, Tekirdag, Sanliurfa and Kilis. Outside these cities, serious health problems, marriage, and new births can be registered. The newly registered provinces are periodically changed by the Migration Administration. The Ministry of Interior announced that as of March 8, 2019, the number of Syrians granted Turkish citizenship was 79.894. According to a statement issued by the Interior Ministry, as of November 2018 in Turkey last eight years, the number of Syrians babies born was announced as 405 thousand 521. Also, According to the statement made by the Ministry of Interior on May 26, 2019, the number of Syrians returning to the country was 329 thousand people. Family, the Ministry of Labor and Social Services according to a statement issued on March 31, 2019, the number of work permits issued Syrians in Turkey has announced that 31 thousand 185 people.

1.3. The Case with Syrian Refugees in Turkey: A Comparative Analysis

This section analyzes the case with Syrian Refugees in Turkey and the changes from 2013 and 2017 based on two AFAD reports. As mentioned before, Turkey has approximately 4 million, previously mostly in camp and off camp and AFAD has related to Syrian guests, Van Earthquake and Somalia. The AFAD published seven reports which are; expenditure and cost analysis in temporary accommodation centers for Syrian refugees, Syrian guests in Turkey (2013) field survey results, Syrian guests in Turkey (2014), Syrian women in Turkey (2014), population influx from Syria to Turkey (2014) life in Turkey as a Syrian guest, Syrian guests in Turkey (2016) and Field survey on demographic view, living conditions and future expectations of Syrians in Turkey (2017).

According to AFAD Report 1, the number of refugees coming from Humus was very low, at 2 %. However, in the AFAD Report 2, this percentage rises to 9 %. Even so, in both years the highest province is Halep.

Syrian refugees mostly live in Gaziantep, Hatay and Şanlıurfa cities. In other words, they started to live in southeastern Anatolia. Although there were twenty camps in 2013, in 2017 there were twenty one camps in Turkey. While in the 2013-year Şanlıurfa had three camps, in the 2017 year it had five camps. In the 2013-year Gaziantep had four camps, in 2017, the new camp was opened. There were five camps in Hatay in the 2013 but one camp was closed in 2017. Whereas in 2013 there was one camp in Osmaniye, in 2017 there was not any camp. This means that camps have been established in large cities like Şanlıurfa and Gaziantep.

Millions of Syrian refugees must come to Turkey as it is mentioned earlier. When it is looked at both years, there weren't significant differences between genders. Moreover,

between 19 - 54 years old group of refugees living in the camp and out of camp is the highest in the reports and the group of 65's and over is the lowest in the reports. Based on the disabled state, there wasn't any information about disabled refugees in AFAD Report 1. Although disabled refugees have quite a little number, this state is mentioned in AFAD Report 2.

Most of the refugees coming from Syria were graduated from a primary school in AFAD Report 1 and in AFAD Report 2. So, these people in this educational status can work in physical strength. Percentage of illiterate was dramatically high in the AFAD Report 2 conversely; the percentage of secondary school graduate and illiterate were noticeable high in the AFAD Report 1. In addition to the educational status of the AFAD Report 1, occupational groups can be seen in the AFAD Report 2.

When looking at the ratio who living and working men in camps, it can see the highest rate is civil servant, at 9 %. On the other hand, healthcare staff is the lowest ratio, at 0,30%. When looked at the ratio who living and working women in the camp, it can see the highest rate is civil servant, at 7 %. On the other hand, an architect/engineer/contractor and healthcare staff are the lowest rates, at 0,20 %. Living women in the camp were not engaged in agriculture and livestock or were not operator/driver or military personnel in AFAD Report 2.

When looking at the ratio who living and working men out of camp, it can be seen the highest rate is handicraft master, at 42 %. On the other hand, military personnel is the

lowest one, at 0,30 %. When looking at the ratio living and working women out of camp, it can be seen the highest rate is handicraft master, at 34 %. Living women out of camp belong not to operator/driver or military personnel.

To sum up, 79 percent of the Syrian guests living in the camp and 49, 90 percent of the Syrian guests living out of camps do not have a profession. This situation can have bad results. For example; beggar rates can increase, or they can be force their children to work, etc. According to the AFAD Report 2, both in camp and out of the camp of the head of the household percent of 37 are Syrian male guests and both in camp and out of the camp of the head of the household percent of 8 are Syrian female guests.

According to the AFAD Report 1, living in camp the head of the household percent of 31 and out of the camp, the head of the household percent of 26 were Syrian male guests. Living in camp the head of the household percent of 5 and out of the camp, the head of the household percent of 6 was Syrian female guests. Most of the heads of households had come with their children in both of year. That means the Syrian guests are more of a nuclear family.

In the AFAD Report 1 and AFAD Report 2, many Syrian refugees said to return when the conflict in Syria ends. For example, refugees' percent of 20 are thinking about turning back when the ruling/regime has been changed in the AFAD Report 2. In the AFAD Report 1, this ratio was 63 %. While in the AFAD Report 2, 16 % Syrian guests didn't think they

will ever turn back, in the AFAD Report 1, this ratio was 7 %. According to AFAD Report 2, they think six years and more in the Syrian civil war will last and they think that half of the Syrian guests will stay in Turkey.

1.4. Residence Permits

According to the Turkey Immigration Report of 2016 of data prepared by the Ministry of Interior's General Directorate for Migration Administration, 48.738 people from foreigners who were allowed residence permit in Turkey in 2016 are Syrian citizens. When looking at the distribution residence permit, it can be seen that 33.247 Syrian people with short-term residence, 4.813 Syrian people with having married quarters, 3.367 Syrian people with a student residence permit and 7.053 Syrian people with a work permit are can live in Turkey.

1.5. Methodology

The methodology of this thesis is cash distribution to live Syrians in Turkey and the literature review has helped us find the gap. Because most of the articles include food supply chain, security, distribution of clothes, etc. for refugees. However, any researcher doesn't focus explicitly on the cash distribution with which eligibility criteria and considering utility. Moreover, in this thesis quantitate method is used.

1.5.1. Research Design

This thesis explains how to distribute cash assistance using which eligibility criteria with the best utility. In order to lead the way of this thesis, a research method is used which is a quantitative method.

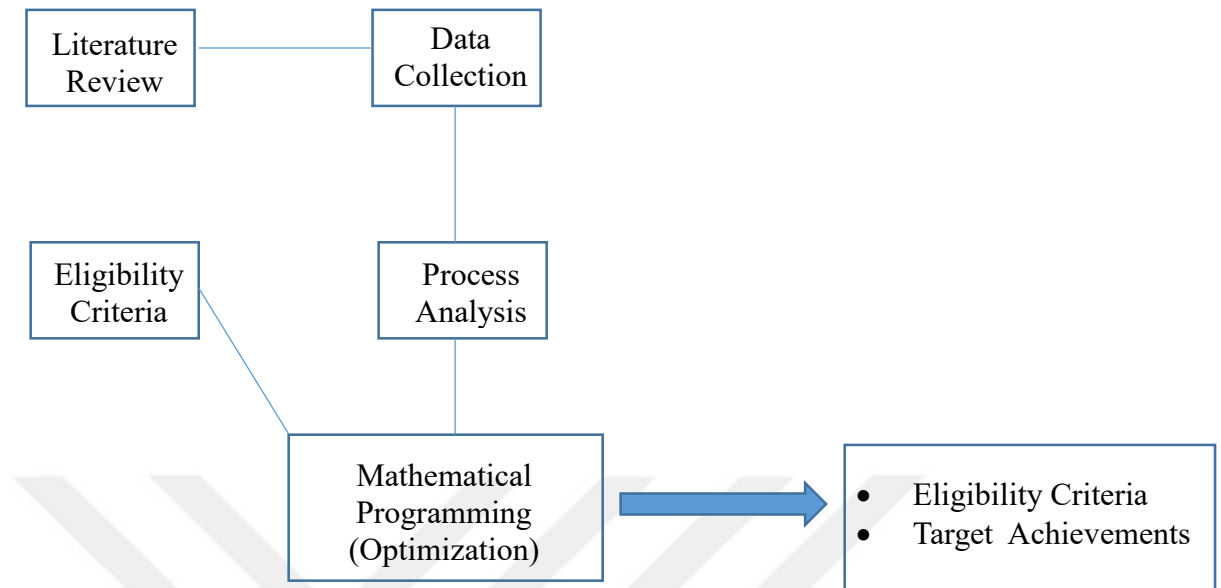
Using different methods in the studies can be seen from the literature, three main types of methods are used for the analysis of refugees and related problems. The first one is qualitative, the second one is quantitative, and the third line of researchers use mixed methods.

Means of quantitative methods are searched with using mathematical and statistical methods. Quantitative methods involve survey, observation, experimental data, and mathematical modeling.

Qualitative methods include a case study, one-on-one interview (the most common in used), focus group (another commonly in used), depth interview, record keeping (examines previously formed data), the process of observation and ethnographic research (people are analyzed in their naturally occurring environment and their living). The thesis is used in the quantitative method. Because we built mathematical modeling (we studied on the GAMS (General Algebraic Modeling System) Mathematical Programming).

Figure 1.5.1. is a representation of the methodological design of the thesis.

Figure 1.5.1. : Methodological Design of the Thesis



1.5.2. Data Collection

There is a huge number of Syrians in Turkey (approximately 4 million) in order that we selected and analyzed on these people. For case study, AFAD Report 1 and AFAD Report 2 were compared between them and we found which data does change (age, gender, working conditions, number of disabled, marital status, their thinking about Syrian, etc.). In some sections, there are very big changes in the four years although in some of the section didn't detect a major change. So that, we determined which section can we use for cash distribution, which section can be eligibility criteria.

1.5.3. Sample

Five scenarios [one of scenario involved currently their status (See figure 1.5.3a.)] were created using the determined eligibility criteria which are the number of elderly people is the highest in the family (See figure 1.5.3b.), number of children is the highest in the family (See figure 1.5.3c.), the number of unemployment is the highest in the family (See figure 1.5.3d.) and the number of disabled people is the highest in the family (See figure 1.5.3e.) from reading the AFAD Report 2 on the excel sheet. Total of 130 people, 30 families, and 50.000 TL were designated. Each family was assigned a minimum of 3 and a maximum of 6 people and according to each selecting eligibility criteria were given the level of utility. For instance; if 0 person matching the eligibility criteria, we give 0 utility. If 1 person matching the eligibility criteria, we give 7 utility. If 2 people matching the eligibility criteria, we give 8 utility. If 3 and over people matching the eligibility criteria, we give 9 utility. Moreover, we wanted to distribute a minimum of 90 people.

Figure 1.5.3a: The scenario with a based scenario

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF
		F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	F15	F16	F17	F18	F19	F20	F21	F22	F23	F24	F25	F26	F27	F28	F29	F30
seniors (65+ ages)	C1	0	0	0	2	2	1	1	2	0	2	0	1	0	1	1	0	0	2	1	2	0	0	2	0	0	0	1	2	1	2
unemployed	C2	2	3	2	3	0	1	2	1	2	1	5	1	2	1	3	2	0	3	0	2	2	0	3	3	1	1	0	2	0	0
children (0-18 ages)	C3	3	2	0	0	2	3	1	1	0	0	0	1	1	2	0	0	3	0	5	0	4	1	0	0	0	5	0	0	1	3
disabled	C4	0	2	1	0	0	0	0	2	1	0	3	0	0	0	0	1	0	0	0	2	0	2	0	0	3	0	4	0	2	3
	Size	5	6	3	5	4	5	4	6	3	3	6	3	3	4	4	3	3	4	6	6	5	3	4	3	4	6	5	4	4	6

Figure 1.5.3b: The scenario with the most seniors

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF
		F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	F15	F16	F17	F18	F19	F20	F21	F22	F23	F24	F25	F26	F27	F28	F29	F30
seniors (65+ ages)	C1	0	0	0	0	0	1	2	0	2	0	0	3	1	1	0	0	4	0	0	0	0	2	0	0	0	0	0	0	5	2
unemployed	C2	2	2	0	0	1	0	5	0	3	6	3	2	0	1	2	2	3	0	2	1	0	2	2	0	0	0	0	3	0	
children (0-18 ages)	C3	3	2	2	5	2	4	3	3	2	0	0	0	1	2	0	1	1	0	6	1	4	1	0	1	1	6	0	3	1	3
disabled	C4	0	2	1	0	2	0	0	5	1	0	6	0	0	1	0	1	0	0	0	3	0	3	0	0	3	0	5	0	2	3
	Size	5	6	3	5	4	5	4	6	3	3	6	3	3	4	4	3	3	4	6	6	5	3	4	3	4	6	5	3	6	5

Figure 1.5.3c: The scenario with the most number of children

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF
		F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	F15	F16	F17	F18	F19	F20	F21	F22	F23	F24	F25	F26	F27	F28	F29	F30
seniors (65+ ages)	C1	0	0	2	2	0	0	1	2	2	0	0	3	3	2	1	0	0	0	0	0	0	0	1	0	0	0	0	1	2	
unemployed	C2	2	3	0	3	2	1	5	5	0	3	2	0	2	0	1	1	2	3	0	2	2	0	1	2	0	3	0	0	3	0
children (0-18 ages)	C3	3	5	0	0	2	5	4	3	1	2	5	0	1	2	0	2	1	1	6	2	3	2	3	2	2	1	3	4	2	3
disabled	C4	0	0	1	0	0	0	0	5	1	0	0	0	0	0	2	1	0	0	0	2	0	1	0	0	3	0	3	0	2	3
	Size	5	6	3	5	4	5	4	6	3	3	6	3	3	4	4	3	3	4	6	6	5	3	4	3	4	6	5	4	4	6

Figure 1.5.3d: The scenario with the most unemployed

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF
		F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	F15	F16	F17	F18	F19	F20	F21	F22	F23	F24	F25	F26	F27	F28	F29	F30
seniors (65+ ages)	C1	0	0	0	0	0	1	2	0	2	0	0	0	1	1	0	0	2	0	0	0	0	2	0	0	0	0	0	0	1	0
unemployed	C2	2	5	0	0	0	1	4	4	0	3	6	0	2	2	1	2	1	3	6	3	5	0	3	4	4	3	3	0	3	6
children (0-18 ages)	C3	3	2	2	3	2	5	4	3	2	0	0	0	1	2	1	1	1	0	0	0	0	2	0	0	0	6	0	0	0	0
disabled	C4	0	2	1	4	2	0	0	5	1	0	5	3	0	0	1	1	1	0	0	2	0	2	0	0	3	0	3	0	2	0
	Size	5	6	3	5	4	5	4	6	3	3	6	3	3	4	4	3	3	4	6	6	5	3	4	3	4	6	5	4	4	6

Figure 1.5.3e: The scenario with the most disabled

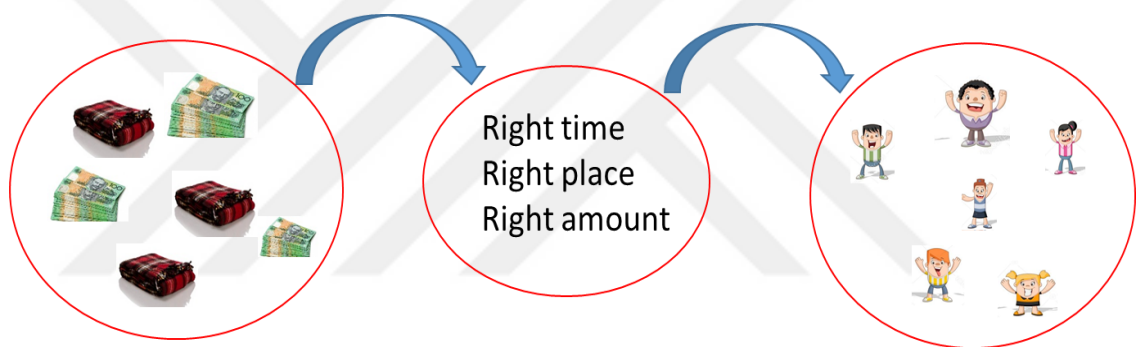
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF
		F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	F15	F16	F17	F18	F19	F20	F21	F22	F23	F24	F25	F26	F27	F28	F29	F30
seniors (65+ ages)	C1	0	0	1	0	2	0	0	0	0	1	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	2	1	0	0	0
unemployed	C2	2	3	1	3	1	4	2	5	2	2	5	2	2	3	3	2	2	3	5	4	4	2	3	3	3	3	4	3	4	5
children (0-18 ages)	C3	3	2	1	2	1	1	1	1	0	0	0	1	1	1	0	1	0	0	1	0	1	1	0	0	0	1	0	0	0	0
disabled	C4	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	1	0	1	0	0	1	0	1	0	0	1	0	1
	Size	5	6	3	5	4	5	4	6	3	3	6	3	3	4	4	3	3	4	6	6	5	3	4	3	4	6	5	4	4	6

1.5.4. Data Analysis

Created scenarios entered on the GAMS Mathematical Programming and they were run from each scenario. In conclusion, the program showed that we should select which eligibility criteria from four of them, which family benefits from distributed cash aid and how many people utilize to cash aid.

1.6. Aid Dispersion

Refugees as ordinary people need various services such as education, food, harboring, etc. To provide these services logistics and supply chain management play an essential role. These services provided by non-governmental sources or ordinary citizens donations and by government. In one hand there are too many aids to distribute and on the other hand, there are too many beneficiaries. Gathering the needs in the right place and in the right time and manage the supply chain of them as cash or in-kind need proper organization.



Eligibility, utility, and distribution are three main categories that describe in this thesis which are difficult to design. In generally each study has guidelines, for who can or cannot participate in the study. **Eligibility** is known as respect to the context it helps to decide on who will get, how much cash or in-kind. In addition, the eligibility has different criteria for people and these criteria change according to subjects, for this purpose various operations are used by criteria. They can include age, gender, medical history, current health status, marital status, educations, incomes, etc. For example; the family has 2 elderly people & 8 children and other family has also 6 elderly people & 4 children. Although there are 10 people each two families, the number of elderly people of the first family has less than the

second family. According to this case, which should we select for eligibility criteria and how can we support them? Do we buy a blanket, or do we distribute the money? To whom can we distribute? Or when we should focus on the number of students in the family, we can give stationery equipment per student. If we select a number of disabled people, can we support belong to kind of disabled like invalid chairs, walking sticks or hearing aid?

In respect to the criteria of this thesis are divided into eight groups; they are number of elderlies, number of children, number of women widows, number of pregnant, number of disabled people, number of unemployed, number of students and families under a certain income. There are two types of eligibility, one of them based on donation and the second one is beneficiary. This thesis focuses are on the beneficiary item.

The second category is the **distribution**. The lexical meaning of distribution is transporting products from one point to another point. Distribution is also another important item because money or goods should be reached right quality and right condition. If it is not, needed can have a problem and sending goods to arrive wrong place. To exemplify; group A need to some quilts and group B require some medicines. If we dispatch medicines to group A, we don't send the right place. Because medicines are not important for group A.

There are high numbers of demand in one hand and on the other hand, there are huge numbers of suppliers. Distribution should be suitable for demand and supply. So, planning, distribution network, and operations should be presentable in order to have a proper distribution.

Another difficulty is **utility**. Utility means productivity in the dictionary meaning. The utility is the availability of funds time-dependent and it can be defined as urgent needs, time-dependent utility function and different types of utilities (short-term, long-term,

savings, educations, health, and security). Utility function depends on various aspects like society, age, gender, income level, etc. The perception and need are changed from person to person, organization to organization, country to country, society to society, and position to position. Sending television or washing machine or money is so blank to flood area instead of this, it can be more important to supply tents, blankets, accommodations & foods or kinds of toys are distributed to family but this family don't have any children or carpets can be allocated however carpets are not important for sending area.

This thesis is involved in eligibility with details more than others. More information will be provided in chapter 3.

There are five main key questions about these situations which are;

- Which eligibility criteria to use?
- How to characterize utility?
- How to plan and perform the distribution?

1.6.1. Definition of Cash and In-kind

Money is important day by day for everyone and especially refugees. Donors supply this money. Governmental agencies, volunteers, private sector or non-governmental organizations receive from the money of coming from donors. Sometimes they build kinds of centers and they distribute coming money from these centers or vouchers are given to beneficiaries. They do field visits.

On the other hand, there are some basic needs arising from a natural disaster and refugees cannot purchase all disaster needs with ready money. Because of the immediate disaster cannot allow their going to shopping and choosing. Coming from various donors of in-kind aid meet the requirements such as; toys, blankets, hygiene kits & clean-up kits, foods, 24-hour needs, etc. This means refugees can take their needs and services without

coupons or money. In example; Medicare (Australian Government Department of Human Services) is supported with in-kind aid program in the U.S. This aid program provides the disabled and seniors people with health service.

1.6.2. Discussion about Cash Distribution and In-kind Aid

Sahinyazan (2018) defend that refugees can buy from everywhere and they can buy whatever and whenever they want with cash. When refugees have enough money, they can buy whatever they need. Moreover, if we give sugar instead of money, maybe taking refugees have a diabetic patient or if we give lentil instead of money, maybe they want to eat beans. So that, sugar and lentil of utilities are low and when money is received to them, the money of utility is high because they consume whatever they need. Shortly, governmental agencies, volunteers, private sector or non-governmental organizations' selected products can be undesirable or risk for refugees. In addition to this, selected products can be harmful to their health. This way (money) is easier and according to utility is better. Moreover, cash has low operations costs because they don't have to hire a truck to carry the money as opposed to carrying tents or blankets. Obviously, this has a cost. On the other hand, for cash distribution, we usually do not use to need this and the refugees don't have to select supply and contract and also, cash helps the economy. Because, if we deposit money into the account or take some amount of money, they can buy from everywhere, every bazaar, every market. So that, crafts earn money and crafts' family make money directly. To sum up, giving money plays a role to invigorate the economy instead of blankets.

On the other hand, working markets & financial capacities, exposure to supply failure, compromise food security and nutrition-related objectives are some of the disadvantages. Besides, one of the family members can buy other things like alcohol, cigarette instead

of the basic need of their family. Because money is received to family leaders and we cannot know how they consume, or what they buy. If family leaders have children, seniors and/or handicapped people, there is a risk for preventing them. Seniors cannot eat sweets, salty things. Children may need toys, stationery equipment. Disabled people must eat special foods or needs various equipment according to handicapped. However, the householder can buy what they want deliberately and carelessly. In the circumstances, we mentioned the utility of the family of 10 people before (an example), the utility of one person (the family leader) can be increased. The utility of others (in-need, children, seniors, and disabled people) can be decreased.

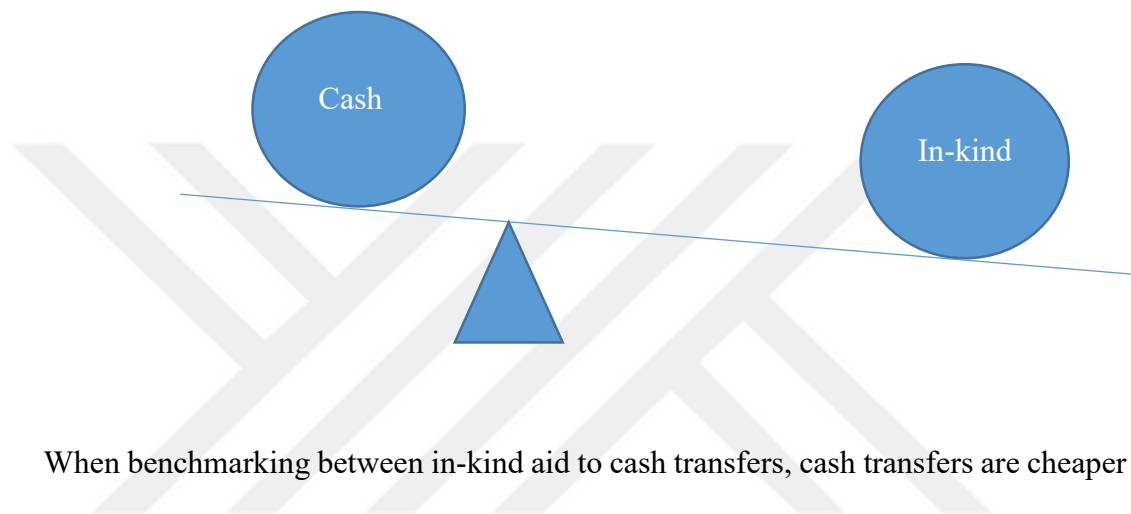
In-kind also has both some advantages and disadvantages. If we select in-kind aid to distribute to refugees, there is no need for a huge working market. When the market has only high quality and enriched foods, this situation can be enough. Therefore; costs' (constant cost, logistics cost, etc.) decreases occur. Moreover, the form of shelter, medical attention, foods, clothing, blankets or basic needs can be useful more than giving money and sometimes their utility can be better than giving money. For example; cash is not substantial for earthquake victim because they should buy what they need, they should find a secure living place. So, they lose their time. In other respects, for example; rice is bought from wholesalers and the profit margin is seriously high because of wholesale purchases. Because between buying of 10.000 kg rice to 1.000 kg of rice is not the same as profit margin. However, somebody cannot want to eat rice or they may have some problems with rice. So, sometimes cash utility can be more useful than in-kind aid.

Besides, in-kind aid minimizes harmful consume the risk. If we give cash instead of in-kind to the family leader, they can buy harmful goods like; cigarette, alcohol or they can spend money except for their family needs.

Food security is another important issue. In-kind avert also this problem. Because controlled food will be distributed like, milk, fish, vegetables, fruits, etc. from vendor shops.

Moreover, we can make ready-to-eat packing (including rice, oil, pulses, teabag, sugar, olive, instant soup, pasta, gravy, salt, beverage, biscuit, etc.) to households.

There is an also logistics cost and distribution problem should be optimized.



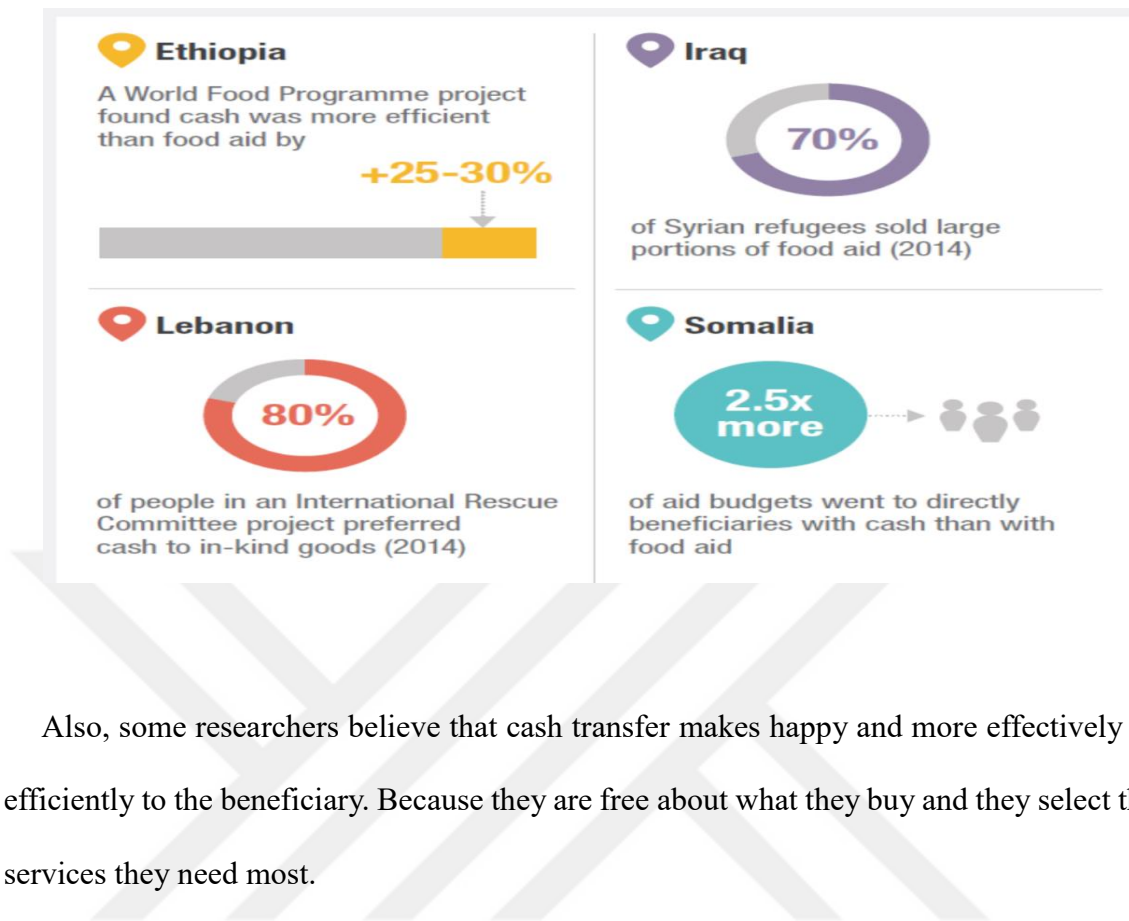
When benchmarking between in-kind aid to cash transfers, cash transfers are cheaper to delivery than in-kind helping. They are also more flexible.

However, some conditions are required for them.

- ✓ *Cash: Refugees can buy from every market and everything.*
- ✓ *In-kind: Refugees cannot select market.*

As it is seen, cash is very useful than in-kind because there are two options immediate cash and account. When the countries are compared according to in-kind and cash, different results can be seen. For example; in Sahinyazan's article (2018) refugees in Ethiopia choose cash instead of food aid. In the other side refugees who live in Iraq preferred food aid. When Lebanon refugees are examined, we see that cash is preferred to in-kind goods (See figure 1.6.2.).

Figure 1.6.2: Cash or in-kind aid by country (Source: Sahinyazan, 2018)



Also, some researchers believe that cash transfer makes happy and more effectively & efficiently to the beneficiary. Because they are free about what they buy and they select the services they need most.

CHAPTER 2

2. LITERATURE REVIEW AND THEORETICAL BACKGROUND

There is a high number of articles regarding involve refugees and their life. While some of that analysis about their education life, health, jobs, some of the area they live in, logistics needs and like this. When searched with migration keyword (in review articles and research articles), between 2009 – 2011 years had approximately 65.203 articles, between 2012 – 2015 years there were 111.683 articles, and between 2016 – 2018 years had 109.383 papers.

When searched with Syrian crisis keyword (in review articles and research articles), between 2009 – 2011 years had approximately 209 articles, between 2012 – 2015 years there were 560 articles, and between 2016 – 2018 years had 804 papers.

When searched with Red Crescent keyword (in review articles and research articles) between 2009 – 2011 years had approximately 1310 articles, between 2012 – 2015 years there were 2183 articles, and between 2016 – 2018 years had 2178 papers.

When searched with cash distribution for refugees' keyword (in review articles and research articles), between 2009 – 2011 years had approximately 70 articles, between 2012 – 2015 years there were 128 articles, and between 2016 – 2018 years had 180 papers.

When searched with cash distribution models keyword (in review articles and research articles), between 2009 – 2011 years had approximately 5669 articles, between 2012 – 2015 years there were 11.454 articles, and between 2016 – 2018 years had 11.682 papers. When

searched with humanitarian aid keyword (in review articles and research articles), between 2009 – 2011 years had approximately 497 articles, between 2012 – 2015 years there were 1.133 articles, and between 2016 – 2018 years had 1.189 papers.

When searched with humanitarian aid distribution keyword (in review articles and research articles), between 2009 – 2011 years had approximately 240 articles, between 2012 – 2015 years there were 633 articles, and between 2016 – 2018 years had 695 papers.

When searched with eligibility for refugees keyword (in review articles and research articles), between 2009 – 2011 years had approximately 201 articles, between 2012 – 2015 years there were 398 articles, and between 2016 – 2018 years had 549 papers.

As seen above, there are huge numbers of articles about these keywords. We can expect an increase in the numbers in the future.

Most of authors focus on aid distribution for beneficiaries. Thompson (2014) suggests cash transfer programs with using cash or voucher. This program aims to have access to households' basic needs for nourishment or non-food or servicing. The program uses voucher or money as a means of enabling households to have access to their basic needs for food and non-food.

Burkart et al., (2016) article include a financial system for humanitarian organizations and this paper achieves coordination between funding supply chain system and stakeholders (private and institutional donors, beneficiaries, humanitarian organizations, governments, and their agencies, non-governmental organizations, suppliers, service providers, and the media). They make various literature reviews and they find two types of topic most details; which are earmarked donations on humanitarian supply chain and in-kind donations on humanitarian supply chain management and they find some problems between in-kind and humanitarian supply chain management like, warehousing cost,

additional cost, etc. the best solution about in-kind donations is the forecast amount of in-kind donations which are received. They see that earmarked donations positive effects on Humanitarian Organization performance but can have negative effects on service levels of eccentrically humanitarian organizations.

Besides, humanitarian aid must be splendidly designed in order to be very well of eligibility, utility and distribution. Therefore; according to Irrera (2018) there are five key elements in order to make a better design which are; information (van der Laan et al., 2016; Yilmaz & Kabak, 2016), communication (Martin et al., 2016), collaboration (Martin et al., 2016; Nagurney et al., 2016), coordination (Martin et al., 2016) and cooperation (Joshi & Nishimura, 2016; Martin et al., 2016). These five main factors help to manage better efficiently and effectively for humanitarian aid stakeholders.

According to Yilmaz & Kabak (2016) information is significant because real-time, real-place and real information about the disaster are needed and correct & real information about the disaster can be increased to the number of aid and who can support.

According to Celik & Corbacioglu (2010) that communication is significant during disaster or after disaster. Because if between donors and disaster victims or between donors communicate with each other's very well, both sides are winners. So, information and communication technologies (ICT) should be improved. When ICT is developed, between disaster management, stakeholders' coordination and collaboration can be simplified.

According to Martin et al., (2016) that cooperation is significant because the risk of working together can be decreased. Moreover, cooperation can be balanced between disaster management stakeholders' strengths and powerless in running the humanitarian aid distribution process.

According to Al Theeb & Murray, (2016) that coordination is significant because coordination means to process to organize humanitarian aid and design of disaster. Logistics operations, goods of delivery, evacuation centers are covered.

According to Martin et al., (2016) that collaboration is significant because only one disaster organization cannot organization to manage. There should be more than one organization and they should be in cooperation and collaboration. Moreover, not only pre-disaster or during disaster but also design of after disaster is so important. Also, Nagurney et al., (2016) defend that government and NGOs should be collaborate their preparation before a disaster.

Van der Laan et al., (2016) noted that generally, humanitarian aid organizations supply emergency and short-term projects to demanding to forecast for disaster victims. However, nobody plan long-term projects for them. This paper includes planning long-term projects. They estimate and analyze to order planning process. Various internal and external factors affect to forecast and order planning process.

Joshi & Nishimura (2016) contact between disaster-affected people and government. If financial aid is distributed sufficiently and justly, disaster-affected people will be identified to the government and they will begin to live into the government's building housing.

Martinez et al., (2011) focused on fleet vehicle management in humanitarian operations. They study with the International Committee of the Red Cross, the International Federation of Red Cross and Red Crescent Societies, the World Food Program and World Vision International which are four major International Humanitarian Organizations. This article also uses a hybrid model and make some interviews with headquarters, regional and national level in Africa, the Middle East, and Europe.

Balcik et al., (2016) explore humanitarian inventory planning and management. Especially, they want to learn to designate how much to stock, where to stock, and when to stock for the humanitarian supply chain and they investigate pre-disaster and post-disaster inventory management. They make a survey for finding their solutions. They make several modeling about the quantity of inventory and location for before a sudden-onset disaster on the purpose of so as to deliver supplies. This means that they claim a predetermining amount of stock before disaster suddenly. For post-disaster, they think about demand without any forecast. So, some products can send back and this situation causes extra ordering cost. In conclusion, they defend that there are some problems with the post-disaster transportation infrastructure, the condition of warehouses & stocks and location & amount of demand.

According to Lentz et al., (2016) cash is opportunity for local food aid but cash can have some risks because cash does not have established sharing norms according to food aid.

Hidrobo et al., (2014) search influence and cost-effectiveness about cash, food vouchers, and food transfers. They find that cash, food vouchers, and food transfers develop the quantity and quality of food consumed. Although vouchers have more various dietary-diversity, food transfers have significant calories their nourishment. They extrapolate with making a test in a certain region of Spain.

Aims of Aaberge et al., (2018) are to learn how in-kind aid transfers procured by local governments influence economic inequality. They use mathematical programming to find their searching. Local governments give in kind transfer to low income families in order to find solution about cash income inequality.

Flogstad & Hagen (2017) want to learn how they should help aid distribution network. They use mathematical programming.

Huber et al., (2011) want to determine whom to help about humanitarian aid of judgment and bias in decisions and refugees watch different films about four different humanitarian crises. After films, they understand that immediate crisis is disproportionately bestowed by participants' refugees. Writers make donation decisions sequentially and then humanitarian donated disproportionately to the immediate crisis.

Alloush et al., (2017) examine economic life living refugees in camps. Especially they focus on Congolese refugee camps in Rwanda and the interactions between refugees and local host-country economies within a 10-km radius around each camp. One of the three camps are received food aid in-kind; two camps are given cash. After they observed, they agree on that cash is better than in-kind (because refugees can buy whatever they want), camps & hosts' economies up and refugee welfare up.

Grass & Fischer (2016) state that every kinds of natural disasters have two-stage: before and after. Although it is very difficult before the disaster the forecast, they want to some decisions have to be made before uncertainty is realized and they have a modeling of the humanitarian aid decision-making process in natural disasters. This paper used mathematical programming.

According to Dugdale et al., (2012), search and rescue are key factors for humanitarian aid distribution process during the disasters. Search and rescue equip is the first aid in during a disaster. This equip must find the victims of disaster. They think that search and rescue efforts should be developed in order not to have difficulty during the disaster.

There is also a body of literature regarding stakeholders for disaster management. According to Alloush et al., (2010) government, NGOs, individual citizens or group of citizens should be disaster management stakeholders and agility, competence, resources, and endurance should be varied of these stakeholders.

Abiew (2012) believes that NGOs involves several service and humanitarian functions and also, NGOs' other name is 'implementing partners' for provide accommodations and protect the victims of disaster. De Oliveira et al., (2016) suggest that private sectors should manage distribute aid coming from volunteer and they lighten aid load coming to government for victims of disaster.

Some authors analysis the technology aspect of humanitarian operations. These studies focus on the use of technology and communication technology effects on disaster management. Purpose of Abushaikka & Schumann-Bölsche (2016) utilize to support humanitarian operations in mobile phones applications and technologies and they offer to country non-government organizations and the United Nations to evaluate the situation mobile cash systems to support refugees. Even though refugees have mobile phones, they afraid they cannot stay alive insecure transportation, harsh weather, medical conditions, and starvation. Authors assert to constitute technologies from ICT (Information and communication technologies) and innovation logistics solutions of humanitarian aid.

Bernardo et al., (2015) & Carley et al., (2016) believe that ICT is to strengthen communication and collaboration between disaster management. In addition, ICT can remove some problems such as; fraudulent reports, redundancy of information, food redundancy, the uneven distribution of food supply to disaster victims, and food insecurity issues (Gao et al., 2011; Ha, 2016; Hussain & Ismail, 2011).

There is a bit articles focusing on disaster problems. Celik (2016) includes that author solves resultant disasters some problems like electrical power, transportation, telecommunications, water supply, and wastewater networks. He views the long term and short-term effects. He also makes a literature review about his subject and this article is used a simulation and mathematical program.

Another inspected topic is social integration. Knappert et al., (2018) investigate refugees' societal integration, their inclusion or exclusion at work and refugee status & gender. Especially the article incorporates about reasons for unemployed according to women and men in Turkey-Syrian. They have interviews with male and female refugees, employers, and experts from governmental and nongovernmental organizations in Turkey and they land up disadvantages for women refugees. Because they see that gendered roles dominate in their home and host societies.

Some studies don't analyze these topics. They are focused more on the operational and political part. Example of operational part; Barbieri et al., (2017) pointed out that cooking technology living in the camps and there were different types of stoves. Example of political part; Fink & Redaelli (2011) stated that political and strategic factors have a role significant to emergency aid allocation.

This section releases on the analysis of related theories to drive conclusion regarding humanitarian logistics also which are; dynamic capability, population ecology, and stakeholder. Stakeholder theory consists of many shareholders and company owners. Stakeholder includes working ethics and management of organizational, and its main aims to make the profit and distribute to between shareholders in this profit (Wittke, 2014). This thesis's stakeholders are Red Crescent, Afad, people who want to help (in domestic and abroad) and refugees. The coordinate should be very well between them.

According to dynamic capability, internal and external competences should also take account. Everyday parameters are changing. The populations are included in these parameters. Millions of people birth and died every time and numbers of the population are decreased or increased. This situation is true of refugees. Moreover, the dynamic is affected by political, economic and social factors. For example, due to the recent events, refugees don't receive help from Germany.

Population ecology related to populations regards to environmental issues such as; distribution, age, population size and environmental influences on density (Salimath & Jones, 2011). Moreover, the theory explains a singular or the group of people lives in the same location. In this thesis's research, the help of population ecology theory defines the rates of population refugees in Turkey. These rates have gender and age groups, working & studying and retired rates, etc.

Although many articles include food supply chain, security, distribution of clothes, etc. for refugees, there is a gap of research focusing explicitly on the cash distribution, eligibility criteria, optimize mathematical programming of them.

Four main research questions are as follows.

1. What is the best model for eligibility?
2. How can distribution be optimized?
3. How should the distribution network be designed?
4. How can a utility be characterized and analyzed?

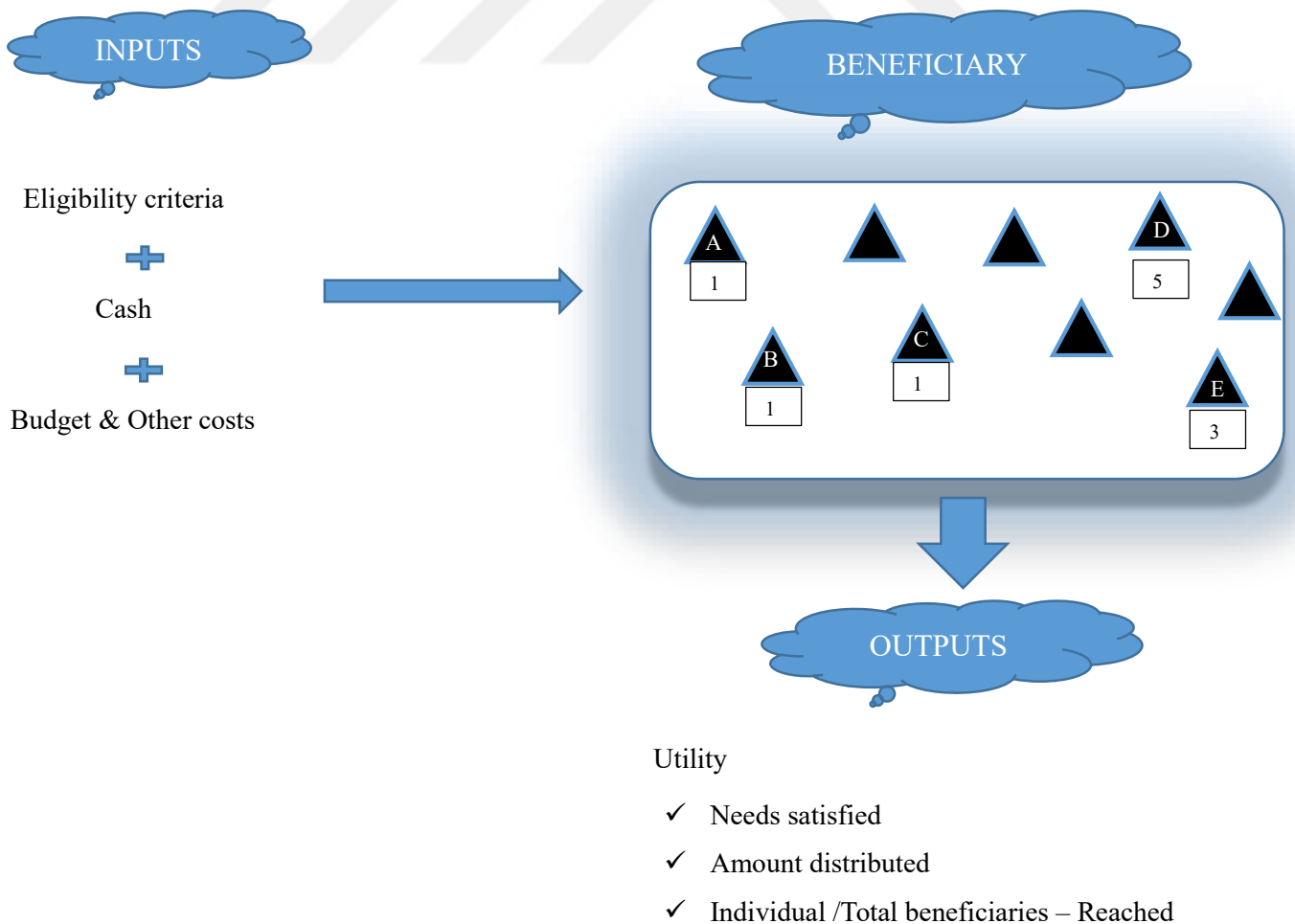
The aim of this thesis is the refugees' logistics network optimization.

CHAPTER 3

3. PROCESS

In this chapter, we analyzed the process regarding aid distribution to beneficiaries. Considering the inputs as eligibility criteria, cash distribution, budget, and other costs, the outputs as a utility, need satisfied, amount distributes, individual or total beneficiaries and reached and the beneficiaries. Figure 3 below is a sketch of the setting that we consider.

Figure 3: Modelling



We have a number of populations. These populations are called “beneficiary” and there are some needs of the beneficiary, but these needs are different property from each other. Characteristic of them are not the same. Needs of them are not the same. Gender of them is not the same. Age of them is not the same. The utility of them is not the same. They don’t live in the same place. All of them wants different things. Seniors people want different something else. Young and teenager people want different something else (example; they can desire to play music and they want to have with kinds of music instrument). Children want different something else (example; they want to have kinds of and different toys). Women want different something else. Men want different something else. Working people want different something else. Having a home of people want different something else. Pregnant want different something else (example; they can be supplied belong to their babies like diapers milk, feeds). There are some public bodies, organizations, people who want to help them. Generally, donors don’t support alone, and they don’t aid o beneficiary. Donors can aid over various foundations such as; TRC (most common foundation in Turkey), endowments, relief agencies, etc. Donors give the amount of money or clothing or materials of sheltering to foundations. Donors and foundations combine, and they give refugees a hand. For this; eligibility, cash, budget & other costs should be considered.

As mentioned above, eligibility criteria are changed subject by subject and case by case. Number of elderlies, number of children, number of women without a husband, number of pregnant, number of disabled, number of unemployed, number of students or families under a certain income in the family are associated with this theses. Cash means ready money in the lexical meaning and we can support with cash aid to reach. We will investigate which is the best utility for refugees according to the case.

Inputs designate the plan regarding the people who will have the aid, and how much the aid. In addition, these inputs determine how we can do operations.

There are several parts of aid that are generally used. We can face to face some risks as mentioned above. Actually, there are two types of risks which are; tangible risk and process risk. Tangible risk includes distribution risk, theft risk, personnel unavailability, schedule slippages and budget shortfalls like this. Process risk involves human error (entering misinformation in the system), mechanical failure, technology errors or security incidents. Aids cannot go to the right place or right conditional. The operation can be not realization. We change them and we focus on the best utility.

In another side, there are some beneficiary or refugees (representing triangular) of families. Below some triangular how many people do they live in their family this means a number of up the triangular represent some utilities. "A" triangular has one child. This triangle's utility is one. "B" triangular has one child. This triangle's utility is one. "C" triangular has one child. This triangle's utility is one. But on the other hand, "D" triangular has five children. This triangle's utility is five. "E" triangular has three children. This triangle's utility is three. Can we distribute "A", "B" and "C" triangular or "D" and "C" triangular? If we select "A", "B" and "C" triangular, we can help 3 families but when we select "D" and "C" triangular, we help 2 families. This is nice in terms of area but if our criteria is a number of children, this area is better than others. So that, we purpose maximum utility and reach & minimum other costs.

Outputs specify to outside factors. Outside factors are defined as situations developing outside of us. For instance; we can give 100 TL to everybody without any criteria. However, we cannot find some of the refugees. Or the distribution cost is very high. Therefore, we can distribute 80 TL instead of 100 TL to every refugee. Or we can aid to 300 number of refugees instead of 500 refugees. Shortly, a number of exogenous factors can influence to

aid. Our plan cannot implement one to one. Sometimes we cannot find a volunteer. Sometimes weather conditions cannot suit to distribute. Or we can plan to supply in winter (such as “winter pack or winterizations package”. It involves winter material like; various soup, several herbal teas, boots, coats, raincoats) but sometimes we might not get permission from the authorities. Products we want to send can be forwarded in summer times instead of winter. Therefore, sending products don't make sense and cannot be of service to refugees. In briefly, our planning and outside factors cannot overlap and so, several types of unexpected situations show up. These situations identify to outputs. These outputs measure with utility and reach. Reach is the target population. This means the number of supported people and number of aids.

Another aim of this thesis that when we use which eligibility criteria (Number of seniors people, number of children, number of pregnant, number of single women, number of young people, number of amount of income, number of disabled people), we can get the best results and decide the output in the best way.

We focused also on who is the target of this study and who will use mathematical programming. Agency, non-government organizations, state organizations, public organizations can use mathematical programming. They will support the aid distribution decisions. The main purpose of this thesis is to determine and distribute which criteria should be used for which profile beneficiary and providing a tool that will be enabled to make this distribution fairer and more target oriented.

3.1. The Case of Red Crescent Card

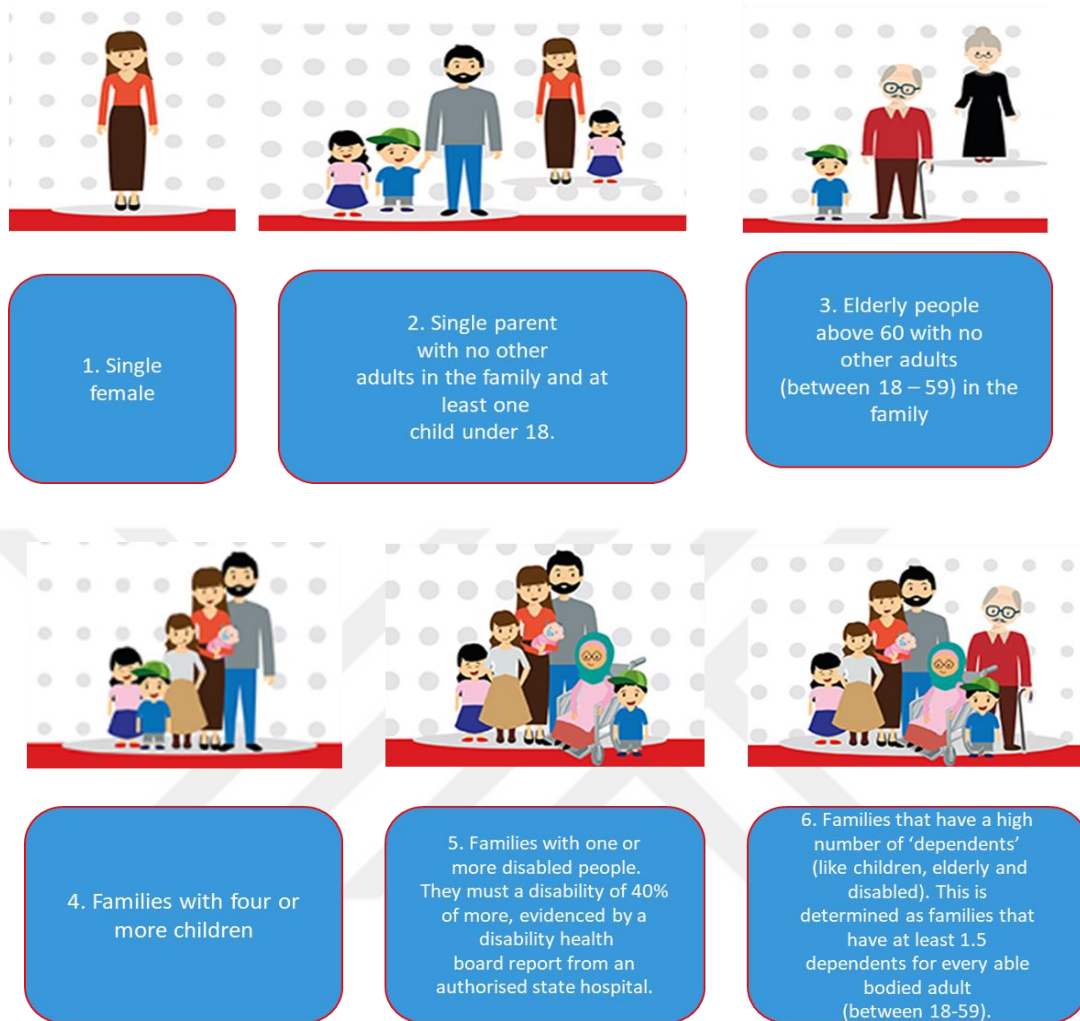
There is an aid agency in Turkey. This name is ESSN (Emergency Social Safety Net)-Red Crescent Card. ESSN program; Turkish Red Crescent (TRC), UN World Food Programme (WFP) and the Turkish Ministry of Family and Social Policies (MoFSP) are in partnership with Halkbank and this card enter into force. Aim of the ESSN program is helping to in need to help and living out of camp. This ESSN program involves cash aid and basic needs like; nourishment, harboring, clothing. Red Crescent Card is a kind of bank card and 120 TL is loaded per person in the household last day of each month. This card is provided by TRC and is distributed from Halkbank branch. Refugees can use all post machines and withdraw from every ATM (Automatic Teller Machine). Also, this program is only for families of refugees who need help and who are not registered with the health and social security institution or SGK (Sosyal Güvenlik Kurumu) and the eligibility criteria will be checked every month.

According to TRC, Red Crescent card was started using in October 2012 in camps and out of camps in June 2015. The total amount of loading was 504.047.868 TL. This card is used in Adana, Adıyaman, Gaziantep, Hatay, Kahramanmaraş, Kilis, Malatya, Mardin, Mersin, Osmaniye and Şanlıurfa (the most intensive cities in Turkey). Furthermore, this card is used in twenty-eight numbers of contractual markets and also, total implementation refugees are 289.048 (141.684 in camp, 147.364 out of camp). In addition, the numbers of calls received are 30.470. The total number of women refugee users are 50.70 and men refugee users are 49.30. To sum up, 57.206 cards are loaded for the refugees' needs.

3.2. Eligibility Criteria for Using Red Crescent Card

Refugees should have some different criteria for using this card (see figure 3.2). The first criteria is being a single female and according to AFAD “Syrian Women in Turkey 2014” report (AFAD Syrian Woman in Turkey), the number of the single female is 1.450 people (number of spinster: 1.210, number of divorced: 41, number of widow: 199) in Turkey. The second criteria is being a single parent with no other adults in the family and at least one child under 18. The third criteria is being elderly people above 60 with no other adults (between 18 and 59) in the family. If the families have four or more children, they can use this card. Other criteria is families with one or more disabled people. They must have a disability of 40 % or more, evidenced by a disability health board report from an authorized state hospital and final criteria are families that have a high number of ‘dependents’ (like children, elderly and disabled). This is determined as families that have at least 1.5 dependents for every able-bodied adult (between 18 and 59). Eligibility criteria of Red Crescent Card are as follows.

Figure 3.2: Criteria of Red Crescent Card (Source: Red Crescent Card, 2017)

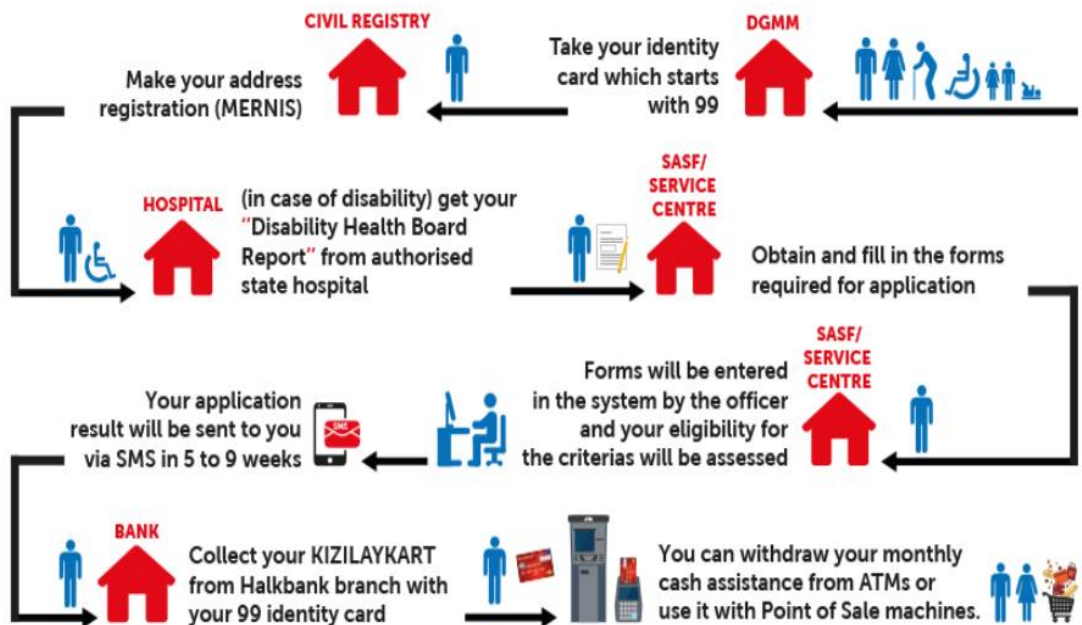


In the old eligibility criteria, there must be two disabled people in the family for using aid. Nowadays, if the family has one disabled person, they can receive support. In the old eligibility criteria, every two healthy adults were obliged to look after at least four dependents. Currently, every two healthy adults must be obliged to look after at least three dependents to receive support. Other eligibility criteria are the same.

3.3. Application Process

Firstly, refugees take a foreign identity card with a beginning number of 99 from the Directorate General of Migration Management (DGMM). Then they register their addresses in the civil registry. If they are disabled people, they should take the “Disability Health Board Report” from a competent public hospital. Then, they procure necessary forms from the foundation of social help and solidarity (SASF) and fill in the forms. These forms will be entered and controlled their eligibility criteria from the officer. The solutions will be sent between 5 and 9 weeks. If they deserve to have this card, they can get from Halkbank. Therefore, they can withdraw cash aid from ATM or they can use in the POS (Point of Sales Terminal) (See figure 3.3).

Figure 3.3: Application Process about Red Crescent Card (Source: Red Crescent Card, 2017)



3.4. Discussion about Eligibility

Eligibility has different meanings of respect to context as mentioned before like a qualification. According to different websites, each study has advice for who can or cannot participate in the study. This thesis includes deciding who will get, how much cash.

In addition, the eligibility has different criteria of these people and criteria change subject by subject. When cash distribute is given to refugees, a number of elderly or number of children or number of women without husband or number of men without wife or number of pregnant or a number of disable people or the number of unemployed or a number of students in their family or families under a certain income can be selected.

There are using six eligibility criteria nowadays (mentioned in the section of eligibility criteria for using Red Crescent Card). However, when looked at Syrian Refugees' profile in Turkey, there can be different types of eligibility criteria and we have some suggestions about eligibility criteria such as; disabled status, education, heads of household, marital status, employment status, housing conditions. Because, these additional criteria can cause better utility, better distribution, better reach for refugees.

3.4.1. Disabled Status

Table 3.4.1. involves disability status distribution of Syrians by the provinces and gender (in-camp and out of camp) with several disability statuses such as; physically handicapped, visually handicapped, aurally handicapped, mentally handicapped. However, the number of non-handicapped is very high. So maybe this criterion is not determined.

Table 3.4.1.: Disability Status Distribution of Syrian Refugees by the Provinces and Gender (Source: AFAD Report 2)

The Province They Settled In	Gender	Camp Setting (%)					Non-Camp Setting(%)				
		Not handicapped	Physically handicapped	Visually handicapped	Aurally handicapped	Mentally handicapped	Not handicapped	Physically handicapped	Visually handicapped	Aurally handicapped	Mentally handicapped
Adana	Male	91.70	2.80	2.80	0	2.70	95.80	3.60	0.20	0	0.40
	Female	84.00	12.00	0.00	0	4.00	98.40	1.60	0.00	0	0.00
	Total	88.50	6.60	1.60	0	3.30	97.00	2.70	0.10	0	0.20
Adiyaman	Male	100.00	0	0.00	0	0	98.90	1.10	0	0	0.00
	Female	95.20	0	4.80	0	0	99.70	0.00	0	0	0.30
	Total	97.20	0	2.80	0	0	99.30	0.60	0	0	0.10
Gaziantep	Male	97.10	0.00	0	1.50	1.50	95.60	2.80	0.50	0.10	1.00
	Female	97.40	1.70	0	0.00	0.90	97.10	2.20	0.00	0.10	0.50
	Total	97.20	0.80	0	0.80	1.20	96.30	2.50	0.20	0.10	0.70
Hatay	Male	96.30	0.90	0	0	2.80	95.90	2.60	0.30	0.50	0.70
	Female	100.00	0.00	0	0	0.00	95.80	2.00	0.70	0.40	1.00
	Total	98.10	0.50	0	0	1.50	95.80	2.30	0.50	0.40	0.90
Kahramanmaraş	Male	93.10	3.40	0	3.40	0	93.90	3.90	0.60	0.40	1.20
	Female	100.00	0.00	0	0.00	0	96.30	2.80	0.00	0.40	0.50
	Total	96.60	1.70	0	1.70	0	95.10	3.40	0.30	0.40	0.80
Kilis	Male	98.50	1.50	0	0.00	0	94.80	4.00	0	0.60	0.60
	Female	98.10	0.00	0	1.90	0	96.70	2.70	0	0.30	0.30
	Total	98.30	0.80	0	0.80	0	95.70	3.30	0	0.50	0.50
Malatya	Male	96.40	3.60	0	0	0	98.90	1.10	0	0.00	0.00
	Female	100.00	0.00	0	0	0	97.10	0.00	0	1.10	1.70
	Total	98.40	1.60	0	0	0	98.10	0.60	0	0.60	0.80
Mardin	Male	87.50	4.20	0	4.20	4.20	99.10	0.50	0	0.50	0.00
	Female	96.30	0.00	0	3.70	0.00	98.50	0.50	0	0.50	0.50
	Total	92.20	2.00	0	3.90	2.00	98.80	0.50	0	0.50	0.20
Şanlıurfa	Male	97.70	1.10	0.60	0	0.60	99.40	0.60	0	0	0
	Female	96.90	1.20	1.20	0	0.60	99.30	0.70	0	0	0
	Total	97.30	1.20	0.90	0	0.60	99.40	0.60	0	0	0
Total	Male	96.50	1.30	0.30	0.60	1.30	96.00	2.80	0.30	0.30	0.70
	Female	97.30	1.20	0.70	0.30	0.50	97.10	1.90	0.10	0.30	0.50
	Total	96.90	1.20	0.50	0.50	0.90	96.50	2.30	0.20	0.30	0.60

3.4.2. Employment Status

In the table 3.4.2a includes employment statuses of Syrian refugees by the provinces they settled in and gender, in the 2017 year (out of camp). In generally, 36 % male and 9 % female were working. As previously mentioned, Syrian guests started to live most in Gaziantep and Istanbul. When looked at table 3.4.2a.,it can be seen the rate of working was

low in these provinces. The reason for this, the living of Syrian refugees could be to outnumber in these provinces.

In the table (3.4.2.b) below includes employment statuses of Syrian refugees by the provinces they settled in and gender, in the 2017 year (in-camp). In generally, 22 % male and 13 % female were working. Therefore, it can be understood that Syrian refugees living out of camp were not working we can support cash aid only unemployment refugees.

Table 3.4.2a: Employment Statuses of Syrian Refugees by the Provinces and Gender (out of camp)(Source: AFAD Report 2)

Non-Camp Setting				
Province	Employment status	Gender		Total (%)
		Male (%)	Female (%)	
Adana	Employed	36.30	6.30	23.60
	Unemployed	63.70	93.70	76.40
Bursa	Employed	68.40	4.20	37.00
	Unemployed	31.60	95.80	63.00
Gaziantep	Employed	22.60	8.20	15.40
	Unemployed	77.40	91.80	84.60
Hatay	Employed	32.00	16.80	24.40
	Unemployed	68.00	83.20	75.60
İstanbul	Employed	27.70	7.60	18.00
	Unemployed	72.30	92.40	82.00
İzmir	Employed	45.70	8.50	28.20
	Unemployed	54.30	91.50	71.80
Kayseri	Employed	60.70	3.70	32.60
	Unemployed	39.30	96.30	67.40
Konya	Employed	61.10	6.80	34.50
	Unemployed	38.90	93.20	65.50
Mersin	Employed	33.10	3.60	20.80
	Unemployed	66.90	96.40	79.20
Total	Employed	36.50	8.80	23.20
	Unemployed	63.50	91.20	76.80
	Total	100	100	100

Table 3.4.2b: Employment Statuses of Syrian Refugees by the Provinces and Gender (in camp) (Source: AFAD Report 2)

Camp Setting				
Province	Employment Status	Gender		Total (%)
		Male (%)	Female (%)	
Adana	Employed	37.50	0.00	22.00
	Unemployed	62.50	100.00	78.00
Adiyaman	Employed	20.00	2.40	9.70
	Unemployed	80.00	97.60	90.30
Gaziantep	Employed	20.40	11.30	16.30
	Unemployed	79.60	88.70	83.70
Hatay	Employed	16.70	15.60	16.20
	Unemployed	83.30	84.40	83.80
Kahramanmaraş	Employed	40.00	7.10	22.60
	Unemployed	60.00	92.90	77.40
Kilis	Employed	17.60	34.80	25.80
	Unemployed	82.40	65.20	74.20
Malatya	Employed	35.70	11.80	22.60
	Unemployed	64.30	88.20	77.40
Mardin	Employed	0	0	0
	Unemployed	100	100	100
Şanlıurfa	Employed	27.50	13.80	20.50
	Unemployed	72.50	86.20	79.50
Total	Employed	22.40	13.20	17.90
	Unemployed	77.60	86.80	82.10
	Total	100	100	100

3.4.3. Numbers of Children

Ministry of Interior Directorate General of Migration Management remarks that children population (between 0 – 18 years) is 1.670.700 (Girls: 798.625 and Boys: 872.075) in 2019. 28 % of the total population of Syrians are under 10 years old. We are able to case distribute 150 TL per child.

3.4.4. Numbers of Elderly

Ministry of Interior Directorate General of Migration Management highlighted that between over 65 and 75 ages are 70.335 people in the elderly population (Women: 37.052 and Men: 33.283). Maybe we can select this criterion and we can take 200 TL per elderly people.

CHAPTER 4

4. MATHEMATICAL MODEL AND ANALYSIS

In this chapter, we formulate a mathematical programming model that the sizes how to allocate aids to beneficiaries in order to maximize the utility of beneficiaries and the total reach. This mathematical model uses as parameters; eligibility criteria, cash distribution, budget, and other costs.

The decision variables are needs satisfied, amount distributed, individual or total beneficiaries and reached. We decide how much cash to distribute to which beneficiary. That means, the amounts of cash to distribute to beneficiaries.

There is also a budget considerate. We will consider two objectives. One objective is the total utility. The second objective is the total reach. The experimental design will consider different settings of budgets, and the number of beneficiaries. The analysis will identify the effect of changes in budget or numbers of beneficiaries on the objectives of utility and reach.

4.1. Mathematical Modelling

We have 130 people, 30 family, and 50.000 TL budget. On the other hand we have five different scenarios and four eligibility criteria respectively which are; numbers of elderly people in the family (65+ ages), numbers of unemployment in the family, numbers of children in the family (0-18 ages) and numbers of disabled people in the family and our

aim to reach at least 90 people. Moreover, we aided the maximum 10.000 TL cash distribution to each one family. Because giving cash distribution not fair too much help to a single family. We aimed maximum diversification in distribution patterns. So, we put this consideration. In order to solve this problem, we used GAMS Mathematical Programming.

$$\text{maximize } \sum_i A_i * u_i$$

Subject to

$$A_i \leq M, \text{ for all } i$$

$$\sum_i A_i \leq D$$

$$\sum_i S_i * r_i \geq H$$

$$\sum_i A_i * u_i \geq Y$$

$$e_i = \sum_j V_{ij} * W_j, \quad \text{for all } i$$

$$b_i = e_i - t_1, \quad \text{for all } i$$

$$b_i \leq \sum_j N * r_i, \quad \text{for all } i$$

$$f_i \leq \sum_j N * r_i, \quad \text{for all } i$$

$$f_i \leq \sum_j e_j + N(1 - r_i), \quad \text{for all } i$$

$$f_i \leq \sum_j e_j - N(1 - r_i), \quad \text{for all } i$$

$$\sum_i f_i = 1$$

$$A_i = D * f_i, \text{ for all } i$$

$$r_i \in \{0,1\}, \text{ for all } i$$

$$A_i, e_i, f_i \geq 0, \text{ for all } i$$

$$w_j \geq 0, \text{ for all } j$$

4.2. Analysis of Results

Scenario 1 shows that the number of elderly people is higher others (+ 65 ages) people in the family. According to this scenario, numbers of 13 families, 91 people, were benefited from cash aid with using Criteria 3 (Numbers of children in the family).

Scenario 2 shows that the number of non-working is higher others. The number of families and people were the same. 14 families, 92 people, were reached using by Criteria 1 (Numbers of elderly in the family) and Criteria 2 (Numbers of unemployment in the family).

Scenario 3 shows that the number of children is higher others (0-18 ages) people in the family. The number of families and people were the same. 18 family, 90 people, were reached according to Criteria 2 and Criteria 3.

Scenario 4 shows that the number of disabled is higher others. The number of families and people were the same. 21 families and 93 people were reached. In this scenario, all criteria were used but Criteria 2 (Numbers of non-working in the family) and Criteria 3 (Numbers of children in the family) were used basically. Other 2 criteria (Numbers of elderly and disabled in the family) were applied slightly.

Scenario 5 shows based scenario (based on AFAD Report 2). The number of families and people were the same. 21 families, 94 people, were distributed cash aid with using Criteria 1, Criteria 2 and Criteria 3.

As a conclusion, a number of families reached are changing. According to reach to families, in scenario 1 and scenario 2 are unfair distribution when we compare with others. Defined all criteria are used. Also, our target number of reached is 90 people. All scenarios have ensured our aim.

CHAPTER 5

5. SUMMARY OF THE FINDINGS AND CONCLUSION

According to AFAD Report 2 data, there are approximately four million Syrians living in Turkey and they need some different things. Our aim to the best cash distribution and utility for beneficiaries. Also, nobody focuses on eligibility analytical criteria. We analyze Red Cross, AFAD Report 1 and AFAD Report 2. We read lots of articles and we built a mathematical modeling that will lead to our goal.

We focused on cash distribution aid with eligibility analytical criteria (with the amount, eligibility criteria, and budget). We determined four different criteria and 30 families (130 people). We built 5 different types of scenarios which are; the scenario with the most seniors, the scenario with the most number of children, the scenario with the most unemployed, the scenario with the most disabled, and the scenario with based scenario). We wanted to distribute a minimum of 90 reached. We did it. Different criteria were used for every each scenario. We determined 4 criteria but the best dispersion are 2 criteria. Cash distribution criteria change by family types. Fewer families are reached in some situation. This is an uneven situation. We wanted to increase utility instead of numbers of families

(See table 5). Budget, target reach and maximum payment can be changed. New criteria can be added. If parameters are changed, the solution will be different.

Table 5: Summary of Scenario Results

	Scenario 1* <i>based scenario</i>	Scenario 2 with the most number of <i>unemployment</i>	Scenario 3 with the most number of <i>children</i>	Scenario 4 with the most number of <i>disabled</i>	Scenario 5 with the most number of <i>seniors</i>
Number of <i>families assisted</i> (Total of 30 families)	21	21	18	14	13
Number of <i>criteria used</i> (Total of 4 criteria)	C1 C2 C3	C1 C2 C3 C4	C2 C3	C1 C2	C3
Number of <i>reached beneficiaries</i> (Total of 130 beneficiaries)	94	93	90	92	91

*Calculated based on AFAD Report 2 data.

5.1. Contribution to Theory of the Study

We constituted new mathematical modeling in order to determine eligibility and distribution of eligibility criteria. Parameters, constraints and objective functions of this modeling can be changed and they can be used to different settings and multi-objective.

5.2. Managerial Contribution of the Study

People of aid distribution used the criteria they knew correctly or all criteria or sum-mixed of criteria up to now. They can better decisions using our modeling thanks to our work. They can find which criteria they should use, which criteria and how much weight they should give, what kind of distribution should determine for which beneficiaries profile. Also, they can use some different kind of scenario analysis (as we did in the thesis). They will see the best solution and potential effects by using a different target reach, different utilities, and a different budget. In other words, they will better manage their work.

5.3. Practical Contribution of the Study

Because the model what we created can be solved very quickly, agencies can run, solve and implement for every aid distribution in the project or changing conditions in these projects. Moreover, beneficiaries receive their aid with a better fair, a better even and better meeting of their needs. Besides, prominent beneficiaries characteristic will be considered according to the profile of beneficiaries using by appropriate criteria for distribution. Table 5.3. includes implantations of the study.

Table 5.3.: Implantations of the Study

Stakeholder	Theoretical	Managerial	Practical
Agency / Organization	✓ Changing parameters / constraint / objective	✓ Better decision ✓ Better manage	✓ Fast running model
Beneficiary	✓ Different types of eligibility criteria	N/A	✓ More even ✓ More fair ✓ More meeting of their needs ✓ Profile
Academics	✓ New model ✓ Flexible Model	N/A	N/A

5.4. Limitation of the Study

The limitations of the study are that investigation or methodology that affect the remark of the findings from research. These involve a number of challenges that arise during the study like the restrictions on generalizability, applications to practice, and/or utility of findings.

In this study, we didn't know which criteria governmental agencies, volunteers, private sector or non-governmental organizations used.

We reached the criteria used by the only Red Crescent. Although nevertheless, we collected from field data, we couldn't make one on one interview with the beneficiary, Red Crescent representatives, AFAD representatives or people in the aid distribution agency. AFAD and Red Crescent are restrictive pretty about this subject. Even though we have

contacts very well, we couldn't make an interview. Because there was a beneficiary potential risk both us and them and we couldn't meet because of their not allow.

Although we used having all the data about the beneficiary profile, we couldn't know some points in this data. For instance, we didn't know how many children a family has on average. Accordingly, we looked at all the data we could reach like AFAD, Red Cross and official data. We built mathematical programming. However, the variety of these data was not like what we wanted. For example, we had to compute the average number of adults in the family and the average number of children in the family using data from some sources.

5.5. Further Study

In future work, timing consideration and in-kind aid can be researched for this topic. For instance (timing consideration); one kind of disaster is done in this month. If we aid in a short time, it can be more intense and efficient. The effect of the aid is immediate. If we aid for a long time, we can reach more people, but it can be a higher cost. The ideal time frame can be decided. There are two parts of aid; which are; suddenly aid and chronic aid. Suddenly aid is done in case of war or floods or quakes. Chronic aid is done a period after war or floods or quakes. There is also some budget for aid. Non-profit organizations give budgeted. If the budget is managed very well, reached will benefit better and there are some costs like distribution cost, operational cost, personal cost, fixed cost, etc.

The timing of the aid distribution also affects utility. For example; there was a flood on February the aids could be done in ways. The first way was delivering 1.000 blankets at

the time of disaster or the second way was delivery of blankets 10.000 after two months the consequence will be obtaining after research.

Besides, distribution should be speedy and planned time. If distribution time is extended, the cost will be increased and the needs of the needed don't fulfill the need. Because there are some urgent like medicines, foods, basic needs.

In-kind is riskier than cash distribution. Because functions and utility are different. Beneficiaries can have some health problems like allergic or diabetic or tension with sending products. Or they cannot need sending products. Also, they can sell to given products. However, in-kind aid, even so, can be distributed.

REFERENCES

3RP (Regional Refugee and Resilience Plan). 2018. 3RP Regional, Refugee & Resilience Plan 2017-2018 In Response to the Syria Crisis Annual Report, December 2018, Available from <<https://data2.unhcr.org/en/documents/download/68557>>. [7 Jun 2019]

Aaberge, R., Eika, L., Langørgen, A., & Mogstad, M. (2018). Local governments, in-kind transfers, and economic inequality. *Journal of Public Economics*, 22.

Abiew, F. K. (2012). Humanitarian Action under Fire: Reflections on the Role of NGOs in Conflict and Post-Conflict Situations. *International Peacekeeping*, 19(2), 203-216.

Abushaikha, I., & Schumann-Bölsche, D. (2016). Mobile Phones: Established Technologies for Innovative Humanitarian Logistics Concepts. *Procedia Engineering*, 159, 191-198.

AFAD Report 1. 2013. Syrian Refugees in Turkey: 2013 Field Survey Results, 2013, Available from <https://www.afad.gov.tr/upload/Node/3926/xfiles/syrian-refugees-in-turkey-2013_print_12_11_2013_eng.pdf>. [8 Jun 2019]

AFAD Report 2. 2017. Field Survey on Demographic View, Living Conditions and Future Expectations of Syrian in Turkey, 2017, Available from <https://www.afad.gov.tr/upload/Node/25335/xfiles/17b-Field_Survey_on_Demographic_View_Living_Conditions_and_Future_Expectations_of_Syrians_in_Turkey_2017_English_1.pdf>. [13 Jun 2019]

AFAD Syrian Woman in Turkey. 2014. Available from
<https://www.afad.gov.tr/upload/Node/17935/xfiles/afad-suriye-kdn_eng_1_.pdf>. [17
Jun 2019]

AFAD Temporary Housing Center. 2018. Republic of Turkey Ministry Of Interior
Disaster and Emergency Management, 15 October 2018, Available from
<https://www.afad.gov.tr/upload/Node/2374/files/15_10_2018_Suriye_GBM_Bilgi_Notu_1.pdf>. [8 Jun 2019]

Al Theeb, N. & Murray, C. (2016). Vehicle routing and resource distribution in
postdisaster humanitarian relief operations. *International Transactions in Operational
Research*.

Alloush, M., Taylor, J. E., Gupta, A., Valdes, R. I., & Gonzalez-Estradab, E.
(2017). *Economic Life in Refugee Camps. World Development*, 95, 334-347.

Asproth, V., Amcoff Nyström, C. & Dubois, D. M. (2010). Preparing for Emergency
Situations. Paper presented at the AIP Conference Proceedings.

Balcik, B., Bozkir, C. D., & Kundakcioglu, E. (2016). A literature review on
inventory management in humanitarian supply chains. *Surveys in Operations Research
and Management Science*, 21(2), 101-116.

Barbieri, J., Riva, F., & Colombo, E. (2017). Cooking in refugee camps and informal
settlements: A review of available technologies and impacts on the socio-economic and
environmental perspective. *Sustainable Energy Technologies and Assessments*, 22, 194-
207.

Bernardo, J. B., Huavas, K. M., Ociones, G. O., Pantuan, R. A. & Vasallo, J. M. P.
(2015). Crowdalert: An Android Application for Increasing the Awareness and Response

Initiatives of the Citizens through Crowdsourcing. 3rd International Conference on Artificial Intelligence and Computer Science (AICS2015).

Burkart, C., Besiou, M., & Wakolbinger, T. (2016). The funding. Humanitarian supply chain interface. *Surveys in Operations Research and Management Science*, 21(2), 31-45.

Carley, K. M., Malik, M., Landwehr, P. M., Pfeffer, J. & Kowalchuck, M. (2016). Crowd sourcing disaster management: The complex nature of Twitter usage in Padang Indonesia. *Safety Science*.

Celik, M. (2016). Network restoration and recovery in humanitarian operations: Framework, literature review, and research directions. *Surveys in Operations Research and Management Science*, 21(2), 47-61.

Celik, S., & Corbacioglu, S. (2010). Role of information in collective action in dynamic disaster environments. *Disasters*, 34(1), 137-154.

de Oliveira, P. M., Fontainha, T. C., & Leiras, A. (2016). The Role of Private Stakeholders in Disaster and Humanitarian Operations. *JOSCM: Journal of Operations and Supply Chain Management*, 9(1), 77.

Development Initiatives. 2016. Global Humanitarian Assistance Report, May 2016, Available from <<http://devinit.org/wp-content/uploads/2016/06/Global-Humanitarian-Assistance-Report-2016.pdf>>. [7 Jun 2019]

Dugdale, J., Van de Walle, B. & Koeppinghoff, C. (2012). Social media and SMS in the Haiti earthquake. Paper presented at the Proceedings of the 21st international conference on world wide web.

Dynamic capability. 2018. David J. Teece The Scholar Entrepreneur, 2018, Available from <<https://www.davidjteece.com/dynamic-capabilities>>. [24Jun 2019]

ESSN. 2016. Emergency Social Safety Net, 2016, Available from <<http://kizilaykart-suy.org/TR/index2.html>>. [18 Jun 2019]

Fink, G., & Redaelli, S. (2011). Determinants of International Emergency Aid—Humanitarian Need Only? *World Development*, 39(5), 741-757.

Flogstad, C., & Hagen, R. J. (2017). Aid Dispersion: Measurement in Principle and Practice. *World Development*, 97, 232-250.

Gao, H., Barbier, G., Goolsby, R. & Zeng, D. (2011). Harnessing the crowdsourcing power of social media for disaster relief. Retrieved from Arizona State Univ Tempe.

Grass, E., & Fischer, K. (2016). Two-stage stochastic programming in disaster management: A literature survey. *Surveys in Operations Research and Management Science*, 21(2), 85-100.

Ha, K.-M. (2016). Disasters can happen to anybody: The case of Korea. *Environmental Impact Assessment Review*, 57, 1-9.

Hidrobo, M., Hoddinott, J., Peterman, A., Margolies, A., & Moreira, V. (2014). Cash, food, or vouchers? Evidence from a randomized experiment in northern Ecuador. *Journal of Development Economics*, 107, 144-156.

Huber, M., Boven, L. V., McGraw, A. P., & Johnson-Graham, L. (2011). Whom to help? Immediacy bias in judgments and decisions about humanitarian aid. *Organizational Behavior and Human Decision Processes*, 115, 283-293.

Hussain, T. P. R. S. & Ismail, H. (2011). Land use changes analysis for Kelantan Basin using spatial matrix technique “Patch Analyst” in relation to flood disaster. *Journal of Techno Social*, 3(1).

Irrera, D. (2018). The EU Humanitarian Aid Policy and NGOs: A Theoretical Overview EU Emergency Response Policies and NGOs (pp. 27-44): Springer.

Joshi, A. & Nishimura, M. (2016). Impact of disaster relief policies on the cooperation of residents in a post-disaster housing relocation program: A case study of the 2004 Indian Ocean Tsunami. *International Journal of Disaster Risk Reduction*, 19, 258-264.

Knappert, L., Kornau, A., & Figengül, M. (2017). Refugees' exclusion at work and the intersection with gender: Insights from the Turkish-Syrian border. *Journal of Vocational Behavior*.

Lentz, E., Ouma, R., & Mude, A. (2016). Does peer monitoring influence choices between cash and food? Findings from a field experiment. *Food Policy*, 65, 21-31.

Louzada, F., Ara, A., & Fernandes, G. (2016). Classification methods applied to credit scoring: Systematic review and overall comparison. *Surveys in Operations Research and Management Science*, 21, 117-134.

Martin, E., Nolte, I. & Vitolo, E. (2016). The Four Cs of disaster partnering: communication, cooperation, coordination and collaboration. *Disasters*.

Martinez, A. P., Stapleton, O., & Wassenhove, L. V. (2011). Field vehicle fleet management in humanitarian operations: A case-based approach. *Journal of Operations Management*, 29(5), 404-421.

Medicare (Australian Government Department of Human Services). 2019. What Is the Difference Between Cash Transfers & In-Kind Benefits?, 28 January 2019, Available from < <https://finance.zacks.com/difference-between-cash-transfers-inkind-benefits-11474.html>>. [19 Jun 2019]

Mülteciler Derneği. 2019. Number of Syrian in Turkey, Jun 2019, Available from <<https://multeciler.org.tr/turkiyedeki-suriyeli-sayisi/>>. [24 Jun 2019]

Nagurney, A., Flores, E. A. & Soylu, C. (2016). A Generalized Nash Equilibrium network model for post-disaster humanitarian relief. *Transportation Research Part E: Logistics and Transportation Review*, 95, 1-18.

Qualitative methods. 2019. Qualitative Research: Definition, Methods, Types and Examples, 2019, Available from <<https://www.questionpro.com/blog/qualitative-research-methods/>>. [27 Jun 2019]

Quantitative methods. 2019. Quantitative Research: Definition, Methods, Types and Examples, 2019, Available from <<https://www.questionpro.com/blog/quantitative-research/>>. [27 Jun 2019]

Richardson, D. A., Leeuw, S. & Dullaert, W. (2016). Factors affecting global inventory prepositioning locations in humanitarian operations—a delphi study. *Journal of Business Logistics*, 37(1), 59-74.

Sahinyazan, F. (2018). Food Aid Logistics in Resource Constrained Environments (Doctoral dissertation, McGill University Libraries). UNHCR Syria Regional Refugee Response. (2017).

Salimath, M. S., & Jones, R. (2011). Population ecology theory: Implications for sustainability. *Emerald Insight*, 49(6), 874-910.

Sibel S. (2017), Planning and Distribution in Cash-based Intervention Programs

Thompson, H. (2014). Cash for protection: Cash transfer programs can promote child protection outcomes. *Child Abuse & Neglect*, 38(3), 360-371.

TRC. 2016. Turkish Red Crescent, 2016, Available from < <http://kizilaykart-suy.org/EN/degerlendirme.html>>. [18 Jun 2019]

Turkey Migration Report. 2016. Republic of Turkey Ministry of Interior Immigration Administration General Directorate. Turkey Migration Report, 2016, Available from <https://www.goc.gov.tr/files/files/2016_goc_raporu_.pdf>. [31 May 2017]

UN (United Nations). 2017. European Commission European Civil Protection and Humanitarian Aid Operations. Turkey: Refugee Crisis Echo Factsheet, April 2017, Available from < https://ec.europa.eu/echo/where/europe/turkey_en> [7 Jun 2019]

UNCHR Syria Regional Refugee. 2019. Syria Regional Refugee Response, 1 Jun 2019, Available from <<http://data.unhcr.org/syrianrefugees/regional.php>>. [7 Jun 2019]

UNHCR Syria Emergency. 2018. UNHCR The UN Refugee Agency, 19 April 2018, Available from < <http://www.unhcr.org/syria-emergency.html> >. [6 Jun 2019]

van der Laan, E., van Dalen, J., Rohrmoser, M. & Simpson, R. (2016). Demand forecasting and order planning for humanitarian logistics: An empirical assessment. *Journal of Operations Management*, 45, 114-122.

Wittke, K. (2014). The Contribution of Stakeholder Theory to Supply Chain Management. *Bachelor Thesis*.

World Bank. 2019. The World Bank Group Response to the Syrian Conflict, 1 April 2019, Available from < <http://www.worldbank.org/en/country/syria/overview> >. [6 Jun 2019]

Yasmin H. (2013), UNICEF's work in humanitarian situations

Yilmaz, H. & Kabak, Ö. (2016). A Multiple Objective Mathematical Program to Determine Locations of Disaster Response Distribution Centers. *IFAC-PapersOnLine*, 49(12), 520-525.

