Census of Syrian Refugees in South Lebanon

(December 2012-December 2013)

Part one

SHEILD's Team

To Ashraf,
May your soul rest in peace.

Acknowledgment

First, I would like to thank the managers of SHEILD who have given me this task, especially Mr. Samer Haydar.

Finally, I would like to thank SHEILD team for heartily working with me in order to accomplish this study. I specify: Mr.Mhamad Saleh who helped us in the cleaning of the database and the coding in the beginning of our project; Ms. Mira Kaafarani who worked with me on the results.

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Introduction

The economic and social developments in Lebanon indicate that the number of Syrian refugees will continue to increase with the persistence of the conflict and the situation will worsen due to the increased number and the settlement of the refugees in the populated areas of the country.

These refugees expand more and more in the cities. It is quite difficult to know their exact number especially that they move to different regions of the country to settle. However, we know that these populations are heterogeneous and include, in particular, young men, married or single women, children, elderly persons and extremely vulnerable individuals.

It should be noted here that the last UN report issued on April 2014 reports that 122842 refugees have been registered in these records and more than 1879 refugees are still waiting to be registered.

In this context, SHEILD Organization has conducted a census of the Syrian refugees in South Lebanon. This report sheds the light on the condition of the refugees who arrived in South Lebanon from December 2012 until December 2013 and draws attention to their social state, their number and their distribution in the four districts of southern Lebanon (Nabatieh, Tyr, Marjayoun and Bint Jbeil).

For this project, the interviewers of SHEILD used Android system to fill the questionnaire about the members of the Syrian refugee families which was drawn up by SHEILD. Two databases have been established based on the general conditions of the families on the one hand, and on the other, on the members of these families who have newly arrived to South Lebanon and who had been there for less than one month. The first database includes more precisely the personal information about each family arriving in South Lebanon such as: the entry to Lebanon, the actual address in the South, the hometown in Syria, the condition of the housing in Lebanon, the difficulties faced in order to reach the Lebanese territory, if some members of the family remained in Syria, the reason of the displacement to Lebanon, etc..

The second database is more specific as it is related to the personal information of each member of the family. It includes the gender and age of each member of the family as well as his physical condition so as to take a census of the most vulnerable cases (or disabilities) that require particular attention.

The first section of this report summarizes the work of cleaning these two databases that contain many errors due to the process and the data collection techniques used.

It took us a lot of time to accomplish this essential phase given the many elements which are likely to cause these errors (the coding in the questionnaire is not unified, the Android system accepts empty fields, the identification numbers of the families are duplicated, the dates are incorrectly filled or miscoded, the names of the Lebanese districts and villages are not unified etc.)

The first two chapters cover in detail the univariate, bivariate and multivariate descriptive statistics, which were used to determine the real condition of the Syrian refugees in southern Lebanon and their distribution as well as their number in each district and their hometowns, etc.

The third chapter deals with the descriptive statistics of the database of the individuals or the number of Syrian refugees and discusses in particular, the vulnerable cases among the refugees including the children and women at risk as well as the persons having serious medical conditions and elderly persons.

The fourth chapter presents the model created through a time series that is based on the date of arrival of each Syrian in the South in order to forecast the evolution of their condition for the coming months.

Location of the project

The census of the refugees was conducted in South Lebanon. This region is approximately 2010.78 square kilometers bordered by Israel in the south until Al Awali River in the north and shares a 375 km border with Syria on the east. The South is administratively composed of two governorates: Al Janoub (The South) and Nabatieh with a population of 665000 inhabitants.

The Nabatieh Governorate is composed of four districts: Nabatieh, Bint Jbeil, Marjeyoun and Hasbaya. The South Governorate is composed of three districts: Tyr, Jezzine and Saida-Zahrani. According to an estimate established in 2008, the following table gives an idea of the population residing in these districts.

District	Governorate	Surface area (km^2)	Population (inhab.)*	Population density per km^2 (*)	Number of Municipalities
Nabatieh (4[+])	Nabatieh	220	92000 286700	418	38
Bint Jbeil (1[+])	Nabatieh	336	58300 91275	174	33
Marjayoun (3[+])	Nabatieh	265	41000 114548	155	26
Hasbaya (7[+])	Nabatieh	220	30000	136	15
Tyr (2[+])	Al Janoub	273	138348	507	60
Jezzine (6[+])	Al Janoub	241	15000	62	35
Saida-Zahrani (5[+])	Al Janoub	275	207500	755	21

*Estimation 2008   [+]View map

It should be noted that our study only focuses on the four districts of Nabatieh, Bint Jbeil, Majayoun and Tyr. Other supplementary studies in the other districts have recently been carried out.

South Lebanon with the four districts

Methodology of the census

Since the beginning of the Syrian crisis and with the inflow of the Syrian refugees into southern Lebanon, a methodology consisting of providing these refugees with aid has been set up in partnership with the organization of SHEILD.

This methodology is composed of five phases of distribution of aid products to the families and the processing of data. We note here that the refugees mainly come from Syrian regions near the Lebanese borders which mostly suffer from the consequences of the conflict such as : Tartous, Homs, Rif Dimashq, Knaytra.

The five phases of this methodology are summarized as follows:

1- **Data entry:** This phase is related to the task of the interviewer which consists of conducting a census of the newly arrived refugees in collaboration with the municipalities and the specific focal points in each district. A questionnaire must be filled using Android system that saves the data in the DRC system and contains the personal information, the date of entry to Lebanon, the Syrian hometown, the condition of the household, non-food items and the vulnerable cases, if any exist.

2- **Organization of data:** the organization of data is an important phase regarding the distribution logistics. It is carried out every week before each distribution of aids for the refugees. It includes several verification phases that range from the elimination of duplicated data to the creation of new distribution lists for each district. Many steps have been applied in order to attain a better visibility of the process of aid distribution in view of the regulations and norms to accomplish this program.

3- **Pre distribution phase:** This phase deals with the logistic of preparation drawn up by SHEILD concerning the distributions of aids to the refugees across the different municipalities of southern Lebanon. This phase is based on the data collected from

families as well as the material prevision of the stocks of products to be distributed in the warehouse, the preparations before contacting the families and municipalities of the districts in order to accomplish the aid distribution.

4- **The phase of distribution:** The distribution is carried out through direct contact with the families and is conditioned by the verification of the identity cards, the distribution of the quota provided for each family and the recording of the distribution in the database.

5- **Ex-post phase :**Following each distribution, we enumerate the products that were not distributed (10 to 15% of families do not benefit from the distribution due to a change of residence, lack of information or the return of these families to their hometowns). The families who benefited from these distributions and those who did not are updated in the database of SHEILD after establishing a verification procedure based on the quotas, the products in storage and the different logistic elements of this operation.

Data Cleaning

Two databases have been created based on the general condition of the families on the one hand, and on the members of the families who have newly arrived in South Lebanon and who had been there for less than one month, on the other. These data are developed according to a questionnaire which was filled on Android system and which includes six parts: Personal information, Displacement in Lebanon, Housing, Personal data and three other parts that were omitted such as: Hygiene, Means of living and Non-food items. The information required for each part are displayed in the following figure:

```
                    ┌─────────────────────────────────────────┐
                    │  Questionnaire for newly-arrived refugees │
                    └─────────────────────────────────────────┘
                                      │
                    ┌─────────────────────────────────────────┐
                    │             Family Database              │
                    └─────────────────────────────────────────┘
```

Personal information in Lebanon

- DRC Id
- Name and date of birth of the head of the household
- Nationality
- Date of arrival to Lebanon
- Place of residence in Syria
- Phone number
- Address in Lebanon
- Identification documents
- Registration with UNHCR
- Members of the family

The displacement

- Reason of leaving Syria
- Passage to Lebanon
- Border crossing point
- Reason of illegal passage
- Difficulties during the passage
- Members remaining in Syria
- Seperated children

Housing

- Type of housing
- Identity and nationality of the host if there is any
- Rental fees
- Number of rooms
- Number of persons in the same house

Individual Database

- Name
- Gender
- Date of birth
- Relation with the head of the household
- Place of residence in Syria
- Place of displacement in Lebanon
- Official documents in possession
- Vulnerable cases

Omitted section

Hygiene

- Acess to water
- Purity of water

Means of living

- Income source
- The work of the head of the household
- Reason why the head of the household don not work
- Salary of the head of the household

Non-food items

Organisational chart of two databases developed as part of the census

We have faced many difficulties in the process of cleaning these databases due to the errors in the data filling system. In fact, we were able to count a certain number of elements that caused these errors:

17. **Absence of unified coding in the questionnaire** (assessment). The answers of the questions were not coded which created a group of answers having the same signification. Below, we present two illustrative examples that show the amount of difficulties we encountered during the processing of information in order to create a homogenous and error-free database.

Coding errors in the census

18. **Android system accepts empty fields**: we were obliged to fill these empty fields by asking the interviewers who already filled the database or by comparing the responses with other questions. In this context, certain fields could not be filled.

Shelter section	Accommodation type	Hosted by	Host nationality	Rent in_usd	rooms	People living
TRUE	hosted	relative				
TRUE	hosted	relative				
TRUE	tent			100.00		
TRUE	tent			400.00		
TRUE	hosted	relative	Syrian			
TRUE	tent			200.00		
TRUE	tent			150.00		
TRUE	hosted					
TRUE	hosted					
	hosted	relative	TRUE	200	1	10

Empty fields in Android

19. **Duplication of the numbers of families**: We have managed to eliminate all the families that appear twice on the database, that is to say, those who possess the same identification number.

20. **Verification of incomplete or miscoded dates**: The coding of the dates was not homogenous. We noticed many date forms such as: yy/mm/dd or dd/mm/yy and sometimes dd/mm/yyyy and many others.

doa	yob
12/14/1995	7/12/1905
5/30/2019	6/8/2228
6/3/1976	7/19/1900
9/20/1985	1/14/1900
5/30/2019	7/27/1900

Date of arrival in Lebanon   Date of birth

The filling of some dates were different from reality. As a reference, we noticed some dates of arrival to South Lebanon which were different from those of the census:

15

doa	c_asm_date
3/16/2013	2/28/2013
3/18/2013	2/27/2013
5/4/2013	3/6/2013
7/31/2013	6/17/2013
8/25/2013	7/29/2013
10/5/2013	11/7/2012
11/2/2013	2/22/2013
11/6/2013	10/8/2013
11/14/2013	10/23/2013
11/17/2013	10/28/2013
12/18/2013	1/1/2013
12/16/2013	11/6/2013
12/17/2013	1/6/2013
12/22/2013	1/11/2013

Date of the census   Date of arrival to the South

21. **The names of Syrian towns are not unified**: The same town is written in different ways such as daraa or darha or darhaa as well as the names of districts and Lebanese villages. Thus, we worked again on unifying the names on the database and verifying the correspondence between a district and a village.

22. By **comparing the annual reports of the newly-arrived refugees and the database** with the number of families who arrived in southern Lebanon, month by month, throughout 2013, we were able to notice a big difference in the numbering of Syrian refugees.

23. A **verification was carried out concerning the** nationalities of the newly-arrived Syrians, Palestino-Syrians or others and the organizations with which they have registered (UNRWA, UNHCR)

24. **Several contradictory answers** were deleted due to the process of filling the style , the gender of the refugees, the absence of identity documents to cross the border although they possess these documents, the tenants do not pay their rental fees, etc.

First name	Father name	Last name	yob	sex
علي	محمد نور	علي	2010	f
محمد	إبراهيم	الكفري	2005	f
محمد	نور الدين	السلامة	1988	f
محمد	علي	السكر	1989	f
فاطمة	شرجي	العبدالله	1974	m
فاطمة	محمود	العقود	1989	mf
فاطمة	عبد الحكيم	الحميد	2010	m

docs	crossing	boarder	boarder area	reasons_for_irregular_crossing
not_available	unofficial	Al Abboudiyye	FALSE	lack_of_documentation
id_syrian family_book	unofficial	Al Abboudiyye	FALSE	lack_of_documentation
id_Syrian family_book	unofficial	Al Abboudiyye		lack_of_documentation
id_syrian	unofficial	Al Masnaa	FALSE	lack_of_documentation
id_syrian family_book	unofficial	Al Abboudiyye	FALSE	lack_of_documentation

shelter section	accommodation type	paying_fees	rent_fees	Rent fees currency	Rent in usd
TRUE	rented	FALSE			
TRUE	rented	FALSE			
TRUE	rented	FALSE			
TRUE	shared_rent	FALSE			
TRUE	rented	FALSE			
TRUE	shared_rent	FALSE			
TRUE	rented	FALSE			
TRUE	shared_rent	FALSE			
TRUE	shared_rent	FALSE			
TRUE	rented	FALSE			
TRUE	rented	FALSE			

Some contradictory answers in the database

25. A process of harmonization of some data has been carried out. It consists of organizing modalities or responses to some variables or questions such as:

- The reason of leaving Syria.
- The border crossing points.

- Difficulties faced during the passage to Lebanon.
- Types of documents that every refugee family possesses.
- Reasons why some family members remained in Syria.

In view of the obstacles we faced during the process of data cleaning (having recourse to the responsables of each questionnaire, understanding the incomplete or miswritten answers and later applying the same correction on the 2nd database (that of each person), a three month delay of the work was very crucial.

Some recommandations

In order to avoid any data entry errors in the rest of this project, it is essential to rectify the process of data collection:

1- Developping a questionnaire (or assessment) with well-defined coding in order to simplify the work of SHEILD interviewers and avoid the data filling of one information in several manners.

2- Imposing a coding in the interface of Android system for the choice of responses to each question.

3- Adding a continuous verification system following each answer.

4- Denying unanswered fields in Android system,in other words, it is forbidden to move to the following question as long as the previous one remains unanswered.

5- Drawing up a unified, coded and numbered list of the towns in southern Lebanon and distributing it on SHEILD interviewers in order for them to use it or install it on Android system. This must be also applied on the Syrian towns.

6- Employing statisticians to conduct a weekly data cleaning of every data record that was newly filled in order to verify the accuracy of the answers and directly fix the incorrect fields.

7- Verifying and comparing the number of refugee families indicated in the report with that of the relevant database, on a weekly basis.

8- Removing the variables relevant to the fields of the questionnaire because these questions were empty after 2013:

- Livelyhood
- Wash
- NFI needs

Chapter 1: Descriptive statistics of Data

This chapter discusses the consequences of the Syrian conflict that caused the displacement of hundreds of thousands of people and their forced moving to southern Lebanon. Here it is a question of the nature of difficulties that the humanitarian teams are facing and the approach of the organization of SHEILD to reduce the suffering of these refugees.The responses generated from the two collected and cleaned database should give a clear visibility regarding the granted aids, the distribution of refugees in the different districts of southern Lebanon and their social integration.We believe that this part should be the cornerstone of the next strategy of aid for the refugees that is based on the respect of humanitarian principals and which should stem a new policy of approach in order to cope with the inflow in case the conflict persists.

1.1. Distribution of Syrian families in South Lebanon

In view of the crisis and the inflow of Syrian refugees, South Lebanon has become a host region despite the low Gross Domestic Product (GDP). The costs of host are generally shared between the public services on the one hand, and the economy, the environment and infrastructures on the other.The aid presented by the non-governmental organizations is of high importance for the refugees but remains insufficient and does not represent a long lasting host solution.

1.1.1. Distribution of Syrians in the districts and governorates of Lebanon

From December 2012 until December 2013, we were able to take a census of 11097 Syrian families. They were distributed between the two governorates of southern Lebanon at a rate of 43% in the governorate of the South and 57% in the governorate of Nabatieh.

However, it is always more relevant to compare the population of refugees between the different districts. We mention here that this document only deals with the four districts taken into account in this study. More explicitly, we count 4811 families, being 44% who settled in Tyr because of its economic reputation since it is the biggest city in the south. Nabatieh, which is the 2nd biggest city in the south hosts 3033 families, being 27% of refugee families. The rest of these families are distributed between Marjayoun with 16% (1810 families) and Bint Jbeil with 13% (1426 families).
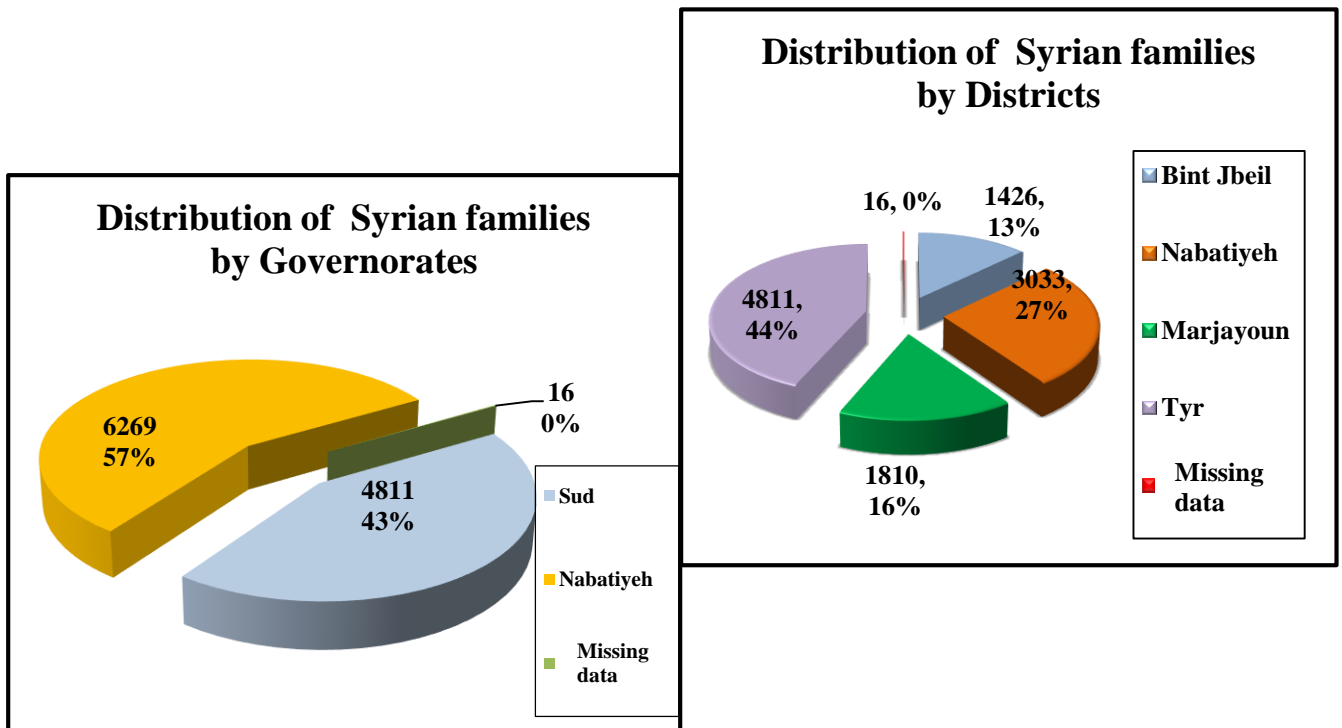
1.1.2. Nationalities of Syrian refugees and the way of entry to Lebanon

Among these refugee families, 11000 are of Syrian nationalities. The others are Lebanese, Palestinians or Jordanians. Historically, several Lebanese families living in Syria were natives or have relatives in southern Lebanon either through business or marriage that occurred in the beginning of the last century between the populations of different frontier regions. Consequently, the number of Lebanese families living in Syria and later repatriated to South Lebanon is 13. On the other hand, following the events that occurred in the different Palestinian refugee camps in Syria, such as that of Yarmouk in the suburb of Damascus, 74 of these Palestinian families ended

up refugees in South Lebanon. Some of the refugee families possessed a double nationality as shown in the following table:

Nationality	Number	%
Lebanese	13	0.12
Jordanian	1	0.01
Palestinian	74	0.67
Palestinian-Syrian	20	0.18
Jordanian-Syrian	3	0.03
Syrian-Lebanese	2	0.02
Syrian	10983	98.98

Entry to Lebanon

45
0%

157
2%

10894
98%

- official
- unofficial
- missing data
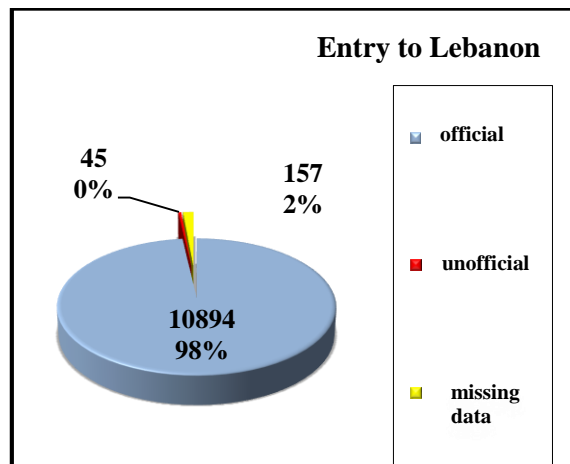
1.1.3. Membres of refugee families remaining in Syria

In view of the ongoing Syrian conflict which escalated in many regions and led to a mass exodus, the social structure of the Syrian families has been ripped apart, paving the way for a wave of inflow of the families into several regions inside Syria and into the different surrounding countries such as Lebanon, Turkey, Jordan and Iraq.The census of these cases is useful for taking decisions and actions in the coming days in order to restore the social structure of these refugees.In the south, we notice that the majority of the refugee families, being 83% has arrived in Lebanon including all the members of the families. Only 11% of the families, being 1180 refugee families have left members of their families in Syria. These members remained there and could not join their families for many reasons that may range from protecting their propreties or being afraid of the displacement and risking their lives to their involvment in the conflict.

	Members remaining in Syria	% Members remaining in Syria
NO	9280	83
YES	1180	11

22

Missing data	636	6

1.1.4. Distribution of Syrian families having brought with them the children of their relatives

Due to the war and the security situation in Syria, many families have collected children of their relatives or their acquaintances to help them flee the country. We take a census of 181 families with a similar case. These children are either their cousins, nephews, neighbours or orphans, etc.

Recuperated children	Sample	Percentage
No	10136	91.3
Yes	181	1.6
Empty	779	7.0
Total	11096	100.0

In order to recognize the distribution of Syrian families who sent their children with other families, we have linked this indicator with the Syrian governorates. The results are represented in the following table:

		Separated children			Total
		No	Yes	Empty	
Syrian Governorates		2245	55	649	2949
	Aleppo	1726	29	33	1788
	Damascus	1574	20	30	1624
	Daraa	1396	23	20	1439
	Deir Ezzour	285	4	4	293
	Hamah	592	10	8	610
	Hasakeh	55	1	5	61
	Homs	304	7	5	316
	Idlib	1618	24	21	1663
	Latikiya	11	0	0	11

23

	Qnaytra	138	3	3	144
	Raqqa	170	5	1	176
	Souayda	16	0	0	16
	Tartous	6	0	0	6
Total		**10136**	**181**	**779**	11096

We notice that these children mainly come from the regions that went through security problems. We note 29 families from Aleppo, 24 from Idlib, 23 from Daraa, 20 from Homs, 4 from Deir Ez-Zor and 1 from Al-Hasakah.

1.2. Passage of Syrians to Lebanon

1.2.1. Distribution of Syrian refugees according to their passage at the Lebanese borders

Lebanon's four official border crossing points were the places of passage for the majority of refugees. These checkpoints are Al-Masnaa, Abboudiyeh, Dabousieh and Beirut airport.

We note here that 10894 families (being 98% of the families) who crossed the Lebanese borders used the four crossing points where the Lebanese State conducted an administrative verification of these refugees, leaving the rest and the issues of the exodus for the different aid organizations; 92% of families, being 9967 families, passed through the crossing point at Al Masnaa which is the closest to Damascus; 8% of families, being 886 families, passed through the crossing point at Abboudiyeh in northern Lebanon which comes in the second place and represents a natural exodus passage for the refugees of Syrian regions as Homs, Hamah, Aleppo and Latakia.

We note here that the low percentage of these families stem from the fact that this crossing point is far from southern Lebanon and consequently, these refugees chose this region because they have acquaintances and family groups here; 25 families arrived in Lebanon through Beirut airport from Damascus airport which represents the only passage to Lebanon by plane. Only one family arrived in Lebanon through the crossing point at Dabbousiyeh.

Official passage

Daboussi yeh
1
0%

Airport
25
0%

Abboudi yeh
886
8%

Masnaa
9967
92%

Unofficial passage

12
27%

6
13%

25
56%

2
4%

- Al Bekaa
- Jabal el Cheikh
- Wadi Khaled
- Missing data
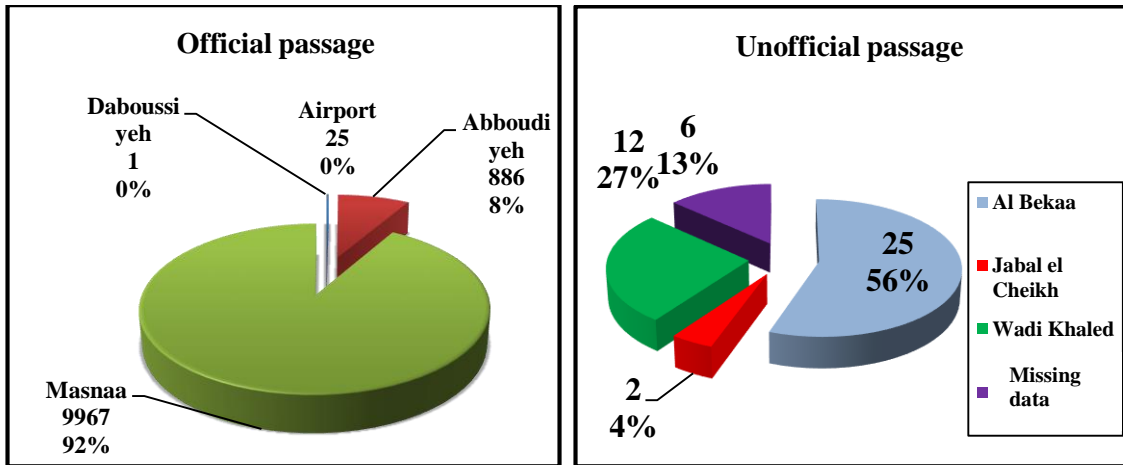
In a conflict such as that happening in Syria, the way of exodus was determined depending on the security situation and borders with the Lebanese regions. The local host communities and transportation facilities have led the families to take routes that bypass the official border crossing points between the two countries. This was the case of 45 families who arrived in Lebanon. The Bekaa shares most of the borders with Syria with plenty of pasaage points and bordering villages which were historically the focal points of clandestine transportation of merchandise between the two countries. This led 25 families among them (56% of them through unofficial passage) to choose the Bekaa as a way to enter the Lebanese territory. Another region in northern Lebanon was opted by 12 families which is Wadi Khaled. The wild geographical aspects of the mountains of Jabal El-Cheikh and the rudimentary routes made only 2 families choose this region to arrive in southern Lebanon. Only 6 families did not mention the way they entered Lebanon.

Passage to Lebanon

	Airport		Masnaa		Al Bekaa		Wadi Khaled	
9967 89.83%								
886 7.98%								
25 0.23%		1 0.01%	25 0.23%	2 0.02%	12 0.11%	178 1.6%		
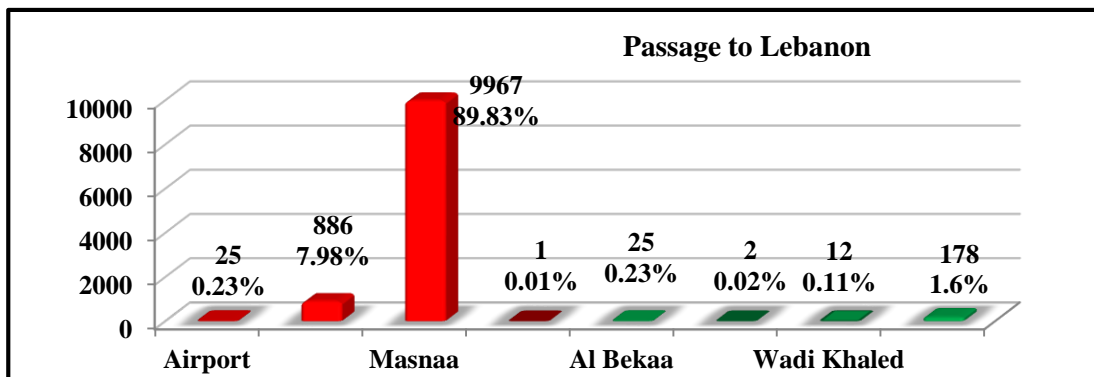
1.2.2. Reasons of illegal passage

Several reasons could be behind the choice of crossing the borders illegally which could range from the financial reasons or lack of official documents to the security problems or the bordering aspects of Syrian villages that pushed the refugees to cross the borders clandestinely. The answers show that only 12 families have financial reasons; 10 families report the lack of official documents; and 11 families chose the bordering aspects of the region. Only 2 families responded that they were not allowed to cross the borders considering their civil servant and military statuses or for fear of reprisal.

	The reasons of irregular passage	% Reasons of irregular passage
Financial reasons	12	26.67
Lack of documentation	10	22.22
Close to an illegal crossing point	11	24.44
Not allowed to cross the border	2	4.44
Other	10	22.22

1.2.3. Displacement towards Lebanon

The fate of the refugees changes according to the gravity, the location and the period of the conflict. We were able to take a census of 1191 (being 11% of the refugee families) who managed to escape the war in other regions inside Syria before heading to south Lebanon. However, the majority that represents 9748 families (being 88%) directly fled to Lebanon following the beginning of the crisis.

displacement of refugee families

direct
9748
88%

indirect
1191
11%

missing
data
157
1%
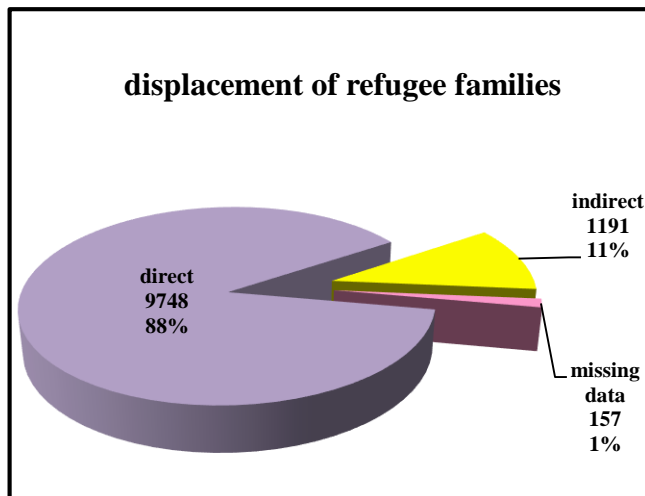
The displacement across the areas of conflict may lead to many risk factors that could be fatal for the refugee families. The conditions of war imposed by the different opposing groups of the conflict without legal notoriety of control and protection put the lives of theses families in danger.

1.2.4. Difficulties in the displacement

In terms of the Syrian conflict, the difficulties of displacement faced by the refugees are represented by the means and the duration of the displacement, the danger, the confiscation of documents and the harassment of authorities. The majority of the families, being 8761 families (79% of them) declared that they have not encountered any problems during their displacement towards Lebanon; 341 families (being 3%) reported the lack of mode of transportation as a difficulty. The confiscation of documents and the harassment caused by authorities were the difficulties that 66 families faced (61 of them were being harassed by authorities and 5 of them had their documents confiscated).

Difficulties of passage	Nbrs	%
Danger	20	0
Lack of transport	341	3
Long journey	258	2
Financial problems	18	0
Confiscation of documents	5	0
Harassment of autorities	61	1
No dificulties	8761	79
Missing data	1632	15

Difficulties of passage to Lebanon

20
0%

341
3%

258
2%

18
0%

5
0%

61
1%

1632
15%

8761
79%

- Danger
- lack of transportation
- long journey
- financial problems
- confiscation of documents
- harassment of authorities
- no difficulties
- missing data
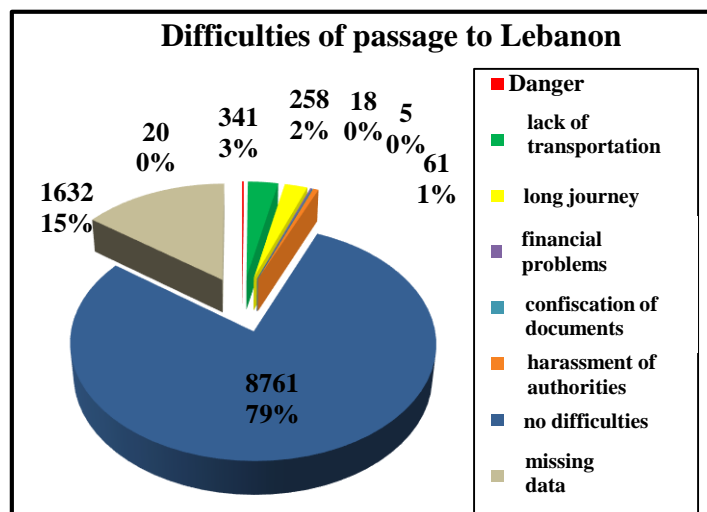
1.3.   Housing conditions of Syrian refugees in South Lebanon

The refugees are facing difficulties in terms of housing and poverty. A lot of them are bound to settle in unsuitable locations that do not provide any safety. A huge number of refugees is competing on the cheap shared housing market because they do not have enough money for a rental deposit. The solidarity of the population in the south worked in favor of these refugees. The public buildings and the tented settlements were provisional solutions in order to host them.

1.3.1. Distribution of Syrian refugees by type of housing

We take a census of 59% of families who were able to rent an apartment, which means a total number of 6523 families. The lack of money has led 14% of families (1549 families) to share one rented house; 22% of refugees (being 2260 refugees) were hosted by Lebanese people or by other refugees because they are detached from their families.

	Type of housing	% Type of housing
Collective shelter	53	1
Hosted	2260	20
Public building	8	0.07
Rental	6523	59
Shared rental	1549	14
Tent	665	6
No housing	6	0.05
Missing data	32	0.29
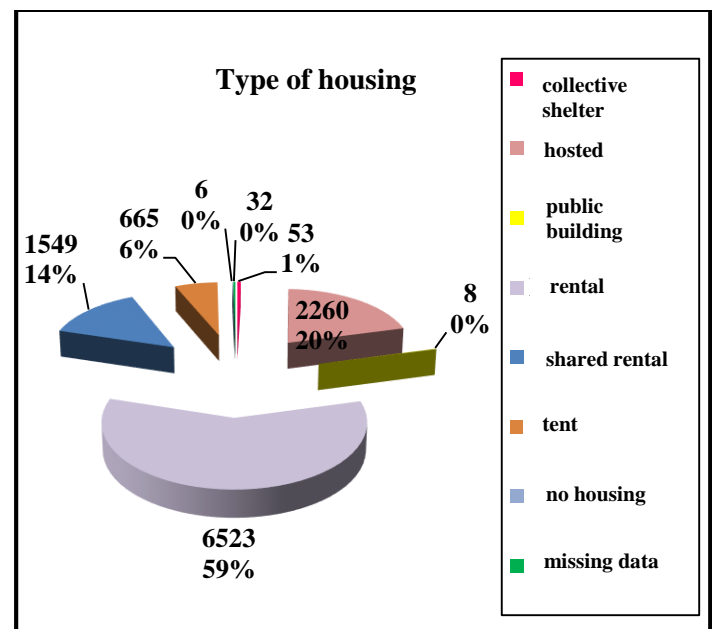
1.3.2. The hosts of Syrian refugees and their nationalities

Among the 2260 families hosted in south Lebanon, 1515 of them have found refuge at their relatives' houses; 213 of them stayed at their friends's houses and 529 were sheltered by people of goodwill.

The nationalities of the hosts were divided between Lebanese (289 families), Syrian refugees (1079 families) and Palestinians (43 families).
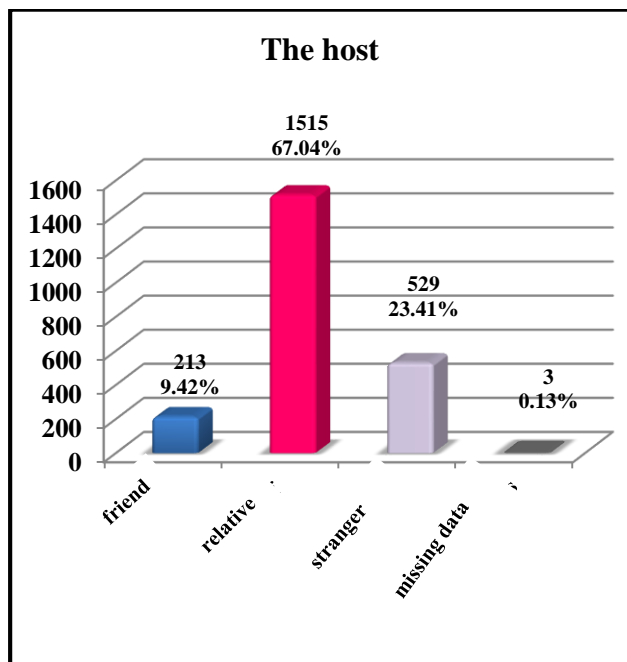
The host

	Nationality of the host	% Nationality of the host
Lebanese	289	16
Palestinian refugee	39	2
Palestinian-Syrian refugee	4	0.22
Syrian refugee	1058	58
Other	23	1
Non-refugee Syrian	21	1
Missing data	390	22

The rest of the Syrian refugees face many difficulties in terms of the housing which remains their only goal in order to survive and integrate into the Lebanese society. A lot of them are forced to settle in peripheral areas with poor housing conditions. This was the case of 8022 refugees (665 families) who leased lands to shelter themselves in tented settlements.

1.3.3. Distribution of housing fees by Syrian families in South Lebanon

The refugees are competing on the cheap housing market but they have insufficient amount of money for a rental deposit or even for necessary local references. This explains the fact that 6523 families were able to rent apartments in which they settled alone while 1549 families chose the shared rental with other families. In consequence, a significant inequality in the cost of rental is observed and confirmed by the value of the high variance and is caused by the diversity of the types of housing and the financial situation of these families. This diversity involves that the rental cost ranges between 50$ and 600$ with an average cost of 193$.

Histogram representing the housing fees

Mean = 192.7400898
Std. Dev. = 72.9975886
N = 8,022
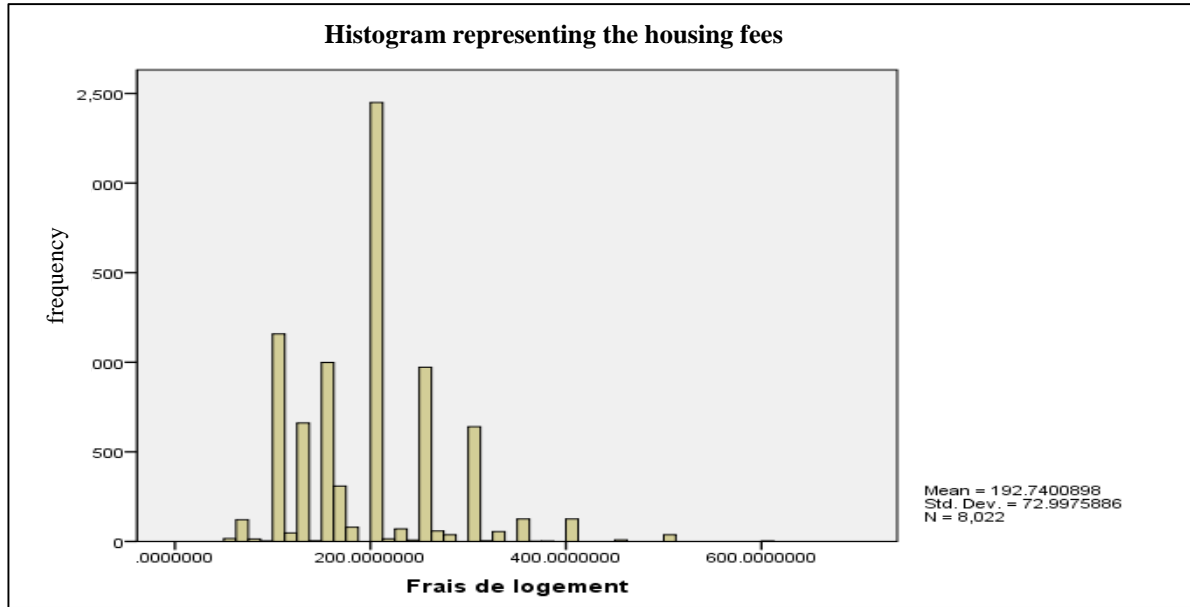
Description						
	N	**Minimum**	**Maximum**	**Average**	**Std. Deviation**	**Variance**
Housing fees($)	8022	50	600	192.74	73	5328
Missing data	138					

Housing fees

Chapter 2: Bivariate statistical analysis of Syrian refugees in South Lebanon

This chapter is dedicated for the bivariate statistical analysis and deals with the relations that could be possibly found between the different parameters of the census conducted on the Syrian refugees in south Lebanon. Nowadays, several techniques of statistical data analysis are used. They help discover the relations that could possibly exist between 2 by 2 variables according to the type of the chosen variables.

For this project, we have chosen the bivariate analysis which is used to measure the association between two variables of different levels of measurements (χ^2 contigency coefficient, Guttman scale, differential coefficient, Spearman's rank correlation coefficient, Kendall's tau (T), Goodman and Krushal's gamma, Pearson's correlation coefficient…), and the statistical tests for the values observed on two groups or more such as the Chi-squared test which is known to be best-suited for qualitative variables and ANOVA test which is adapted to suit both qualitative and quantitative variables.

Before we start the analysis, we present a brief review of the theories of these two tests:

2.1   Chi-squared test to study the independence between two qualitative variables

The Chi-squared test studies the independence of a qualitative variable (Y) from another qualitative variable (X). The hypotheses test is as follows:

H₀: X and Y are independent.

H₁: X and Y are not independent.

The steps of this hypothesis are the following:

We calculate the criterion of the Chi-square, $\mathcal{X}^2_{obs} = \sum_{i=1}^{p} \sum_{j=1}^{q} \frac{(n_{ij} - t_{ij})^2}{t_{ij}}$ with p denoting the number of modalities of y, q representing the number of modalities of x_i, n_{ij} representing the observed sample and $t_{ij} = \frac{n_{i.} \times n_{.j}}{N}$ representing the expected value of sample under H_0.

We compare the observed value of $\mathcal{X}^2_{obs}$ with the threshold value $\mathcal{X}^2_{thrs}$ on the table of $\mathcal{X}^2$ with $(p-1) \times (q-1)$ degree of freedom, and a α alpha risk level (usually set at 5%).

If $\mathcal{X}^2_{obs} > \mathcal{X}^2_{thrs}$ the null hypothesis H_0 is rejected with alfa error α : there is no statistical independence between y and x.

If $\mathcal{X}^2_{obs} < \mathcal{X}^2_{thrs}$ the null hypothesis H_0 is not rejected: y and x are statistically independent.

This test calculates a probability « p-value » = $P[\mathcal{X}^2_{obs} > \mathcal{X}^2_{thrs}]$ that represents the probability of assuming that the null hypothesis is true according to the Chi-squared indicator. However, when the p-value is superior to 5%, the null hypothesis is not rejected but when the p-value is inferior to 5%, then the result is considered significant and the null hypothesis is rejected, thus, there is a relationship between *x* and *y*.

2.2 ANOVA test to study the relationship between a qualitative variable and a quantitative one

ANOVA test is used to compare the means of several groups according to a categorical variable. This test opposes the null hypothesis H₀ which states that the means of groups arises from the same population against the alternative hypothesis which states that there is at least one of the different means.

H₀: X and Y have different effects

H₁: X has an effect on Y

The F result of this test is the relation between the variability of inter-groups (SCE) et intra-groups (SCR) means. The more the inter-groups means are separated, the more the intra-groups variability (which is at the numenator of the ratio) increases; this results in an increased F value.

The mathematical formula is presented as follows: $SCT = SCE + SCR$

$$\sum_{i=1}^{n}(x_i - \overline{x})^2 = \sum_{k=1}^{k} n_k \, (\overline{x_k} - \overline{x})^2 + \sum_{k=1}^{k}\sum_{i=1}^{nk}(x_{ik} - \overline{x_k})^2$$

n denotes the total number of observations et k denotes the number of modalities of the categorical variable. The F statistics is formulated as follows:

$$F = \frac{\frac{SCE}{K-1}}{\frac{SCR}{N-K}} = \frac{CME}{CMR}$$

This value is compared with the Fisher-Snedecor distribution table as a function of two degrees of freedom of inter-groups and intra-groups. If the calculated F is inferior to the F value of the table, we deduce that H0 is true. If the calculated F is superior to the F value of the table F $_{\text{Calculated}}$ > F$_{(1-a)}$ (K-1,n-K), H0 is rejected, thus, we deduce that H1 is true.

The application of this test is conditioned by three criteria:

- Random sampling with independent groups: there is no relation between the inter-groups and the intra-groups observations.
- Normal distribution of the population; it is possible to use ANOVA test without having a perfect normality for a big number of observations.
- The variances of the populations are equal.

2.3 Relation between the Syrian governorates and the other indicators

In order to recognize the criterion of the choice which was essential for the displacement of Syrian families to South Lebanon, we conducted a study on the relation between their place of

residence in the Syrian governorates and other indicators that are generated from their responses during the census. The results of this study are displayed in the following table:

Chi-squared test					
	N	Chi-square value	DOF	P-value	Risk α
Variables	**Syrian Governorates**				
Lebanese District		3339.249[a]	52	0.000	
Reasons of leaving Syria		754.773[a]	91	.000	
Passage to Lebanon		123.837[a]	26	.000	
Border crossing point	11096	1407.881[a]	91	.000	5%
Documents		**7.787[a]**	13	.857	
Dificulties		351.042[a]	91	.000	
Type de housing		1467.740[a]	91	.000	
Displacement		314.983	26	.000	

These results show that there is a huge dependence on all the indicators except that of the documents (chi-square value=7.787). More explicitely, we observe a high dependence (chi-square value=3339.29) on the choice of families of the Lebanese districts which explains that these refugees have families and acquaintances in the region of South Lebanon. The high dependence on the border crossing points (chi-square value= 1407.881) explains the effects of the choice which is related to the security situation in these governorates and to the distance they traveled to reach the crossing points. Moreover, the strong link to the type of housing (chi-square value=1467.740) may be caused by the gathering of refugee families across the different regions of the South.

2.3.1 Distribution of Syrian governorates and Lebanese districts

Having acquired the highest Chi-square value, the districts of the two countries are therefore, very dependent. In order to deal with the analysis in depth, we studied the distribution of Syrian

families in the Syrian governorates and the Lebanese districts in South Lebanon. This distribution is represented in the figure and the table below:

Relation between the Syrian Governorates and the Lebanese Districts
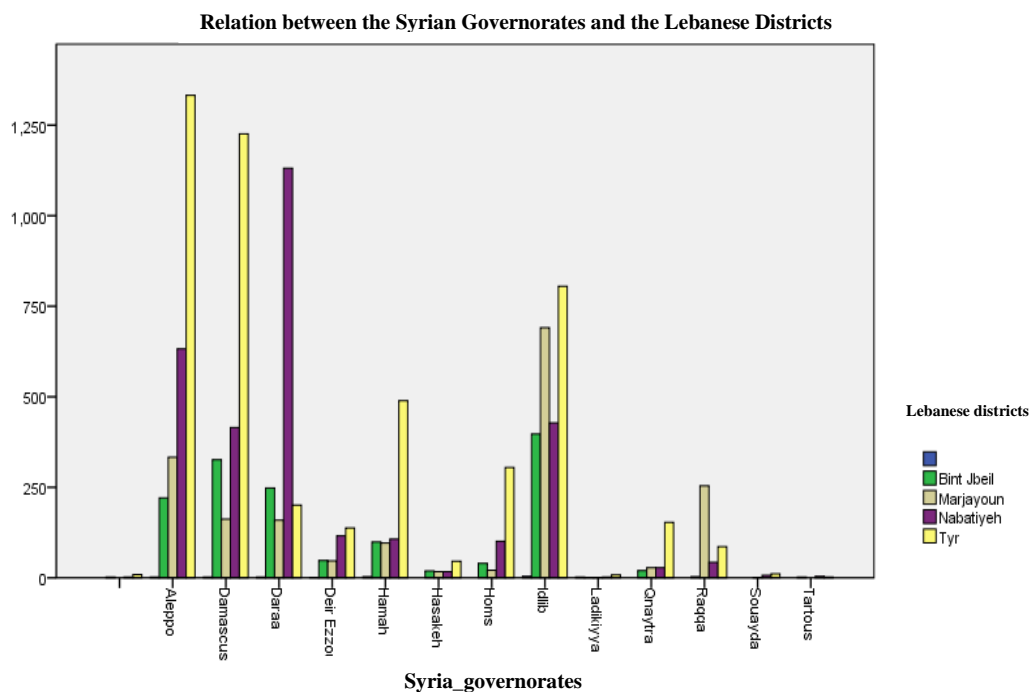
Governorates of Syria * Lebanese districts							
		Lebanese districts					
		NA	BintJbeil	Marjaayoun	Nabatieh	Tyr	Total
Governorates of Syria		0	2	0	2	9	13
	Aleppo	2	221	333	632	1332	2520
	Damascus	2	326	162	415	1226	2131
	Daraa	2	248	159	1131	201	1741
	Deir Ezz	1	48	47	116	138	350
	Hamah	3	99	96	107	489	794
	Hasakeh	0	19	17	17	46	99
	Homs	0	40	21	101	305	467
	Idlib	4	397	691	428	805	2325
	Ladikiyy	2	1	1	2	8	14
	Qnaytra	0	20	28	28	153	229
	Raqqa	0	3	254	43	86	386
	Souayda	0	0	1	7	11	19

	Tartous	0	2	0	4	2	8
Total		16	1426	1810	3033	4811	11096

We notice that the refugees who settled in Bint Jbeil came from Idlib (397 families), from Damascus (326 families), from Daraa (240 families) and from Aleppo (220 families). Those who are settled in Marjayoun mainly came from Idlib (691 families). Those who arrived in Nabatieh mainly came from Daraa and Aleppo and those who settled in Tyr particularly came from Aleppo and Damascus (1300 families).

2.3.2 Distribution of Syrian governorates and the displacement in Lebanon

In order to have a more precise analysis, and with the aim of identifying whether the place from which the Syrians came is actually their place of birth or it was a place chosen for refuge before definitively settling in South Lebanon, we calculated the relations between the three indicators : displacement, Syrian governorates and Lebanese districts. We obtained the results displayed in the following table:

Relation between the Syrian Governorates and the displacement in Lebanon

Syrian Governorates

displacement

■ Direct
■ Indirect
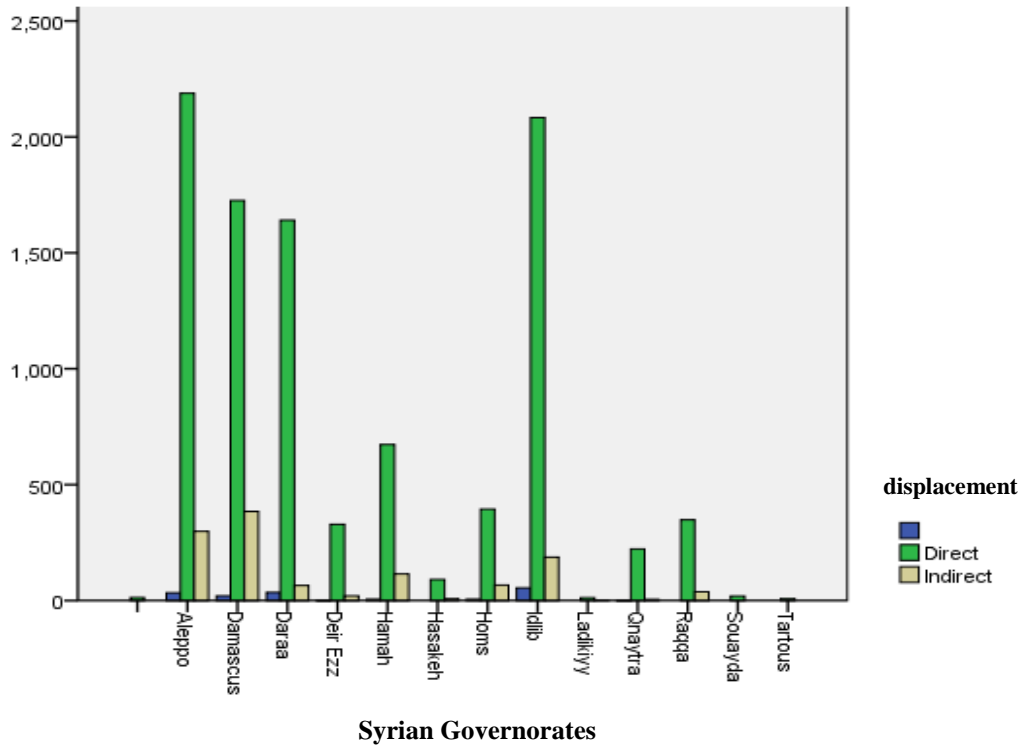
				Lebanses Districts			
					BintJbeil	Marjaayoun	Nabatieh	Tyr
Displacement	NA	Goverorates_Syria			3	24	2	2	3
			Aleppo		0	22	0	11	0
			Damascus		0	13	2	12	1
			Daraa		0	14	0	5	0
			Deir Ezzour		0	1	0	2	0
			Hamah		0	4	0	2	0
			Hasakeh		0	3	0	1	0
			Homs		0	3	0	2	0
			Idlib		1	10	0	10	0
			Qnaytra		0	2	0	1	0
			Raqqa		0	0	0	0	1

First displacement	Governorates_Syria		12	549	354	729	997
		Aleppo	0	158	294	473	621
		Damascus	0	137	228	484	552
		Daraa	0	138	239	418	472
		Deir Ezzour	0	29	50	72	106
		Hamah	0	65	113	158	207
		Hasakeh	0	7	4	20	19
		Homs	0	35	46	98	97
		Idlib	0	160	261	441	595
		Ladikiyya	0	0	1	1	6
		Qnaytra	0	8	27	33	53
		Raqqa	0	26	25	41	68
		Souayda	0	2	3	5	6
		Tartous	0	1	0	1	3
Second displacement	Governorates_Syria		0	3	33	6	232
		Aleppo	0	1	27	3	178
		Damascus	0	5	28	0	162
		Daraa	0	3	18	1	131
		Deir Ezzour	0	0	6	0	27
		Hamah	0	2	11	0	48
		Hasakeh	0	0	0	0	7
		Homs	0	0	1	0	34
		Idlib	0	1	33	1	150
		Ladikiyya	0	0	0	0	3
		Qnaytra	0	0	3	0	17
		Raqqa	0	0	1	0	14
		Tartous	0	0	0	0	1

The results marked in yellow show that the majority of the Syrian refugees in South Lebanon have directly arrived from their places of residence or birth in Syria. Thus, they did not move to different locations before settling in southern Lebanon. A little number of them has been displacing in the different Syrian governorates such as Damascus, Aleppo, Daraa, Idlib and Hamah where they temporarily settled at the beginning of the crisis.

The escalation of the crisis and its spreading across the different Syrian villages has forced these refugees to flee the country towards South Lebanon.

2.4   Relation between the reason of leaving Syria and other indicators

2.4.1 Repartition between the reason of leaving Syria and the choice of Lebanese borders

The arrival in Lebanon tells the story of the desert crossing and the passage to the other side of the borders. The refugees moved from one village to another, taking hazardeous routes for fear of being ambushed, arrested or killed. After a long journey of escape, they finally arrived to the border crossing points after having experienced the fear of being arrested by a military barricade or by militants or being simply killed by the bombardment.

This implies that the border crossing point remains a factor that indicates the inflow of the refugees and their situation of arrival in Lebanon. The conducted tests have shown a clear relationship between the border crossing points and the reasons that pushed these refugees to flee the country.

Chi-squared test					
Variables	N	Chi-square value	DOF	P-value	Risk α
Border crossing points **Reasons of leaving**	11096	9594.196[a]	49	0.000	5%

Referring to the table above, we have a p-value equal to $0.00 < 0.05$, which clearly indicates a huge dependence between these two indicators. In order to come up with a concrete analysis, we have represented the cross tabulation and hence, we were able to notice that the majority of these refugees who crossed the border through the crossing point at Al-Masnaa, have had their houses destroyed and they were insecured in their villages. Three families were injured and arrived through the crossing point at Al Masnaa. Ten families have crossed through the illegal border at

Wadi Khaled and they felt insecured. A single family decided to cross through the border at Dabboussiyeh.

Reasons of leaving Syria * Border crossing points										
		Reasons of leaving Syria								**Total**
		NA	**Insecurity**	**Destroyed house**	**Injury/ medical case**	**Insecurity and destroyed house**	**Insecurity and injury**	**Destroyed house and injury**	**Insecurity destroyed house and injury**	
Border crossing points		155	13	3	0	7	0	0	0	**178**
	Airport	0	13	2	0	10	0	0	0	**25**
	Al Abboudiyye	0	483	34	0	368	0	0	1	**886**
	Al Bekaa	0	18	6	0	1	0	0	0	**25**
	Al Masnaa	3	6627	764	3	2556	7	2	5	**9967**
	Daboussiyya	0	1	0	0	0	0	0	0	**1**
	Jabalel Cheikh	0	0	0	0	2	0	0	0	**2**
	Wadi Khaled	0	10	0	0	2	0	0	0	**12**
Total		158	7165	809	3	2946	7	2	6	**11096**

2.4.2 Repartition between the reason of leaving and difficulties

The terror that the refugees lived while heading towards the borders, including the constant bombardment and the severity of safety check is a factor possibly behind the reasons and the difficulties encountered by Syrian refugees. This is obvious through the huge dependence obtained in the analysis (Chi-square=1338.252), between the reasons of leaving Syria (militia, bombardment, destroyed houses, etc.) and the encountered difficulties (mode of transportation, distance of the border, etc…) during the passage to another place outside their country.

Chi-squared test between Reason et Difficulties					
Variables	N	Chi-square value	DOF	P-value	Risk α
Reasons of leaving Syria **Difficulties**	**11096**	**1338.252[a]**	**49**	**.000**	**5%**

Reasons of leaving Syria * Difficulties									
		difficultiés							Total
		NA	confiscation_ documents	danger	Financial problems	harassment_ authorities	Lack of transportation	Lengthy journey	none	
Reasons of leaving Syria		158	0	0	0	0	0	0	0	**158**
	Insecurity	1146	3	13	9	39	267	86	5602	**7165**
	Destroyed house	147	0	3	6	10	15	10	618	**809**
	Injury/medical case	1	0	0	0	0	0	0	2	**3**
	Insecurity and destroyed house	176	2	4	3	12	59	161	2529	**2946**
	Insecurity and injury	3	0	0	0	0	0	0	4	**7**
	Destroyed house and injury	1	0	0	0	0	0	0	1	**2**
	Insecurity, destroyed house and injury	0	0	0	0	0	0	1	5	**6**
Total		**1632**	**5**	**20**	**18**	**61**	**341**	**258**	**8761**	**11096**

2.4.3. Repartition between Reason of leaving Syria and type of passage

Moreover, the choice of crossing the border whether legally or illegally is highly dependent on the reasons that forced the refugees to leave their country. This dependence is significant through the Chi-squared value=1076.398 with a p value < 5%. We should note here that the insecurity and the destroyed houses are the highest generated responses obtained from the reasons of leaving Syria.

Chi-squared test between Reason and type of passage					
Variables	N	Chi-square value	DOF	P-value	Risk α
Reasons of leaving Syria **Passage to Lebanon**	**11096**	**10746.398[a]**	**14**	**0.000**	**5%**

Reason of leaving Syria* Passage to Lebanon				
		Passage to Lebanon		Total
			official	unofficial	
Reason of leaving Syria		155	3	0	158
	Insecurity	1	7136	28	7165
	Destroyed house	1	801	7	809
	Injury/medical case	0	3	0	3
	Insecurity and destroyed house	0	2936	10	2946
	Insecurity and injury	0	7	0	7
	Destroyed house and injury	0	2	0	2
	Insecurity, destroyed house and injury	0	6	0	6
Total		157	10894	45	11096

2.4.4. Repartition between the type of passage and the difficulties encountered

We notice a huge dependence between the choice of the border and the difficulties encountered during the passage to Lebanon. The values obtained by the Chi-squared test manifest this dependence.

Chi-squared test between Borders and Difficulties					
Variables	N	Chi-square value	DOF	P-value	Risk α
Border crossing points Difficulties	11096	1524.840[a]	49	.000	5%

The refugees who chose the border crossing point at Al-Masnah mostly reported that they did not face a lot of difficulties during their passage to Lebanon. This could be the result of several reasons among which we mention: more safety while heading to the border, a short distance to travel before arriving in south Lebanon, the supervision of both humanitarian organizations and Lebanese and Syrian authorities, etc…

Difficulties * Border crossing points									
		difficulties							Total
		NA	confiscation_ documents	danger	financial	harassment_authorities	lack_of_ transportation	lengthy_ journey	none	
Border crossing points		169	0	1	0	1	0	1	6	178
	Airport	3	0	0	0	0	2	3	17	25
	Al Abboudiyye	100	2	2	1	16	44	48	673	886
	Al Bekaa	8	0	4	1	0	0	3	9	25
	Al Masnaa	1351	3	13	16	44	295	200	8045	9967
	Daboussiyya	1	0	0	0	0	0	0	0	1
	Jabal el Cheikh	0	0	0	0	0	0	2	0	2
	Wadi Khaled	0	0	0	0	0	0	1	11	12
Total		1632	5	20	18	61	341	258	8761	11096

2.5. Relation between the type of housing and the rental fees with other indicators

2.5.1. Distribution of Syrians according to the type of housing, the Lebanese districts and the Syrian governorates

Since the beginning of the Syrian crisis, the refugees who escaped the violence ravaging the country are still crossing the borders in pursuit of safety. The region of South Lebanon hosts the refugees who can live in apartments, in tented settlements or in empty warehouses that are sometimes lacking infrastructure and sanitary installations as well as water supply and electricity. Their choice of the type of housing primarily depends on their situation and their place of residence in Syria. According to the census, we observe that the refugees who opted for living in tents came from the governorates of Idlib, Raqua and in a little less number from

Aleppo. The explication of this lies in the fact that these refugees are very poor and originally came from poor Syrian suburbs. Those who rented apartments lived respectively, in a descending order, in Aleppo, Idlib, Daraa nd Damascus. The families who lived a comfortable life and who have acquaintances or family relationships and who arrived from Aleppo, Damascus, Daraa and Idlib, were hosted by Lebanese families.

Relation entre les Mouhafazat Syriennes et le type de logement au Liban

Y-axis: 0 – 500 – 1,000 – 1,500

X-axis (Governorates__Syria): Aleppo, Damascus, Daraa, Deir Ezzour, Hamah, Hasakeh, Homs, Idlib, Ladikiyya, Qnaytra, Raqqa, Souayda, Tartous

Types of housing (legend): Collective shelter, Hosted, No housing, Public building, Rental, Shared rental, Tent
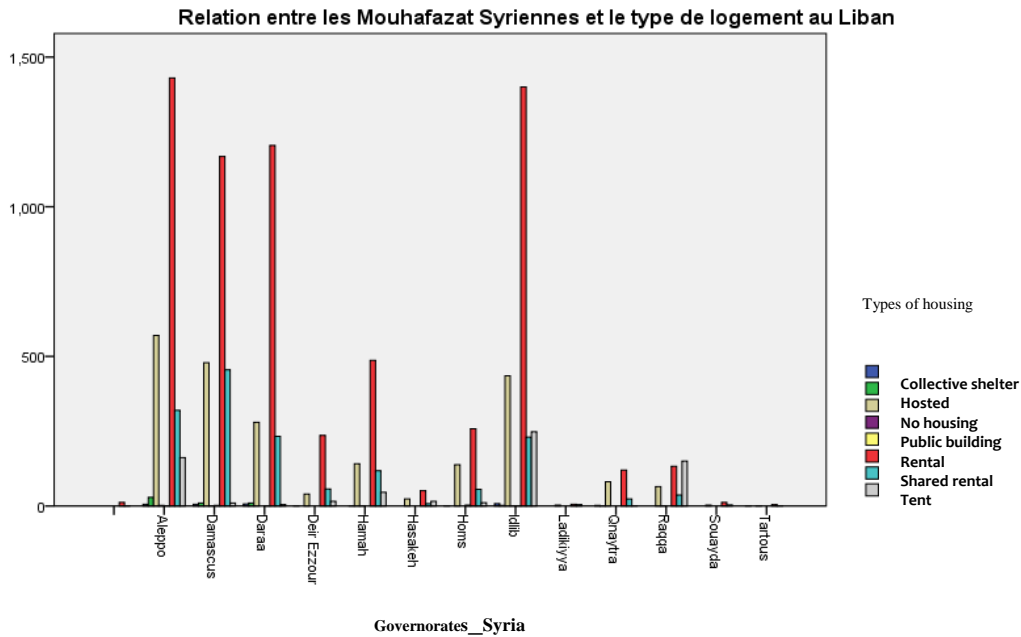
In order to deal with the study in depth, we reviewed the distribution by adding a supplementary indicator which is that of the Lebanese district for the purpose of analyzing the distribution of Syrians by Lebanese district and according to the type of housing. The results are displayed in the following table:

				Governorates_Syria												
				Aleppo	Damascus	Daraa	DeirEzzo	Hamah	Hasakeh	Homs	Idlib	Ladikiyya	Qnaytra	Raqqa	Souayda	Tartous
Cazalebanese	Bitn.Jbeil	accommodation_type	collectiv_shelter	2	0	0	0	0	0	0	0	0	0	0	0	0
			Hosted	31	22	21	18	3	8	1	3	28	0	0	3	1
			public_building	2	0	0	0	0	0	0	0	0	0	0	0	0
			Rented	421	136	108	107	21	58	7	27	113	0	9	21	1
			shared_rental	118	22	25	29	6	5	2	7	27	0	1	2	0
			Tent	1	0	0	0	0	0	0	0	1	0	0	0	0
			Vide	1	1	1	1	0	0	0	1	2	0	0	0	0

District		Type															
Marjaayoun	accommodation_type	collectiv_shelter	3	2	5	1	2	0	0	0	5	0	0	0	0	0
		Hosted	60	68	62	65	13	39	1	12	70	0	7	1	0	0
		Noaccom	0	0	1	0	0	0	0	0	1	0	0	0	0	0
		Rented	194	138	108	98	18	40	0	16	117	0	11	12	1	0
		shared_rent	18	15	15	14	6	7	0	3	19	0	1	1	0	0
		Tent	114	98	65	77	17	38	3	16	82	1	11	12	2	0
		Vide	0	0	2	2	0	0	0	0	0	0	0	0	0	0
Nabatieh	accommodation_type	collectiv_shelter	5	3	1	1	0	0	0	1	3	0	0	0	0	0
		Hosted	83	82	90	65	9	31	1	16	82	0	4	5	1	1
		Rented	544	358	356	326	57	123	18	71	325	1	29	33	4	0
		shared_rent	103	41	47	27	7	6	2	11	40	0	1	2	0	0
		Tent	2	1	0	1	1	0	0	1	1	0	0	0	0	0
		Vide	0	2	2	4	0	0	0	0	1	0	0	1	0	0
Tyr	accommodation_type	collectiv_shelter	1	2	2	6	0	2	0	2	4	0	0	0	0	0
		Hosted	209	225	209	171	41	74	5	38	226	5	22	25	1	1
		Noaccomm	1	0	1	1	0	0	0	0	1	0	0	0	0	0
		public_building	2	0	3	1	0	0	0	0	0	0	0	0	0	0
		Rented	754	404	352	277	66	135	16	61	343	3	31	40	4	1
		shared_rent	248	147	126	130	20	37	5	23	144	1	16	15	1	2
		Tente	15	19	20	17	6	7	0	6	25	0	1	3	0	0
		Vide	2	2	2	0	0	0	0	1	2	0	0	0	0	0

We notice that the majority of Syrian families who were hosted by Lebanese families is living in Tyr (at a ratio of 2260 families). The latters are distributed according to the Syrian governorates: 226 families from Idlib, 225 families from Aleppo, 209 families from Damascus, 171 families from Daraa. We observe that those who opted for the tented settlements in Marjeyoun and Tyr come from Idlib and Aleppo. The same goes for the district of Bint Jbeil and Nabatieh.

2.5.2. Distribution between housing fees and type of housing

To study the inequality between the housing fees and the type of housing, we conducted the ANOVA test that uses the quantitative and qualitative variables. For 8022 families, we notice that the average of the rental fees alone is of 185.92$ for 6437 among them. The 1497 families

who chose a shared rent pay an average of 223.21$ while 88 families who opted for tented settlements, pay an average of 143.49$ for the rental of the lands where their tents are located.

ANOVA						
Housing fees		**n**	**Average ($\bar{X}$)**	**F value**	**P-value**	**Risk α**
Type of housing	Rented house	**6437**	185.92	**186.071**	**.000**	**5%**
	Shared rental	**1497**	223.21			
	Tent	**88**	143.49			

2.5.3. Distribution of Syrian refugees according to the type of housing and the Lebanese district

In order to shed the light on the distribution of Syrian refugees in south Lebanon, we examined the distribution of these refugees according to the type of housing and the district. The objective is to see if the type of housing is related to the district where they are settled. We notice that the Syrian families who live in tented settlements are distributed in the two districts of Marjayoun (536 families) and Tyr (119 families). These families are helped by the municipalities of these districts to find lands to install their tents.

The family relationships and acquaintances were in favor of 2260 Syrian refugee families, among which 1252 families were distributed in Tyr, 470 families in Nabatieh and 339 families in Marjayoun. Moreover, the table below shows that the distribution of 6523 families who opted for the rental is quite fair between the four districts of southern Lebanon. The shared rental was the choice of 1549, among which 244 families are settled in Bint Jbeil, 915 families in Tyr and 536 families in Nabatieh.

Relation between the Lebanese districts and the type of housing
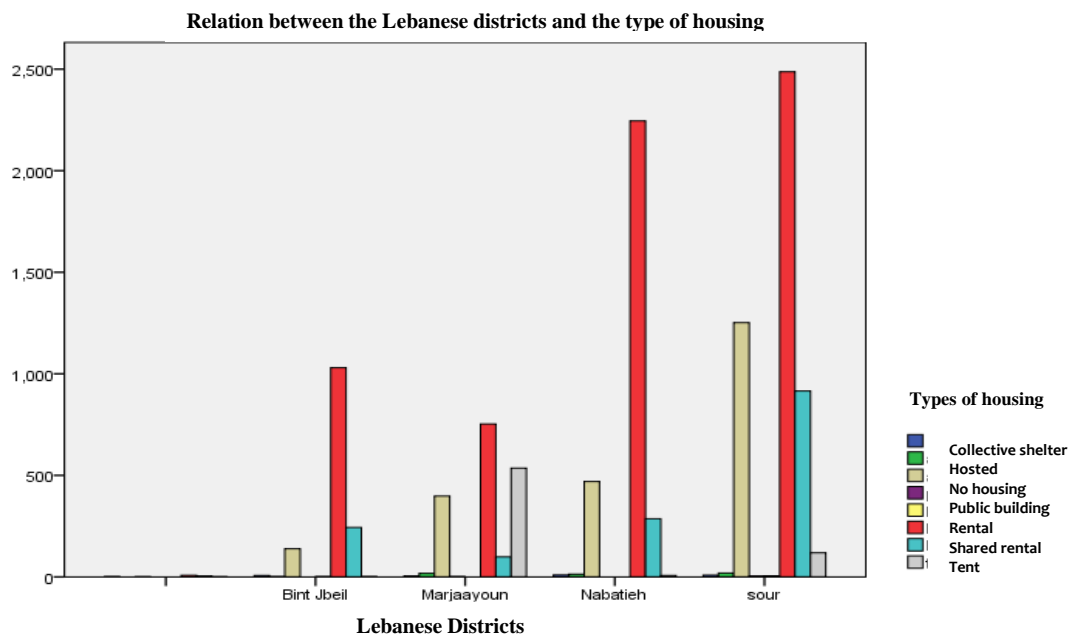
Lebanese Districts*Types of housing							
		Chef-lieu Libanais					Total
			BintJbeil	Marjaayoun	Nabatieh	Tyr	
Types of housing		2	7	4	10	9	32
	collective shelter	0	2	18	14	19	53
	hosted	1	139	398	470	1252	2260
	no housing	0	0	2	0	4	6
	public building	0	2	0	0	6	8
	rental	8	1030	753	2245	2487	6523
	shared rental	4	244	99	287	915	1549
	tent	1	2	536	7	119	665
Total		16	1426	1810	3033	4811	11096

2.5.4. Distribution of Syrian refugees according to the housing fees in each Lebanese district

Again with the same approach, we used ANOVA test having a quantitative variable and a qualitative one, in order to study the inequality of the housing fees between the four Lebanese

districts. We notice that the average payment of a housing in Marjayoun is the lowest (146$), followed by Tyr (181$), Bint Jbeil (198$) and then Nabatiyeh (208$).

In Marjayoun, the average of housing fees is around 150$, only 1 family pays 400$/month. In Tyr and Nabatieh, the average is around 200$ where 3 families in Nabatieh pay around 500% and 10 families in Tyr pay around 550$. This dispersion depends on the nature and the quality of the housing and above all on the location, the thing that justifies the inequality of fees.

ANOVA						
Housing fees ($)		**n**	**Average**	**F**	**Sig.**	**α**
Lebanese Districts	Bintjbeil	3356	197.918	179.362	.000	5%
	Marjayoun	2516	146.678			
	Nabatiyeh	886	207.691			
	Tyr	1251	181.527			

Distribution of the variable housing fees by Lebanese Districts

48
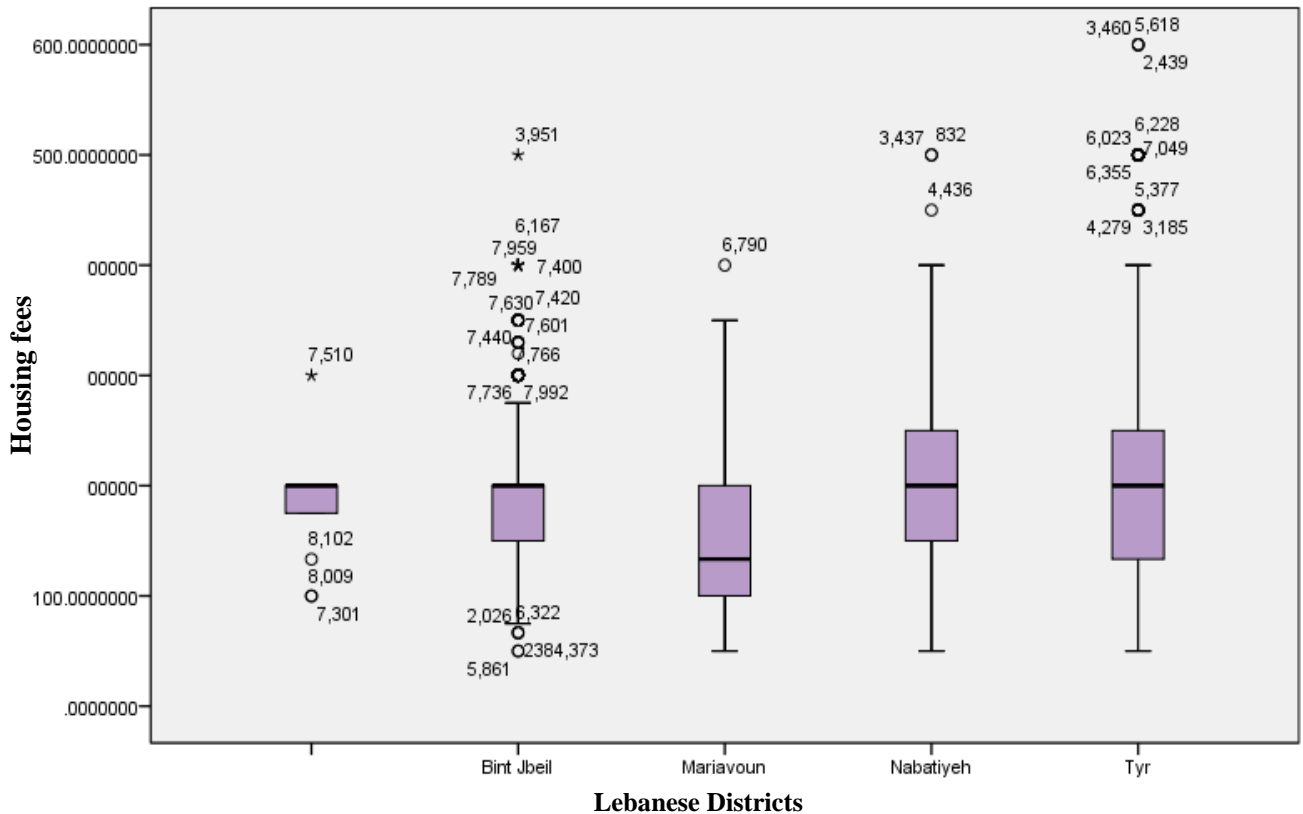
To be more accurate regarding the nature of housing, we notice that the majority of the Syrian refugees are settled in apartments with two rooms. Some of them, residing in Tyr and Nabatieh, chose apartments with 6 to 8 rooms which could be justified by a shared rental. In Bint Jbeil, Marjayoun and Tyr, a lot of families opted for flat apartments. In Nabatieh, the majority of Syrian refugees are living in apartments with more than 2 rooms. Only 1 family (referring to the number 10377 on the graph) is sheltered in a tent.
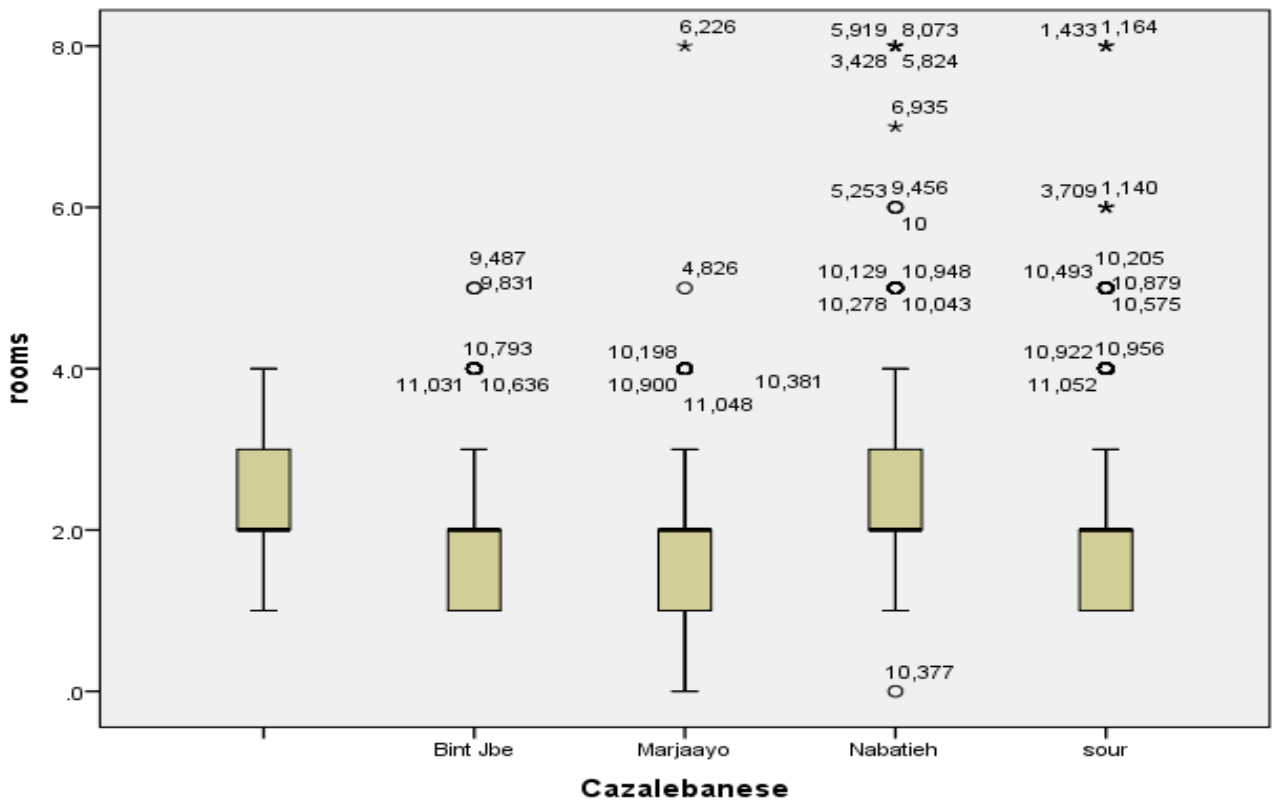
2.6. Distribution of Syrian refugees by family members in the Lebanese districts

The families of Syrian refugees in South Lebanon are, on average, composed of five persons including the father and the mother. The graph above shows that it is inclined to the right towards the upper section, thus, there is no symmetry, which indicates that the Syrian families tend to have a maximum average of 5 persons. We can as well find families composed of 17 persons.

Regarding the distribution of the number of persons per family between the four districts, we notice that the families in Tyr are numerous and even exceed the average of 5 persons.

The graph shows the number of families who have a high number of members that exceeds the average. These families are composed of 10 to 15 persons.

Descriptive statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Number of persons per family	11096	16.0	1.0	17.0	4.476	2.0318
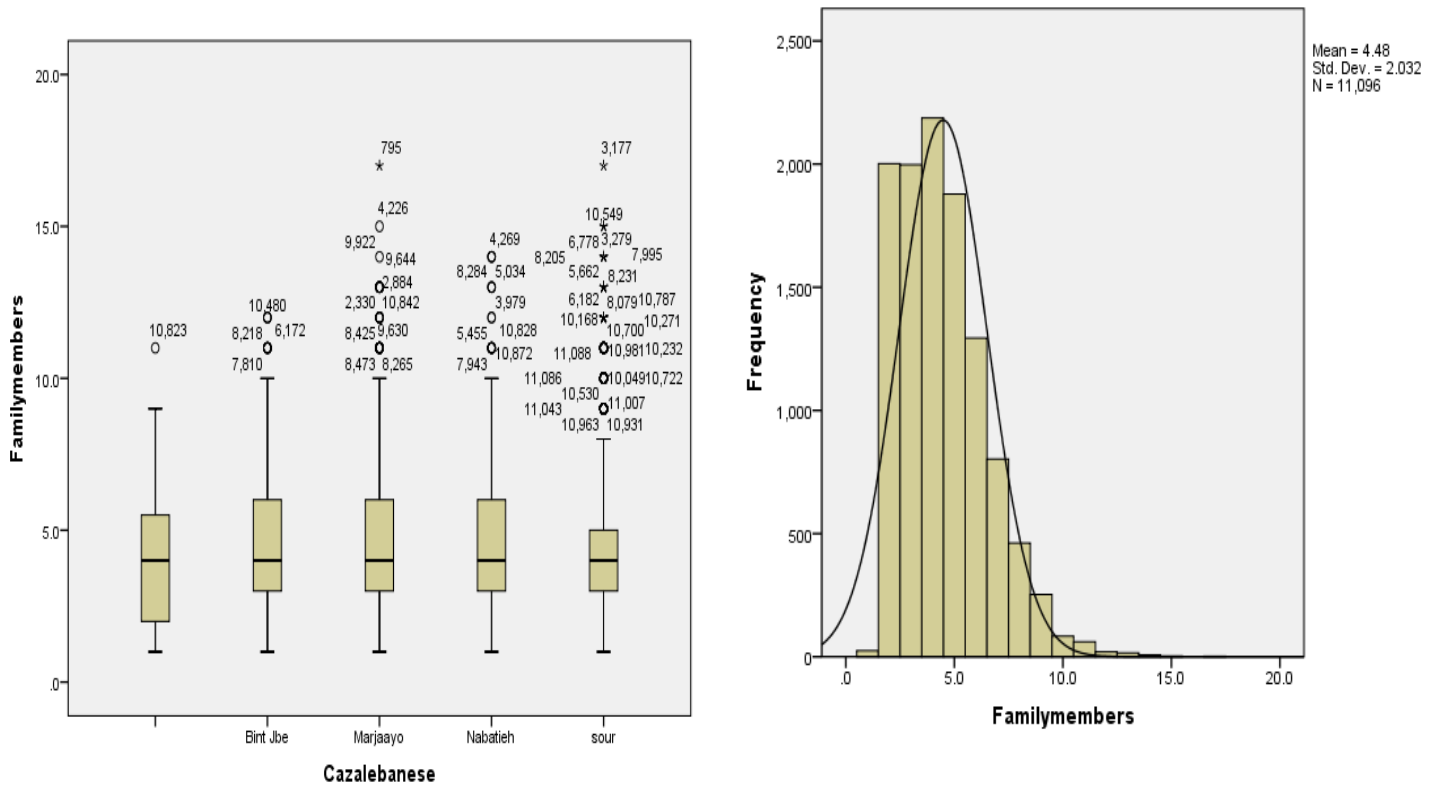
In order to understand if the number of the family members is directly related to the Syrian governorates from which they came, we represented in the following figure this number as a

function of these governorates. We notice a homogenous dispersion of this number for the majority of the governorates. Several factors could possibly affect this numbering, among which we mention the nature and quality of life of these families, the educational level of the parents, even the tradition and the influence the religion has on the society.
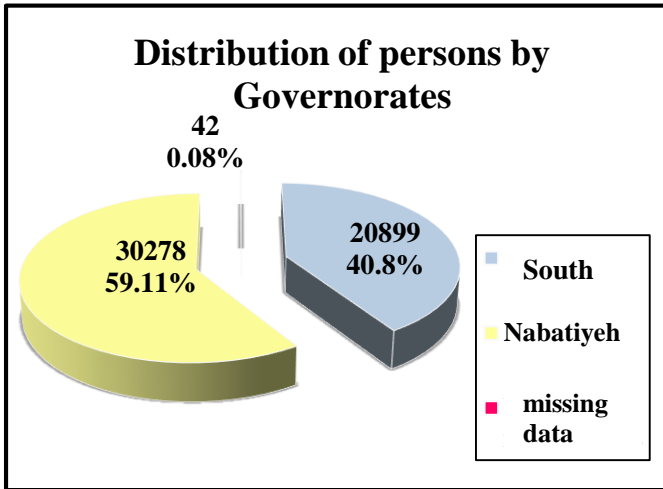

Governorates_Syria

Chapter 3: Processing of Personal Data

3.1. Descriptives of the numbers of Syrian refugees in South Lebanon

Throughout this chapter, we go over the section of the database that covers the personal information related to each member of the Syrian refugee families in south Lebanon, from December 2012 until December 2013. The database of each member includes: the date of birth, the gender, the relation to the head of the family, the place of residence in Syria, the place of refuge in Lebanon and especially the vulnerable cases, that is to say, the sick or disabled persons who need careful assistance. Based on these indicators, we will draw the results that will help us understand the social condition of the Syrian families and enclose the most vulnerable cases at risk that require a specific treatment.

From December 2012 until December 2013, we take a census of 51219 Syrian refugees residing in South Lebanon who are distributed between the two governorates of southern Lebanon, at a ratio of 59% in the governorate of the South and 41% in the governorate of Nabatieh. The huge mass of persons is found in the district of Tyr with a sample of 20899 refugees. In Nabatieh, we take a census of 13393 refugees and 8660 refugees in Marjayoun and the rest with a sample of 8222 refugees in Bint Jbeil.

Distribution of persons by Governorates

42
0.08%

30278
59.11%

20899
40.8%

- South
- Nabatiyeh
- missing data

	District	% District
BintJbeil	8222	16.05
Nabatiyeh	13396	26.15
Marjayoun	8660	16.91
Tyr	20899	40.80
Missing data	42	0.08

The Syrian refugees residing in South Lebanon are equally divided between female and male. We take a census of 26082 Syrian women and 25137 Syrian men. This minor difference could be justified by the effects of the conflict that compel men to stay in Syria, either to engage in the conflict or to protect their propreties or for reasons of security that prevent them to join their families.

The age of the Syrian refugees follows a normal evolution which depends on the nature of the Syrian society considered as a "young" society with a quite high birth rate and families with an average of members exceeding 5 persons/family.This is reinforced by the rates observed among children falling within the age group that ranges between 0 and 30. In reference to the population pyramid above that represents the age of the Syrian refugees as function of their gender, we notice that the distribution is quite equal between male and female, especially in the age group between 4 and 30.

Distribution of persons by gender

26082
51%

25137
49%
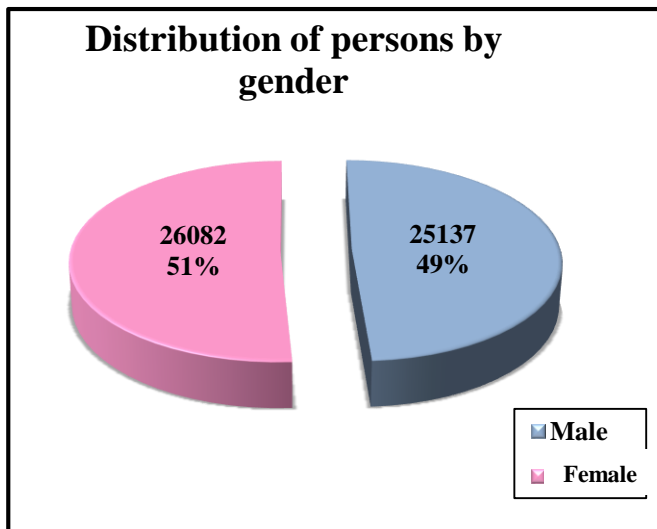
- Male
- Female

Age	Gender	
	Male	Female
[0;4[	3098	2859
[4;12[	6519	6146
[12;18[	3470	3150
[18;30[	5188	6695
[30;40[	3803	3527
[40;50[	1669	1822
[50;60[	819	1165

3.2. Vulnerable CASES of Syrian refugees.

| ≥60 | 566 | 711 |

The vulnerable cases represent those who demand emergency aid or particular assistance even a lasting one in order to endure the conditions that they are confronting. These cases are divided between children at risk, elderly persons, pregnant women or lactating, children who are not accompanied by their parents, persons having serious medical conditions, persons who have been tortured and others. The details about them are coded by SHEILD and illustrated in appendices.

Based on our study, we notice that a high number of refugees in southern Lebanon, at a ratio of 34265 persons, being 67% of the refugees are in good health and do not require medical attention. Only 23% at a ratio of 11674 refugees were divided between serious and average cases.

Persons at risk
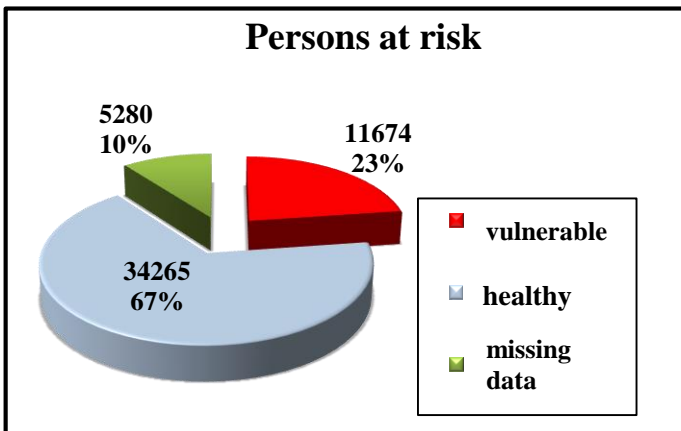
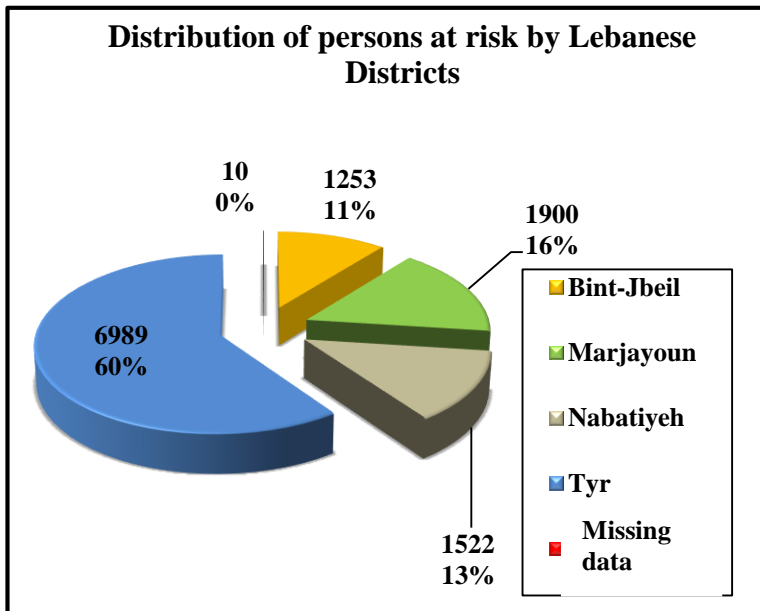|	Persons	% persons
vulnerable	11674	22.79
healthy	34265	66.90
missing data	5280	10.31
Total	51219	100

Among the 23% of the vulnerable cases (11674 cases), we notice that the women represent 54% (6267 women) and the men represent 46% (5407 men). The majority of the women falling under the category of vulnerable cases are pregnant or about to give birth so they are at the stage of lactating which requires social and medical assistance.

Disribution of persons at risk by their gender
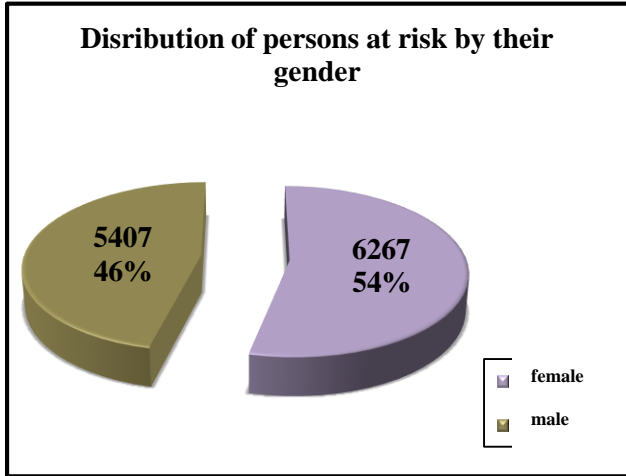
	Gender	% gender
Female	6267	53.68
Male	5407	46.32
Total	11674	100

3.2.1. Distribution of persons at risk in the Lebanese districts

In order to have the aids better organized, it is important to take a census of the cases of persons at risk in the different districts of southern Lebanon. Among the 11674 refugees having vulnerable cases, we notice that 60% of them are settled in Tyr, being 6989 cases. In Marjayoun, we collect 1900 cases and in Nabatieh and Bint Jbeil, we collect respectively 1522 and 1253 cases.

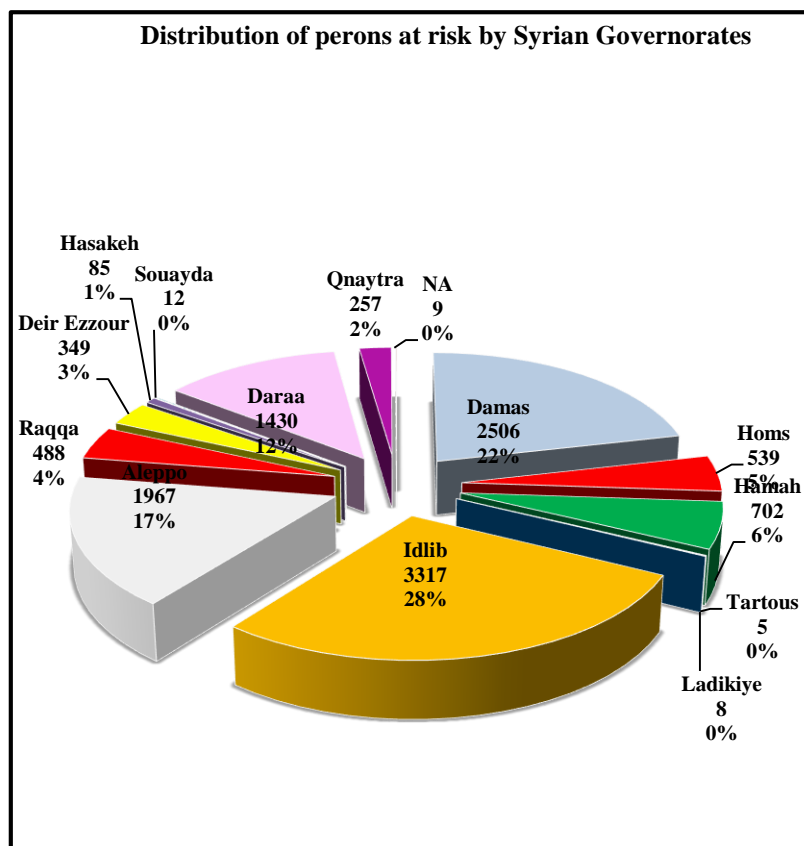Distribution of persons at risk by Lebanese Districts

	District	% District
Bint-Jbeil	1253	10.73
Marjayoun	1900	16.28
Nabatiyeh	1522	13.04
Tyr	6989	59.87
Missing data	10	0.09
Total	11674	100

3.2.2. Distribution of persons at risk in the Syrian governorates

We note here that the 11674 persons at risk came from Idlib, at a rate of 28% (being 3317 persons), from Damascus, at a rate of 22% (being 2506 persons), from Aleppo, at a rate of 17% (being 1967 persons) and from Daraa, at a rate of 12% (being 1430 persons). The percentage obtained from Idlib, Damascus and Aleppo could be justified by the fact that these three regions have the largest area surface and the highest population.
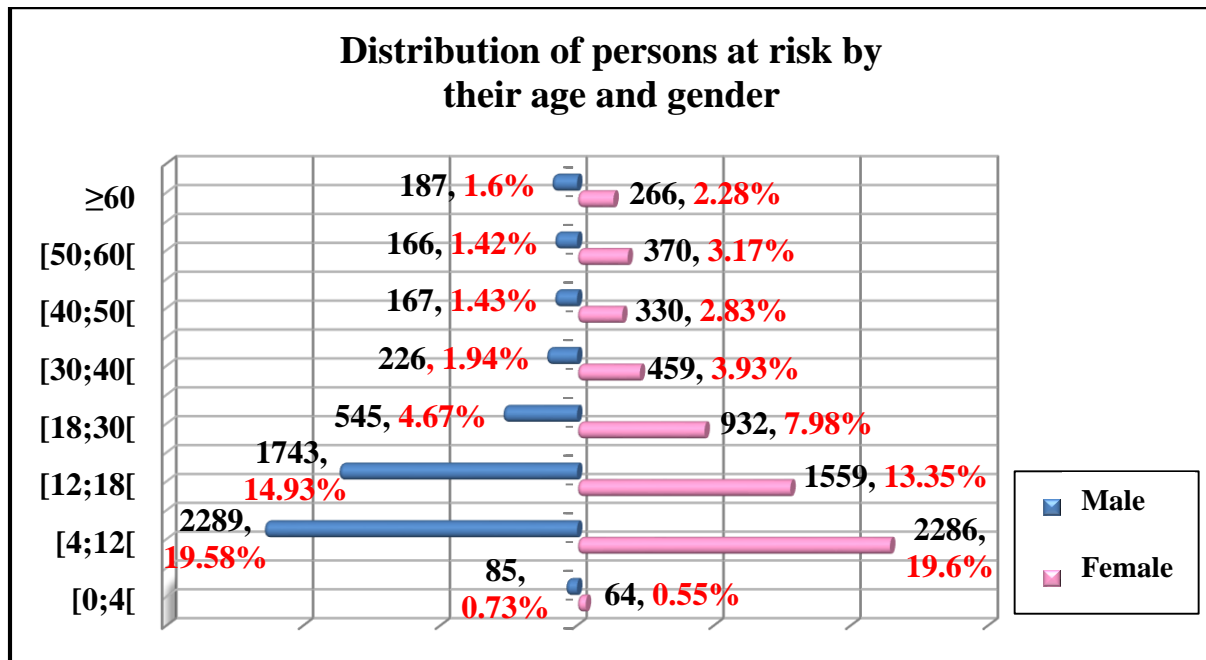
Syrian Governorates	Person at risk	% person at risk
Damas	2506	21.47
Homs	539	4.62
Hamah	702	6.01
Tartous	5	0.04
Ladikiye	8	0.07
Idlib	3317	28.41
Aleppo	1967	16.85
Raqqa	488	4.18
Deir Ezzour	349	2.99
Hasakeh	85	0.73
Souayda	12	0.10
Daraa	1430	12.25
Qnaytra	257	2.20
NA	9	0.08
Total	11674	100

Distribution of perons at risk by Syrian Governorates

3.2.3. Distribution of persons at risk by age

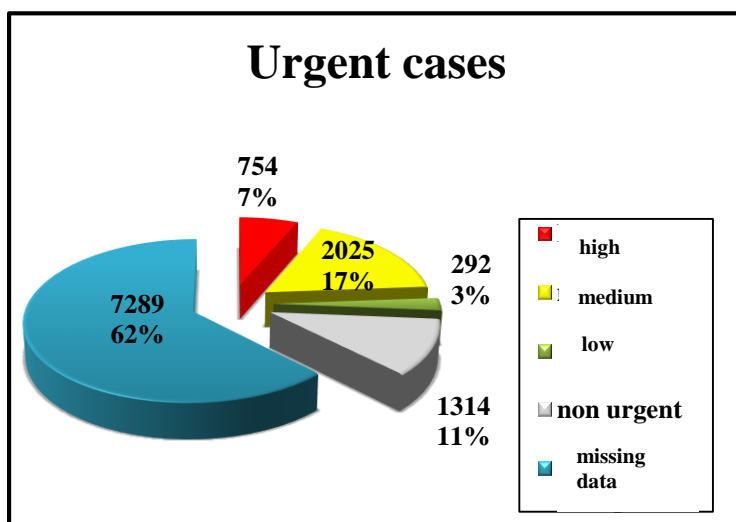As it is essential to know the age groups of these vulnerable caees, we notice that the majority represents young refugees falling within the age group that ranges between 4 and 18. This age group is equally divided between the two genders. We should mention here that this equal tendency is no longer valid as from the age group that ranges between 18 and 30 since it is not in the favor of the female gender.

Distribution of persons at risk by their age and gender

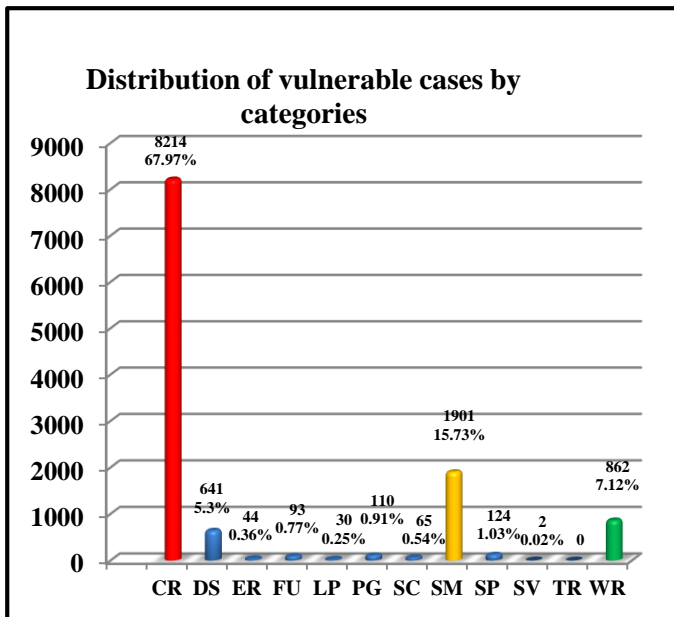| Age	Male	Female
≥60	187, 1.6%	266, 2.28%
[50;60[	166, 1.42%	370, 3.17%
[40;50[	167, 1.43%	330, 2.83%
[30;40[	226, 1.94%	459, 3.93%
[18;30[	545, 4.67%	932, 7.98%
[12;18[	1743, 14.93%	1559, 13.35%
[4;12[	2289, 19.58%	2286, 19.6%
[0;4[	85, 0.73%	64, 0.55%

3.2.4. Distribution of persons at risk according to the difficulty of the vulnerable case

In order to organize the emergency aids, we classified the vulnerable cases of Syrian refugees according to three aspects: high vulnerability, medium vulnerability and low vulnerability. We observe that there are 754 cases of high vulnerability that require immediate emergency assistance from humanitarian organizations, that is to say, at a rate of 7% out of the 11674 vulnerable cases. The cases of medium vulnerability represent 2025 cases that require less attention than the previous one. The cases of low vulnerability represent 2.5% of the cases, being 292 cases.

Urgent cases

Category	Value	Percent
high	754	7%
medium	2025	17%
low	292	3%
non urgent	1314	11%
missing data	7289	62%

Several categories of vulnerabilities were defined by the SHEILD and used in this census. At this stage and considering the analysis of the database, it is important to note that a single person can be classified in 2 or 3 categories. For instance, we notice that the study of this indicator shows that there are 12086 cases chosen among the 11674 persons at risk. The children at risk are affected the most. We collect 8214 cases, being 68% of the total number of cases. This demonstrates the observation which was previously illustrated in the

	Urgency	% Urgency
High	754	6.46
medium	2025	17.35
Low	292	2.50
non urgent	1314	11.26
NA	7289	62.44
Total	11674	100

pyramid showing the vulnerable cases as function of the age of persons at risk. The category of serious medical conditions is classified in 2nd place. It represents 15.75% of refugees with vulnerable cases, being 1901 cases. The number of women at risk who require particular aid is 862. The category of disability represents 641 persons, being 5% of the cases. No torture cases have been reported during the census.

Distribution of vulnerable cases by categories

Catergories of vulnerabilities	Codes	Total	%Total
Child at risk	CR	8214	67.97
Disability	DS	641	5.30
Elder person at risk	ER	44	0.36
Family unity	FU	93	0.77
Special physical and legal protection needs	LP	30	0.25
Pregnant or lactating	PG	110	0.91
Separated and unaccompanied child	SC	65	0.54
Serious medical conditions	SM	1901	15.73
Single parent	SP	124	1.03

		SV	2	0.02
Sexual violence				
Torture		**TR**	0	0
Woman at risk		**WR**	862	7.12
Total			**12086**	**100**

3.2.5. Distribution of persons at risk in the Lebanese districts

A large number of persons having critical conditions is settled in Tyr with a percentage of 59%. This sounds normal because the majority of Syrian refugees chose this big city to look for jobs or to find treatments or assistance. These cases represent, in particular, the children at risk (4313 cases) and the persons with serious medical conditions (1347 cases). The 15% of the persons with vulnerable cases in Marjayoun are mainly children at risk (1380 children). The 12% of the cases in Nabatieh include 1125 children at risk and 227 women at risk. In Bint Jbeil, the 10% cases include 890 children at risk, 188 cases of persons having serious medical conditions and 54 children separated from their parents.

Categories of vulnerabilities	Codes	District					total categories/ districts	% Total categor/ districts
		Tyr	Nabatiyeh	Marjayoun	Bintjbeil	NA		
Child at risk	CR	4813	1125	1380	890	6	8214	**67.96**
Disability	DS	233	14	24	9	362	642	**5.31**
Elder person at risk	ER	33	4	0	7		44	**0.36**
Family unity	FU	48	10	3	32		93	**0.77**
Special legal and physical protection needs	LP	7	11	7	5		30	**0.25**
Pregnant or lactating	PG	33	6	56	15		110	**0.91**
Separated or unaccompanied child	SC	2	0	9	54		65	**0.54**
Serious medical condition	SM	1347	88	274	188	4	1901	**15.73**
Single parent	SP	119	4	0	1		124	**1.03**
Sexual violence	SV	1	0	1	0		2	**0.02**
Torture	TR							
Woman at risk	WR	476	227	111	47		861	**7.12**
Total_districts		7112	1489	1865	1248	372	12086	**100.00**

% Total_districts		58.84	12.32	15.43	10.33	3.08	100	

3.3. Study of children at risk

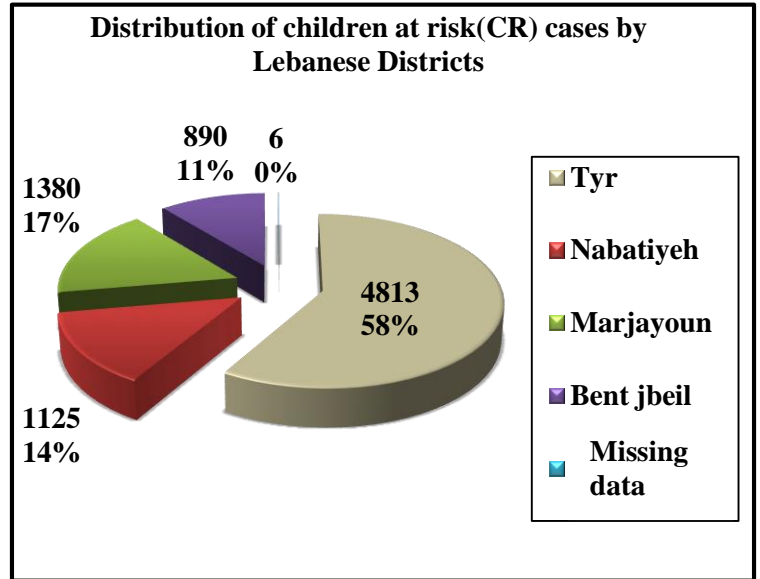### 3.3.1. Distribution of children at risk by Syrian governorates

The number of the children at risk among the Syrian refugees who are settled in South Lebanon is 8214. They came from the Syrian governorate of Idlib with a percentage of 30%, being 2449 children. We count 1669 children coming from Damascus, 1370 children coming from Aleppo and 1023 children coming from Daraa and the others are distributed between each of the governorates of Hamah (456 children), Homs (365 children), Raqaa (349 children) and Deir Ez-Zour (247 children).

Distribution of children at risk (CR) cases by Syrian Governorates
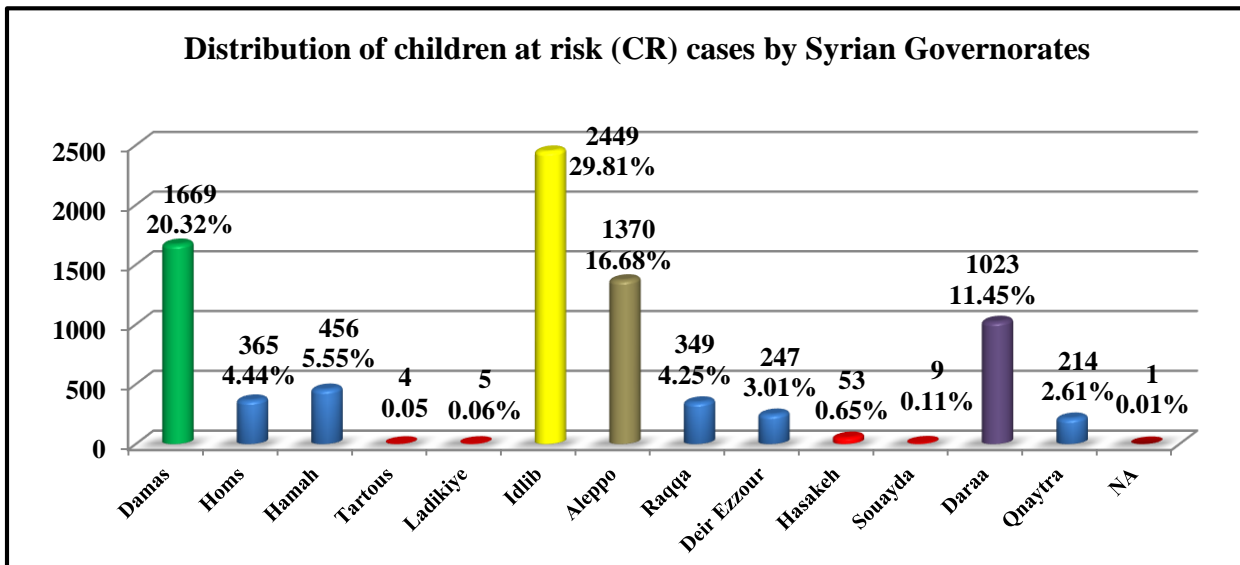
3.3.2 Distribution of children at risk by Lebanese districts

The distribution of 8214 children at risk in South Lebanon is carried out in the following manner: a large number of children at risk are settled in Tyr with a high percentage of 58%, being 4813 children, followed by Marjayoun with 1380 children, then Nabatieh with 1125 children and finally Bint Jbeil with 890 children at risk.

Lebanese Districts	Children at risk (CR)	% Children at risk (CR)
Tyr	4813	58.60
Nabatiyeh	1125	13.70
Marjayoun	1380	16.80
Bint-Jbeil	890	10.84
NA	6	0.07
Total	8214	100

Distribution of children at risk(CR) cases by Lebanese Districts

890 11% 6 0%

1380 17%

4813 58%

1125 14%

- Tyr
- Nabatiyeh
- Marjayoun
- Bent jbeil
- Missing data

### 3.3.3 Distribution of children at risk by type of risk

To recognize the risk associated with the children at risk, we explained in detail, the type of their vulnerable cases in the table below. We notice that the highest risk arises from the fact that 98% of these Syrian children (being 8076 chilren) do not attend school and they do not acquire the necessary education in order to progress and correctly integrate into the society, the thing that is essential for them in the future and will maybe drive them towards delinquency and marginalization. Moreover, we find 53 children who are responsible of their families and should work to gain money to satisfy the needs of their families. Likewise, there are 16 children who work to help their parents. Finally, we notice 13 pregnant girls. This is perhaps due to the fact that marriages are common at a young age in Syria and are considered as a tradition for Syrian refugees.

Categories_children at risk (CR)	Code	Number of cases	% Number of cases
Child associated with armed forces or groups	**CR-AF**	10	0.12
Child carer	**CR-CC**	32	0.39
Child-headed household	**CR-CH**	53	0.65
Child in conflict with the law	**CR-CL**	1	0.01
Child Parent	**CR-CP**	16	0.19
Child Spouse	**CR-CS**	3	0.04
Child engaged in other forms of labour	**CR-LO**	7	0.09
Child engaged in the worst forms of child labour	**CR-LW**	3	0.04
Minor Spouse	**CR-MS**	1	0.01
Children at risk of not attending school	**CR-NE**	8076	98.32
Child with special educational needs	**CR-SE**	37	0.45
Teenage pregnancy	**CR-TP**	13	0.16
Total	**CR**	**8214**	**100**

3.4   Study of unaccompanied children or separated from their parents.

We already meantioned that there are families who brought with them children who are not theirs and who could possibly be children of their relatives or neighbors or another. We count 65 children, among which 53 are actually separated from their parents, 9 live in institutions without even a member of their families, 2 are head of te household and 1 minor child is unaccompanied by his parents. We take a census of 22 unaccompanied children coming from Daraa, 16 coming from Damscus, 16 coming from Idlib, 4 coming from Deir Ez-Zour and 4 coming from Qnaytra. (refer to annex of chapter 3).

Categories_ Unaccompanied children or seperated (SC)	Code	Number of cases	% Number of cases
Child head of the household	SC-CH	2	3.08
Child in an institution	SC-IC	9	13.85
Separated child	SC-SC	53	81.54
Unaccompanied minor child	SC-UM	1	1.54
Total	SC	65	100

Categories of unaccompanied or seperated children(SC)
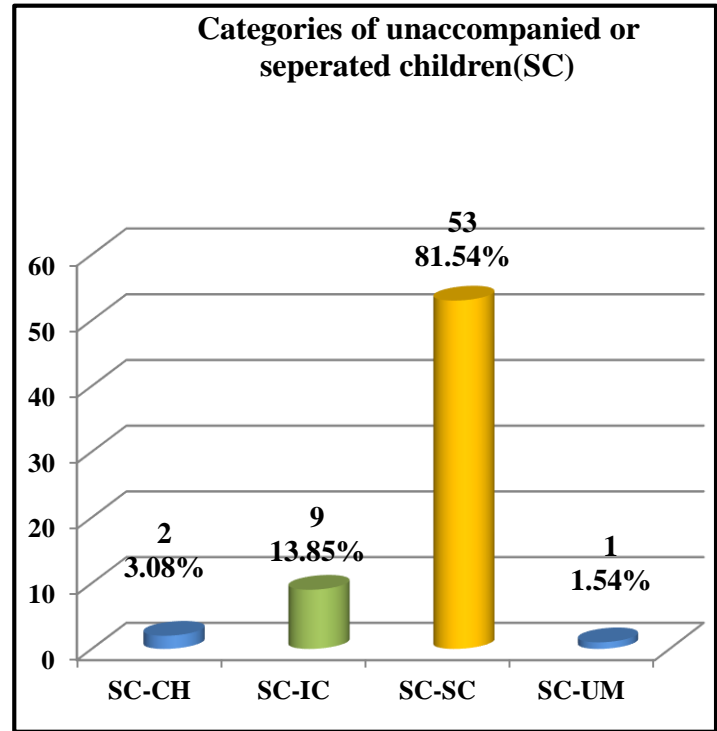
3.5 Study of sick Syrians having serious medical conditions

3.5.1 Distribution of persons having a serious medical condition (SM) according to age and Syrian governorates

The total number of persons having serious medical conditions is 1900 representing critical cases, distributed between elderly persons who are aged over 50 (741 persons). 15% having an average age with the age range between 40 and 50. More than 200 children between the age of 4 and 12 have serious medical conditions. Babies represent 4% of them. We can conclude that Syrian refugees having serious medical conditions are equally divided between all age groups. The majority of them come from Damascus, Idlib and Aleppo. The rest come from other regions such as Daraa, Homs, Hamah, Raqaa ad Deir Ez-Zour.
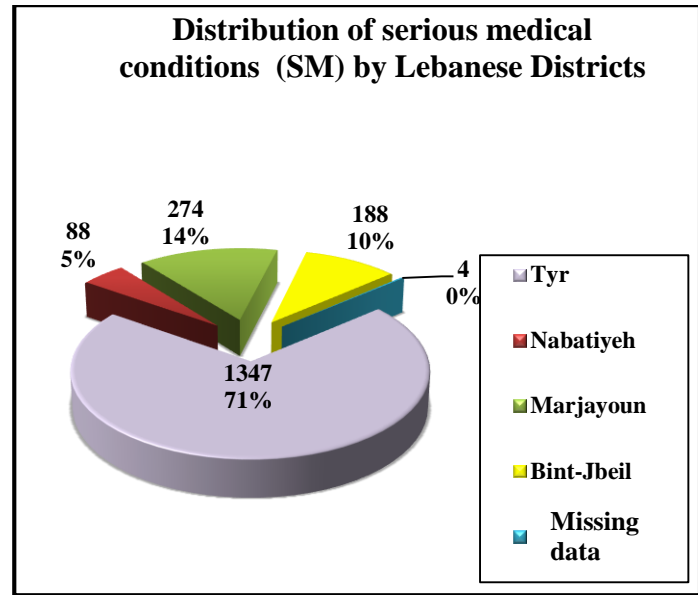
Distribution of serious medical conditions (SM) by Syrian Governorates
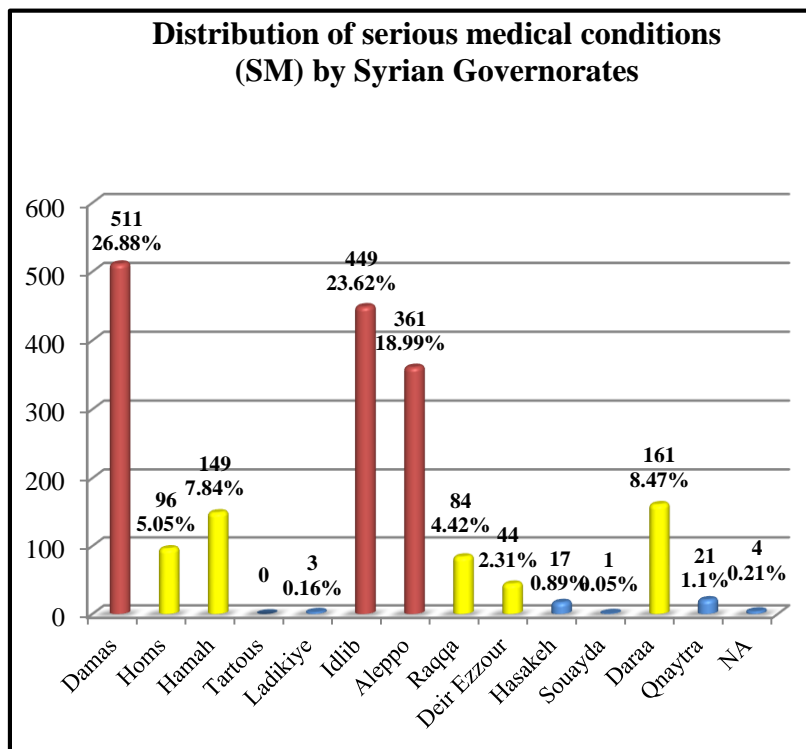
Age	Serious medical condition (SM)	% Serious medical condition (SM)
[0;4[	80	4.21
[4;12[	200	10.52
[12;18[	108	5.68
[18;30[	226	11.89
[30;40[	262	13.78
[40;50[	293	15.41
[50;60[	376	19.78
≥60	356	18.73
Total	**1900**	**100**

Chart values:
- Damas: 511 / 26.88%
- Homs: 96 / 5.05%
- Hamah: 149 / 7.84%
- Tartous: 0
- Ladikiye: 3 / 0.16%
- Idlib: 449 / 23.62%
- Aleppo: 361 / 18.99%
- Raqqa: 84 / 4.42%
- Deir Ezzour: 44 / 2.31%
- Hasakeh: 17 / 0.89%
- Souayda: 1 / 0.05%
- Daraa: 161 / 8.47%
- Qnaytra: 21 / 1.1%
- NA: 4 / 0.21%

3.5.2 Distribution of persons having serious medical conditions (SM) according to the lebanses Districts

The persons having serious medical conditions are settled in Tyr, with a rate of 71%, being 1347 cases. The total number of sick refugees in Marjayoun is 274. The number of those who live in Bint Jbeil is 188 persons. We should not here that these districts are equipped with public hospitals and are capable of providing medical aftercare for the refugees.

Lebanese Districts	Serious medical condition (SM)	% serious medical condition (SM)
Tyr	1347	70.89
Nabatiyeh	88	4.63
Marjayoun	274	14.42
Bint-Jbeil	188	9.89
Missing data	3	0.17
Total	1900	100

Distribution of serious medical conditions (SM) by Lebanese Districts

3.5.3 Distribution of persons having serious medical conditions (SM) by type

The majority of Syrian refugees having serious medical conditions suffers from chronic illness at a rate of 89%, being 1692 cases and should be medically assisted in order to survive. We take a census of 116 critical cases that require emergency treatment. The number of difficult pregnancy cases is 74. The number of cases representing mental illness that require the attention of specific schools and organizations is 12 cases.

Categories_serious medical condition (SM)	Code	Number of cases	% Number of cases
dependence	SM-AD	4	0.21
Critical condition	SM-CC	116	6.10
Chronic illness	SM-CI	1692	89.01
Difficult pregnancy	SM-DP	74	3.89
Mental illness	SM-MI	12	0.63
malnutrition	SM-MN	2	0.16
Total	SM	1900	100

**Categories of serious medical conditions(SM)**

65
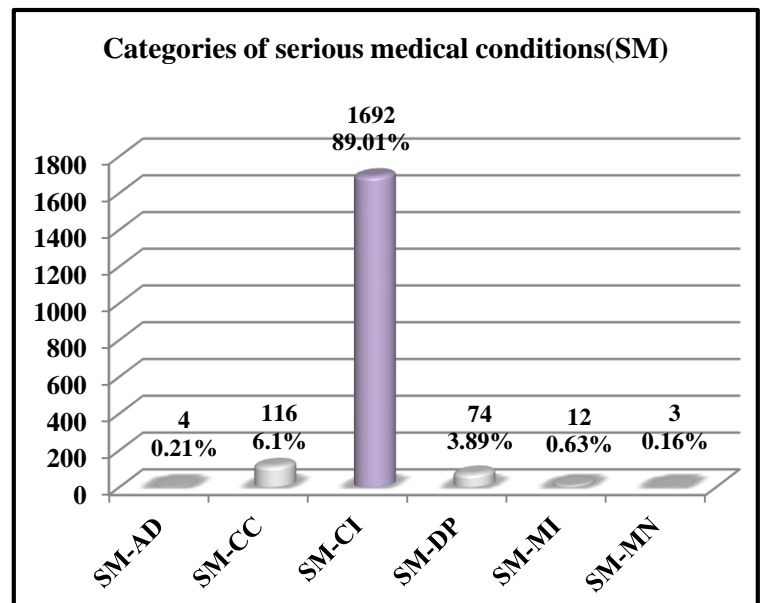
3.6   Study of women at risk

3.6.1 Distribution of women at risk according to the Syrian Governorates

The total number of women at risk is 862, among which 230 come from Idlib, 175 from Damascus, 137 from Daraa, 128 from Aleppo and the others come from the rest of the Syrian regions.

Syrian Governorates	Women at risk (WR)	%Women at risk (WR)
Damas	175	20.30
Homs	40	4.64
Hamah	50	5.80
Tartous	0	0.00
Ladikiye	0	0.00
Idlib	230	26.68
Aleppo	128	14.85
Raqqa	34	3.94
DeirEzzour	35	4.06
Hasakeh	4	0.46
Souayda	11	1.28
Daraa	137	15.89
Qnaytra	18	2.09
Total	862	100

Distribution of women at risk (WR) cases by Syrian Governotaes
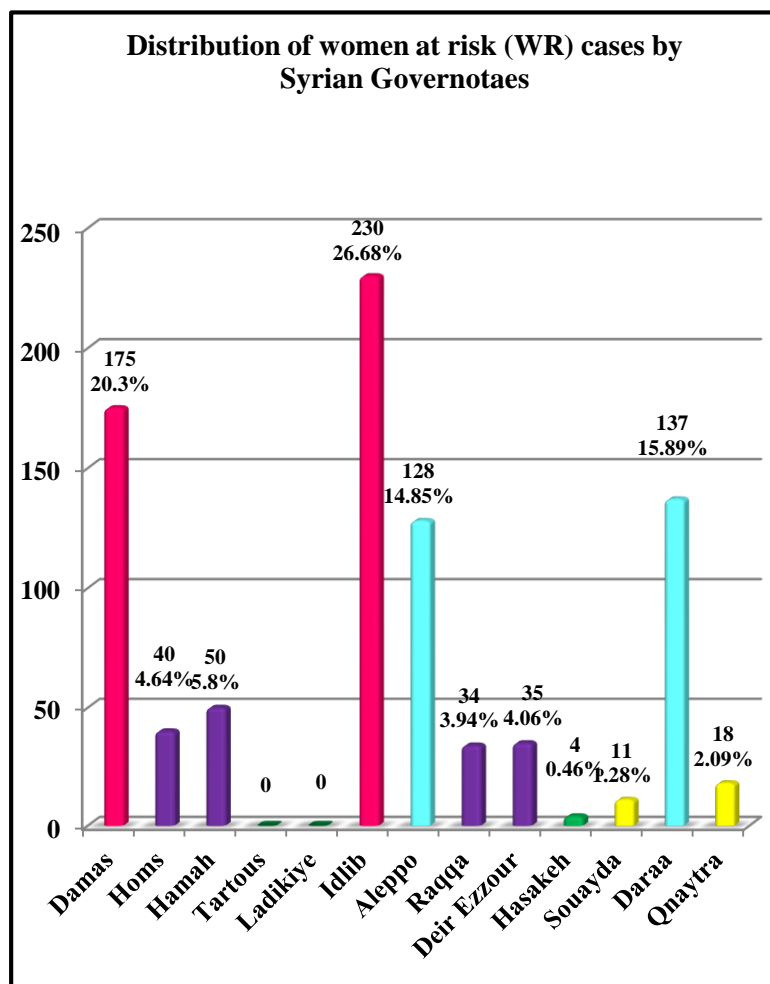
3.6.2 Distribution of women at risk by Lebanese Districts

The total number of women at risk living in Tyr is 476, followed by Nabatieh with a rate of 26% then Marjayoun with 111 women at risk. There are also 47 women at risk in Bint Jbeil.

Lebanese Districts	Woman at risk (WR)	% woman at risk (WR)
Tyr	476	55.28
Nabatiyeh	227	26.36
Marjayoun	111	12.89
BintJbeil	47	5.46
Total	861	100

Distribution of women at risk (WR) cases by Lebanese Districts

111
13%

47
6%

227
26%

476
55%

- Tyr
- Nabatiyeh
- Marjayoun
- Bint-Jbeil
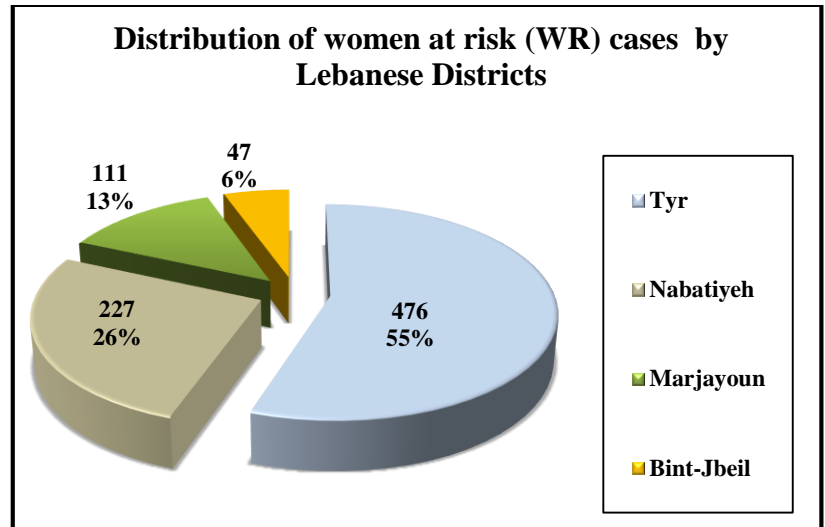
3.6.3 Distribution of women at risk by type of risk

The women at risk are the most affected by this conflict as they represent the most critical cases and require a lot of assistance in view of the instability they are living as refugees. While taking a look at the types of risk collected by these women having problems in their lives, we notice that the majority of them chose the two types that are related to the unique responsibility of the household and lactation. We note here that a single woman can chose multiple possible cases, that is why we obtain a total number of 897 cases. We count 404 women who reported that they are the only responsibles of their families and 421 women who are breastfeeding and who require assistance in order to breastfeed their new-born babies.

Categories_woman at risk (WR)	Code	Number of cases	% Number of cases
Threat posed by female genital mutilation	**WR-GM**	1	0.11
Household representative	**WR-HR**	404	45.04
lactation	**WR-LC**	421	46.93
Polygamous marriage or relation	**WR-PY**	1	0.11
Single female	**WR-SF**	15	1.67
Unaccompanied woman by a male family member	**WR-UW**	25	2.79
Woman at risk	**WR-WR**	30	3.34
Total	**WP**	**897**	**100**

Categories of women at risk (WR)
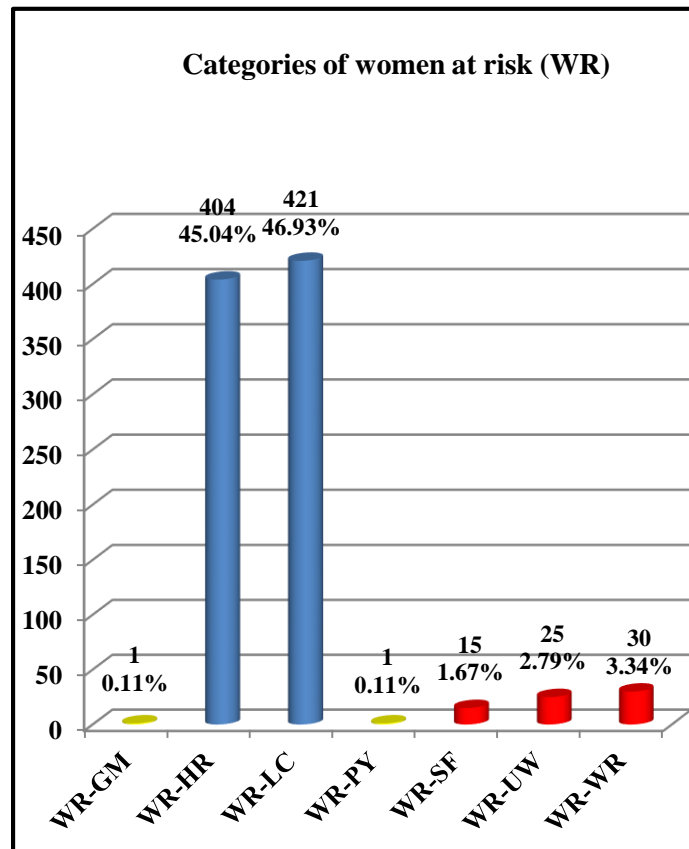
3.7 Study of Syrians having disability cases (DS)

Among the persons at risk, we take a census of 721 Syrian refugees who are incapable, by reason of ill-health, of being active in their lives and should be absolutely treated in order to survive. We take a census of these serious cases that are divided between 167 blind persons or with visual impairment, 155 persons with severe physical disabilities and 157 persons with moderate physical disabilities. The other cases are not less important as there are 89 deaf persons or with hearing impairment and 80 persons with severe mental illness and 56 persons with moderate mental illness. All these refugees require a specialized assistance.

Categories_ Disability (DS)	Code	Number of cases	% Number of cases
Visual impairment (including blindness)	DS-BD	167	23.16
Hearing impairment (including deafness)	DS-DF	89	12.34
Moderate mental illness	DS-MM	56	7.77
Severe mental illness	DS-MS	80	11.10
Moderate physical disability	DS-PM	157	21.78
Severe mental disability	DS-PS	155	21.50
Speech disorder	DS-SD	17	2.36
Total	**DS**	**721**	**100**

Categories of disability cases
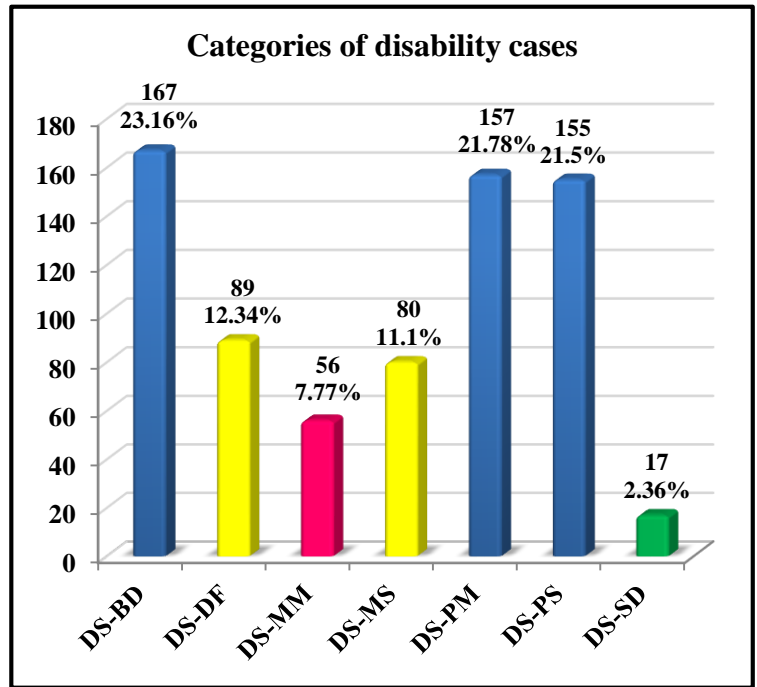
Chapter 4: Forecasting and trends of Syrian refugees in South Lebanon

This chapter deals with the analysis of particular statistical data in a way that there is a regular temporal ordering of the observations. Such type of data analysis is well-known and is called the time series analysis. Its particularity stems from the introduction of time to the process of data analysis. In general, we distinguish three componants of the time series:

- The long term fluctuation of the time series is called secular trend, trend component or trend. The initial description of the trend lies in the interpretation of the graphic representation of the series.
- Seasonal variation which occurs periodically and is regularly repeated. This component of the time series is called seasonal component.
- Irregular variation; that describes random influences and is due to the occurrence of accidental fluctuation.

A time series is a sequence of data points measured at successive points in time. The time series analysis comprises a wide range of methods for exploratory data analysis and hypothesis testing with two major objectives: (a) identifying the nature of the phenomenon represented by a sequence of observations, and (b) forecasting (predict future value based on the variables of the time series). These two objectives require identification and a description, which is more or less formal, of the componants of the observed time series. Once these componants are established, we still have to interpret and integrate them in other data (that is to say, use them in our approach

towards the phenomenon under study). Without being concerned about the good comprehension nor the pertinence of our interpretation of the phenomenon, we are able to deduce the identified component in order to predict future events.

For our project, we intend to build a model to forecast the evolution of Syrian refugees in South Lebanon. The temporal reference for this study is the date of arrival of the refugees with a measurement on a weekly basis. We opt for the number of families as a main parameter for the period that ranges from Mars 2012 until December 2013 (88 weeks). We were able to conclude that the number of the families who arrived in the south is quite uncertain and ranges between 2 to 328 families with an average of 126 families per week. The maximum number of 328 families is attained in the last week of May 2013.

Variable	Total weeks	average	Standard deviation	minimum	maximum
Nb of refugee families in the south	88	126	97.5351	2	328

The standard deviation (σ(nb_refugee_families))=97.5351, is dispersed from the average of the data series, which indicates that the observations are dispersed around the average and this shows clearly due to the huge difference between the minimum and maximum number of Syrian refugee families arriving in southern Lebanon. This evolution could be explained by the fact that the phenomenon of the inflow of Syrian refugees to South Lebanon is unstable and vary according to the security and political situation in Syria.

In order to be more detailed, we represent in the following graph the evolution of the number of Syrian refugee families, week by week, during the period of the study. A general view of the graph shows that the number of Syrian refugee families increased with an unexplained observation of a maximum during the first week of each month and a gradual decrease to reach the minimum at the end of the same month. The maximum is observed during May and August 2013 and which could be justified by the Israeli air strike on Damascus and a possible american attack on August 2013.

Number of Syrian refugee families in the South: 2012-2013
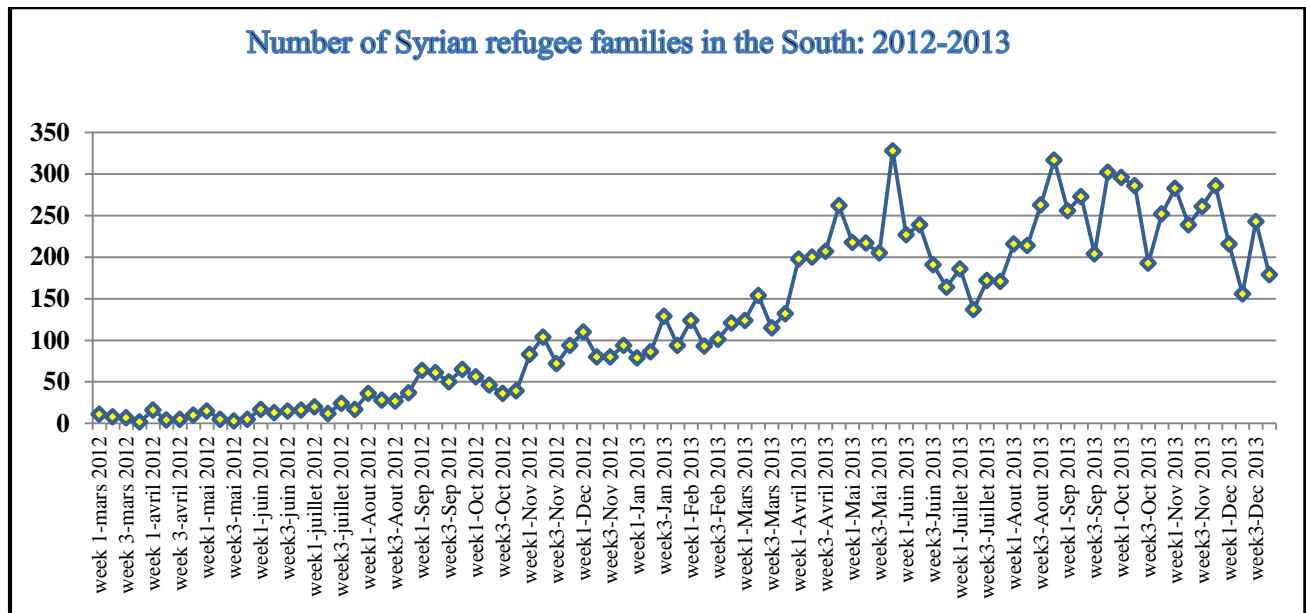
We notice a distinct evolution as from the 2nd week of Novembre 2012 (**104 families**). After this date, the number of refugee families increases, representing an evolutionary progression of the monthly variation.

This monthly repetitive phenomenon is interrupted several times by a peak in the number of refugee families as soon as the Syrian crisis escalates. These dates are:

- The second week of November 2012
- The third week of January 2013
- The three months of April, May, and June of the year 2013
- The third week of August 2013
- The months of September and November of the year 2013.

4.1 Data Analysis

In order to generate the prediction model using the collected data, several steps are required to obtain the most convenient model for this study. In what follows, we present some elements of the calculation process without evoking the theoretical basis of the used methods which are widely applied in econometrics.

4.1.1 Process of building a time series model related to the number of the refugee families

In order to build the convenient model, a series of test is necessary:

A- Ljung-Box test

At first, we would like to know whether the observations are different from the previous ones or not. That is why we apply the Ljung-Box test(X^2), on the series of collected data. We condiser the following hypotheses:

H_0 represents the observations that are independent of X_t.
H_1 represents the observations that are dependent of X_t

This test is conducted with a risk $\alpha = 5\%$

Ljung Box	X^2	Degree of freedom	p-value
Number of Syrian refugees	859.0446	22	$< 2.2\ e^{-16}$

We deduce that the value p= 2.2 e^{-16}<5%. Based on this value, we therefore, accept the hypothesis H_1 and reject H_0. This indicates that the data are not independently distributed and consequently, are not qualified as white noise.

Stationarity of observations
In the wide sense, a series of data is not considered stationary only if its mean and variance are **constant.**

Variance stabilization
In reference to the graph representing the variable « number of Syrian refugee families arriving in South Lebanon », we are able to notice that the seasonal variations are unstable, in other words, the variance is not constant.

In order to stabilize the variance, we divide the set of observations into four parts of the same size (22 observations each) and we calculate the volatility of each set of observations.

Segmentation	Lower bound	Upper bound	number of observations	Std. deviation
segment 1	1	22	22	8.59
segment 2	23	44	22	26.68
segment 3	45	66	22	58.65
segment 4	67	88	22	47.29

b. Graph of standard deviaitons
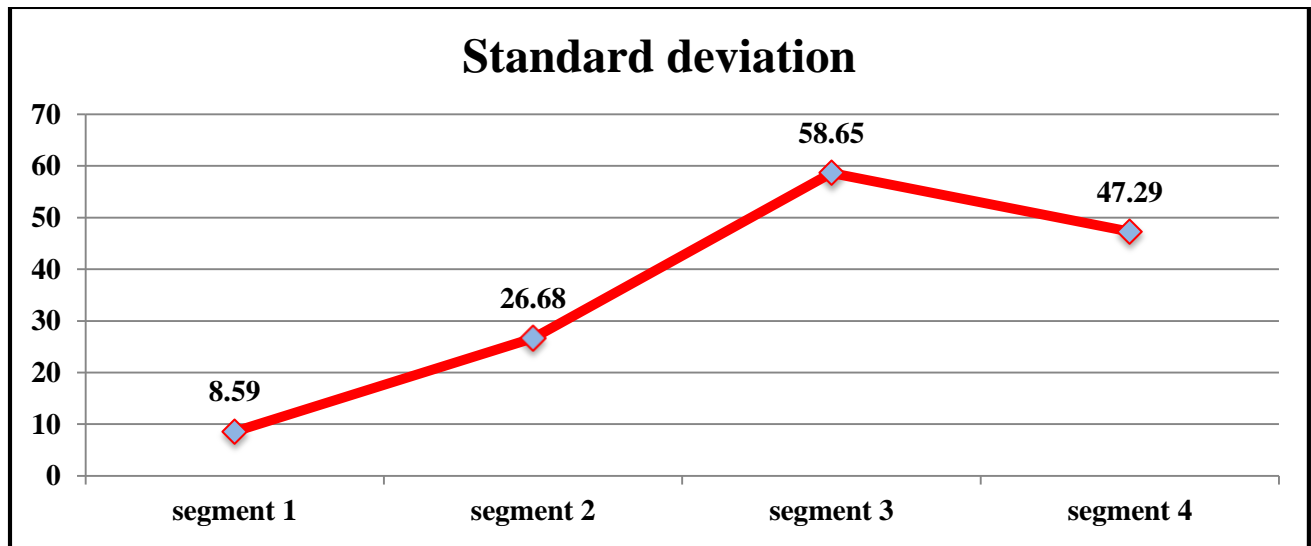
The graph above shows that the standard deviations of the groups are spread out. Thus, the variance remains unstable, which implies that the observations are not stationary. To resolve this problem, we examine the logarithm of the variable as function of time in the following graphic representation:

log(nb_refugees)
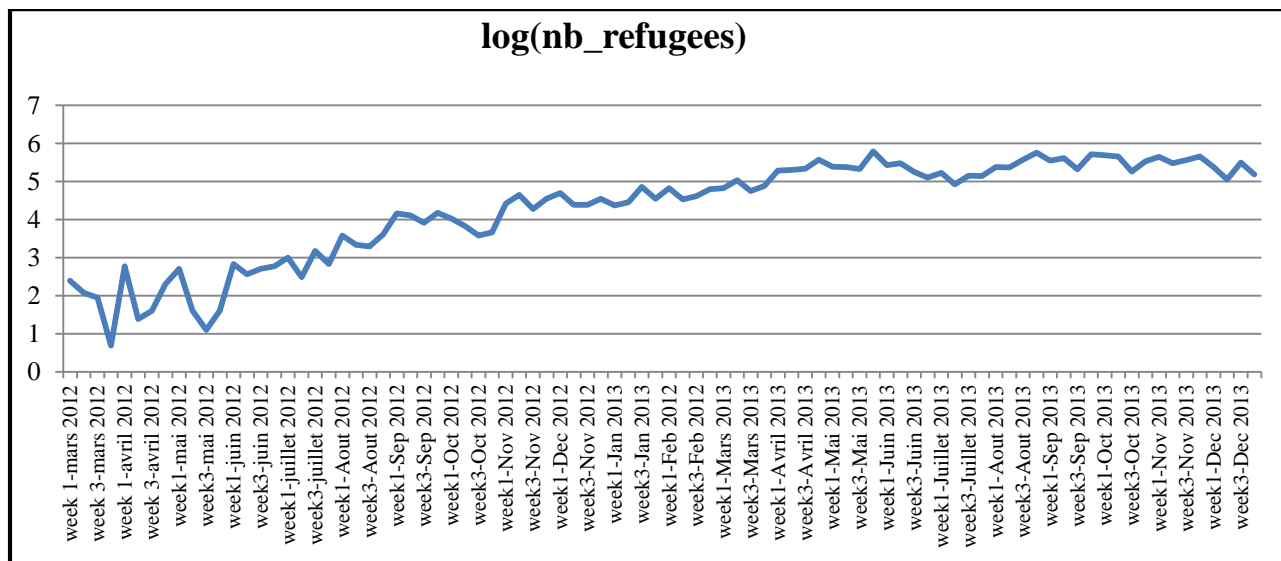
The graph of the Log represents the percentage of these observations and therefore, the seasonal variation has become quite stable. Yet, we still have to verify the stationarity of the seasonal variation. Hence, we conduct Dickey-Fuller test.

4.1.2 Test de Dickey-Fuller

The Dickey-Fuller test with a level of confidence=99% is used to test the stationarity of the observations in order to verify whether the model we are building is stationary or not. We consider the following hypotheses:

H_0: the logarithms of the observations, $\log(X_t)$, are not stationary

H_1: the logarithms of the observations, $\log(X_t)$, are stationary

	Dickey-Fuller	**lag**	**p-value**
Log (nb_refugees)	1.5904	5	0.97

We notice that the P value = 0.97>1%, which implies that the null hypothesis H_0 is accepted, rejecting the alterntive hypothesis H_1. This allows us to say that the observations of the $\log(X_t)$ remain non-stationary. We shall now proceed to the study of the first difference of the log of number of refugees.

75

4.1.3 Removal of the trend – First Difference

The Dickey-Fuller test leads us to use the first difference to render the log(Xt) stationary.

	Dickey-Fuller	**lag**	**p-value**
Diff(Log (nb_refugees))	-4.3649	5	0.01

Based on the test, we obtained a p-value=0.01<=1%, which implies that the alternative hypothesis H1 is accepted and the null hypothesis H0 is rejected. Therefore, we obtain a stationarized series that differ from the log of observations.

4.1.4 Removal of Seasonality – Fourth Difference

In order to eliminate the seasonal effect of the 4th order, we apply the fourth difference. Thus, the series is represented in the following form:
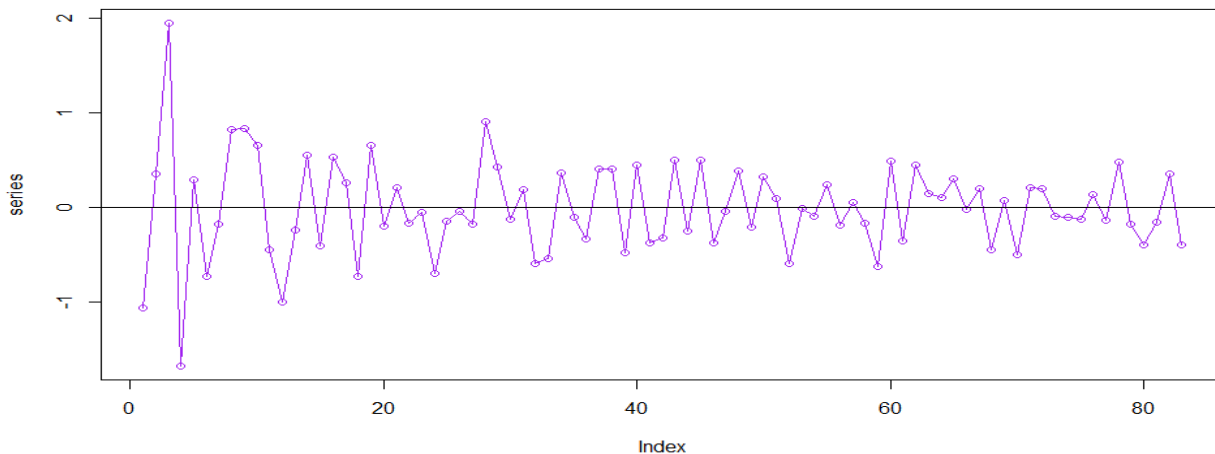

The data series has become stationarized. Thus, we are able to obtain a seasonal ARIMA model SARIMA(p,d,q)(P,D,Q)$_4$, since we consider the seasonal effect of the weekly observed series.

4.2 Identification of the model

In order to identify the parameters of SARIMA model, several steps have been carried out:

4.2.1 The autocorrelations of the series that is different from the logarithm of «number of Syrian refugee families arriving in South Lebanon »

Correlogram of autocorrelation function(ACF)

Series difsais
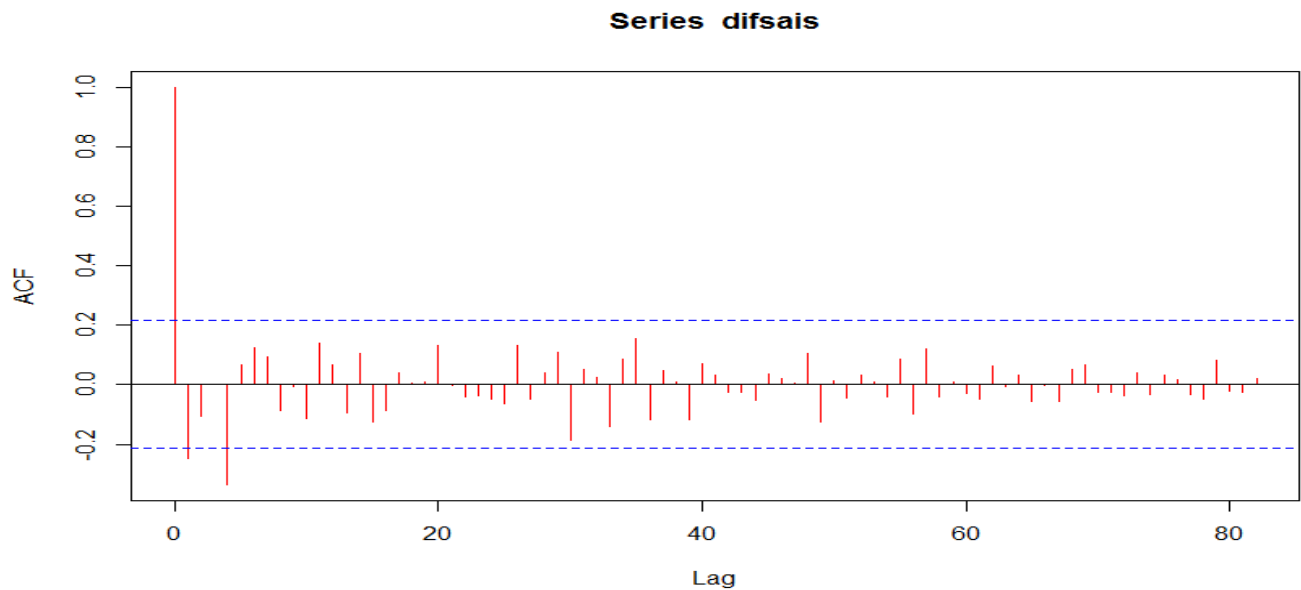
The correlogram representing the autocorrelations of a series of given observations shows that the values are rapidly and exponentially converging towards zero in a damped sine wave pattern. Moreover, we notice that the autocorrelations are removed as from ACF(1), as well as ACF(4) is outside the interval [-0.2 ; 0.2] which is caused by the seasonality.

The estimation of the autocorrelations of diff(log(X_t)) is represented in the following table :

| T	0	1	2	3	4	5	6
ACF(t)	1	-0.249	-0.104	0.002	-0.335	0.066	0.123
T	7	8	9	10	11	12	13

ACF(t)	0.093	-0.088	-0.004	-0.115	0.142	0.065	-0.092

The table representing the autocorrelations shows that the autocorrelations are being removed as from ACF(1), thus, we have the moving-average (**MA**) model of order **q=1**; ACF(4) is significant, therefore **Q=1.**

4.2.2 The PACF of the series that is different from the logarithm of number of passengers arriving in Lebanon.

Correlogram of partial autocorrelations function (PACF)

Series difsais
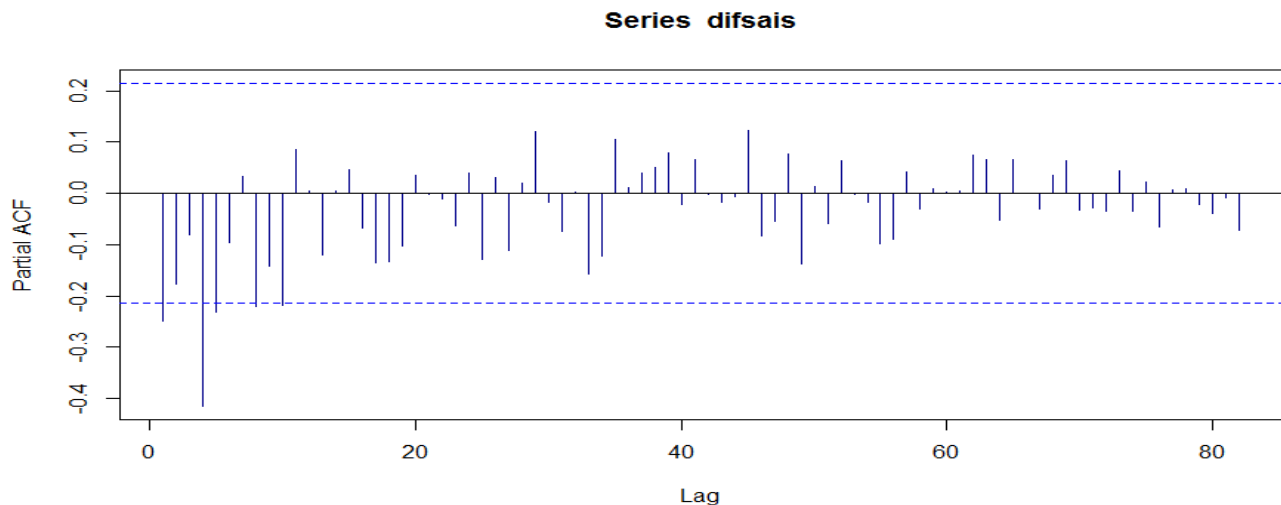
The correlogram displays a damped sine wave pattern and shows that the autocorrelations are removed as from the PACF(10). Moreover, we notice that the PACF(4) and the PACF(8) are quite significant, thus, confirming the seasonality. For more verification, we can take a look at the values of the PACF.

The estimation of the partial autocorrelations of X_t is represented in the following table :

T	1	2	3	4	5	6	7	8
PACF(t)	-0.249	-0.177	-0.08	-0.415	-0.231	-0.096	-0.033	-0.22
T	9	10	11	12	13	14	15	16
PACF(t)	-0.142	-0.219	0.085	0.005	-0.119	0.006	0.047	-0.067

According to the graph and the table representing the partial autocorrelations, we notice that the partial autocorrelations are removed after the PACF(10). Theoretically, p=10, which is not convenient for the practice of the model because there will be no parametric limit. That is why we will refer to the autoregressive **AR** model of order **p=5**, (so we will get back at the rejected parameters if need be)

The PACF(4) and the PACF(8) are significant, thus **P=2**.

4.2.3 Model estimation

According to the ACF and the PACF of the observed series, we estimate the model: S**ARIMA(5,1,1)(2,1,1)$_{12}$**.

However to be assured of our choice, we compared several models and we selected the one which minimizes the Akaike information criterion (AIC) and maximizes the maximum-likelihood estimator (MLE)

model	p	d	q	P	D	Q	s	AIC	MLE
Model1	10	1	1	2	1	1	4	87.15	-28.57,
model2	**5**	**1**	**1**	**2**	**1**	**1**	**4**	**85.73**	**-32.86**
model3	5	1	1	1	1	1	4	85.4	-33.7
model4	10	1	1	1	1	1	4	90.03	-31.01
model5	4	1	1	2	1	1	4	85.73	-32.34

For the purpose of verifying the model order, five seasonal ARIMA models have been suggested. We notice that the **AIC** of the 2nd and 3rd models are very close to one another and have the lowest values (85.73 and 85.4 respectively). According to the values of the MLE of these two models **(-32.86> -33.7)**, we accept the estimated model (model 2) in favor of model 3.

4.3   Final model

The final model we deduced is as follows: **SARIMA(5,1,1)(2,1,1)$_4$:**

$(1-B)(1-B^4)(1+0.4022B+0.258B^2+0.2217B^3+0.2951B^4 +0.2955B^5)$ $(1+0.139B+0.2257^2)^4X_t =$ $(1+0.1552B)$ $(1+0.564B^4)\varepsilon_t$

-the **regular** polynomial **AR(5)** is : $\varphi(B)= 1+0.4022B+0.258B^2+0.2217B^3+0.2951B^4 +0.2955B^5$
-the **regular** polynomial **MA(1)** is : $\theta(B)= 1+0.1552B$
-the **seasonal** polynomial **AR(5)** is : $\phi(B)= (1+0.139B+0.2257^2)^4$
-the **seasonal** polynomial **MA(1)** is : $\Theta(B)= (1+0.564B^4)$

In reference to this model, we conclude that a single observation on a weekly basis depends on the number of Syrian refugee families arriving in south Lebanon during the 5 past months (AR(5)), as well as on 2 whole seasons, that is to say, 8 past weeks (2 months); seasonalAR model is of order 2. We shall also consider the white noise of a past week (MA(1)) and of a past season (4 weeks=month); SMA(1).

In order to complete the analysis, we carried out a study on the estimated errors (or residuals) of the model SARIMA(5,1,1)(2,1,1)$_4$

a-Graph of residuals
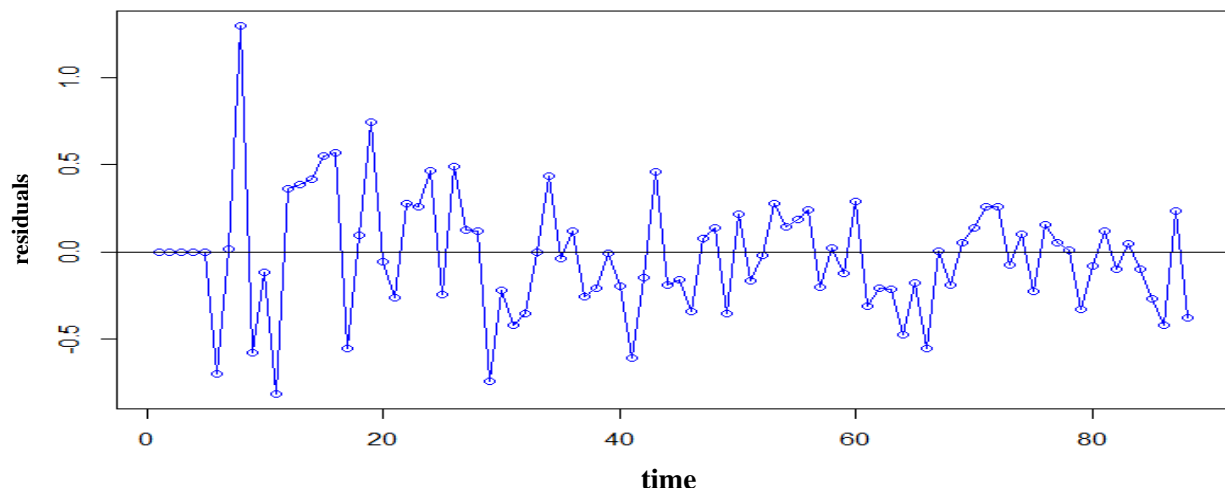
The graph above represents the residuals of the model.

b-Normality of residuals

Normal Q-Q Plot
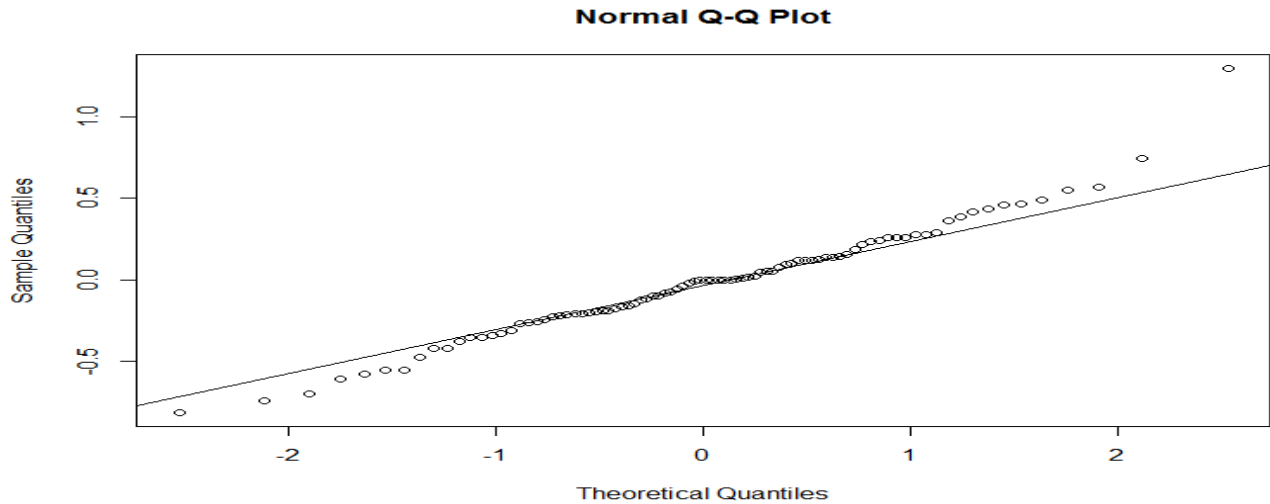
The graph of the normality shows that almost all the residuals fall on the right of the regression line and therefore, the normality is verified.

c-Shapiro-Wilk test

To verify the normality of the residuals, we used the Shapiro-Wilk test.

Shapiro-Wilk	W	p-value
Residuals of the model	0.9745	0.07934

W=0.97~1, thus the residuals are normally distributed with 97%.

d-Autocorrelation of residuals

We want to test the null hypothesis H_0 against the alternative hypothesis H_1:

H_0: $\rho=0$ are independent

H_1: $\rho \neq 0$ are not independent

Alpha risk α = 5%

Ljung Box	X^2	dof	p-value
Residuals of the model « nb of Syrian refugee families »	15.6268	22	0.834

P=0.834>5% thus H_0 is not rejected, and consequently, the residuals are independent and said to be Gaussian white noise.

In other words, the residuals no longer contain information.

e- The ACF of residuals

Residuals of the series
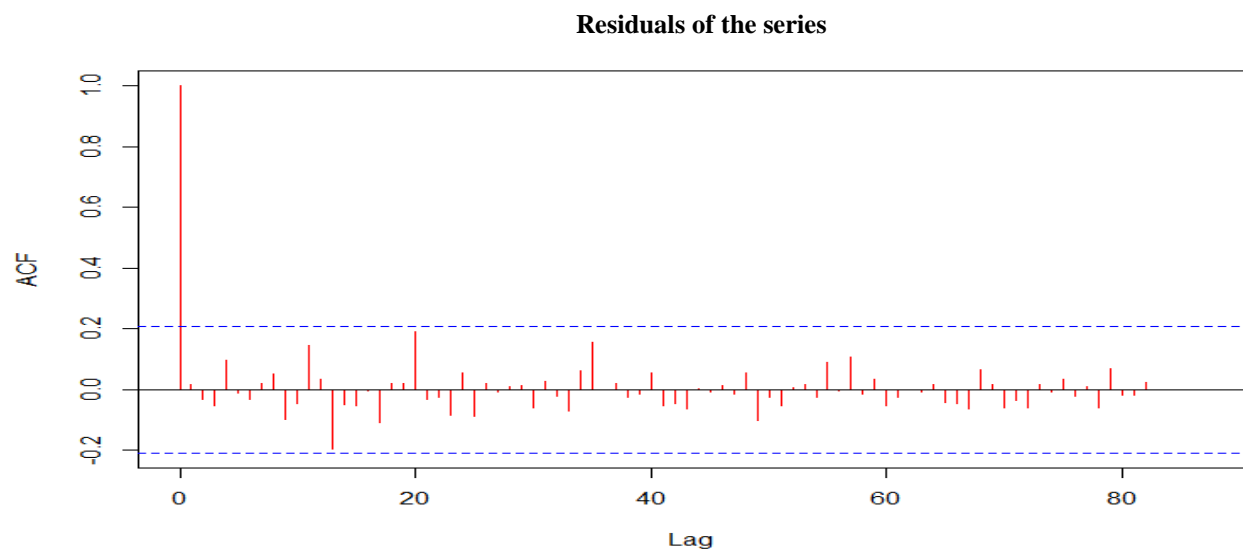
The ACF of the residuals fall between the two bounds, thus, within the confidence interval.

f- Les PACF des résidus

Residuals of the series

The PACF of the residuals fall also between the two bounds, thus within the confidence interval. The residuals of the model are independent and are considered as Gaussian white noise (they are normally distributed); the ACF and the PACF fall within the interval [-0.2 ; 0,2]. In consequence, the proposed model **SARIMA (5,1,1)(2,1,1)** is accepted.

4.4   Retrospective forecast.

In order to verify the trends generated by our SARIMA model, we compared the values obtained from the model with the values collected during four months (16 observations) for the period that r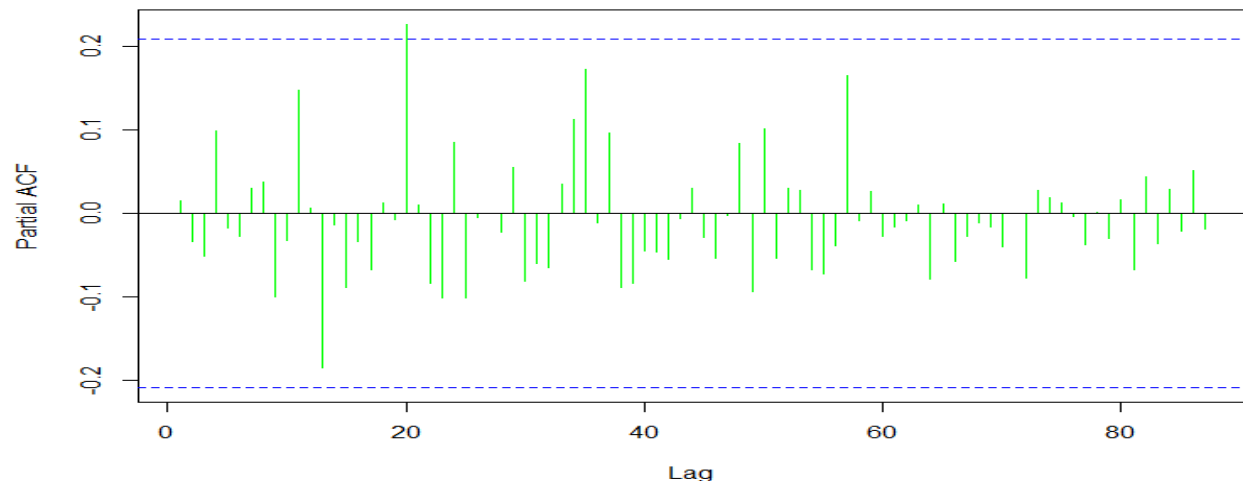ange from September 2013 until the last week of Decembre 2013. The following table represents the **16** observations (**4 months**) related to the number of Syrian refugee families arriving in South Lebanon, which are compared to the values generated by the proposed **SARIMA (5,1,1)(2,1,1)$_4$** model, having the same variable.

#values	month	date	Observed values	Log (observed values)	Expected values	EXP(expected values)
1		week1-Sep 2013	256	5,5451774	5,518526	249
2	September	week2-Sep 2013	273	5,6094718	5,579918	265
3	2013	week3-Sep 2013	204	5,31812	5,356208	212
4		week4-Sep 2013	302	5,710427	5,2829	197

5		week1-Oct 2013	296	5,6903595	5,446935	232
6	October	week2-Oct 2013	286	5,6559918	5,223372	186
7	2013	week3-Oct 2013	193	5,2626902	5,417376	225
8		week4-Oct 2013	252	5,5294291	5,443411	231
9		week1-Nov 2013	283	5,6454469	5,606877	272
10	November	week2-Nov 2013	239	5,4764636	5,584717	266
11	2013	week3-Nov 2013	261	5,5645204	5,722465	306
12		week4-Nov 2013	286	5,6559918	5,966723	390
13		week1-Dec 2013	216	5,3752784	5,726054	307
14	December	week2-Dec 2013	156	5,049856	5,787405	326
15	2013	week3-Dec 2013	243	5,4930614	5,563689	261
16		week4-Dec 2013	179	5,1873858	5,490381	242

a. Comparative graph showing the observed values and the expected values of the number of passengers arriving in Lebanon
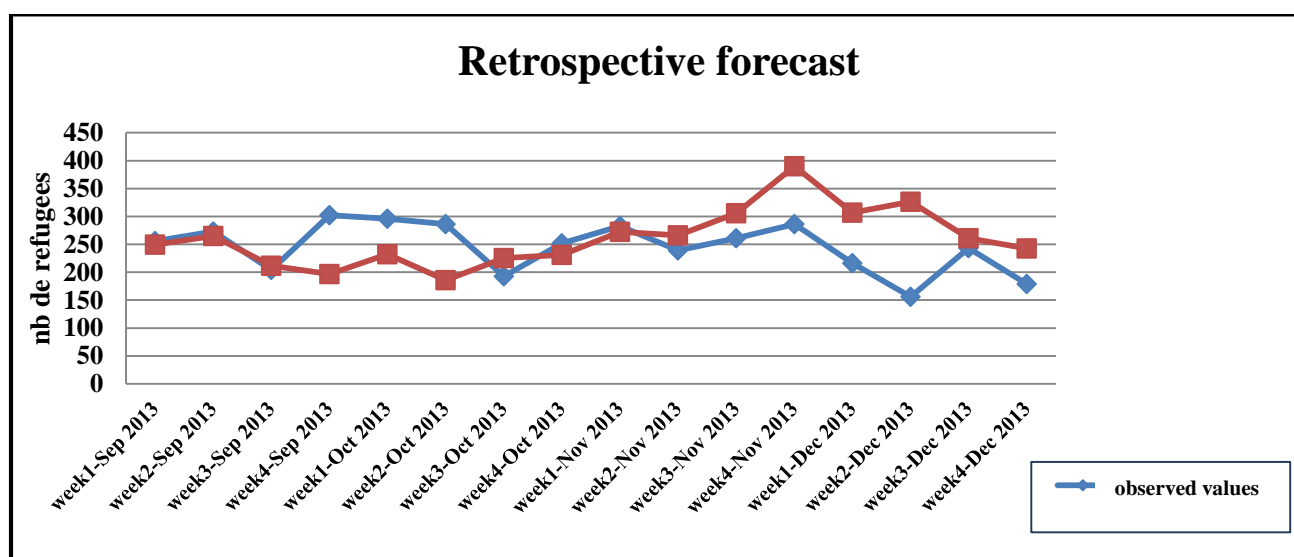
In reference to the graph and the comparative table, we notice that the actual values and the expected values of the number of Syrian arefugee families arriving in South Lebanon are very close and only differ during the months of November and December 2013.

b. Forecast error- MAPE

in order to make sure of the accuracy of the model, we measure the forecast error, MAPE (MeanAbsolutePercentageError) which is defined by the following formula:

$$MAPE = \frac{\sum_{h=1}^{n} APE_h}{16} x100 = \textbf{3.715\% = 0.037}$$

The percentage of the error is very low, thus, the forecast is accurate and the model is considered as a representative of the time series data.

c. Prospective forecast.

The two following tables represent the forecasts of the proposed **SARIMA (5,1,1)(2,1,1)₄** model of the number of Syrian refugee families arriving in South Lebanon , week by week, for the period ranging from January 2013 until December 2015.

	Time	week1-Jan 2014	week2-Jan 2014	week3-Jan 2014	week4-Jan 2014
	nb_refugees	221	207	197	200
	Time	week1-Feb 2014	week2-Feb 2014	week3-Feb 2014	week4-Feb 2014
	nb_refugees	231	187	188	212
	Time	week1-March 2014	week2-March 2014	week3-March 2014	week4-March 2014
	nb_refugees	210	174	194	192
Year 2014	Time	week1-April 2014	week2-April 2014	week3-April 2014	week4-April 2014
	nb_refugees	198	170	182	183
	Time	week1-May 2014	week2-May 2014	week3-May2014	week4-May 2014
	nb_refugees	195	164	173	178
	Time	week1-June 2014	week2-June 2014	week3-June 2014	week4-June 2014
	nb_refugees	187	157	168	171
	Time	week1-July 2014	week2-July 2014	week3-July 2014	week4-July 2014

nb_refugees	178	151	161	164
Time	week1-August 2014	week2-August 2014	week3-August 2014	week4-August 2014
nb_refugees	172	145	155	158
Time	week1-Sep 2014	week2-Sep 2014	week3-Sep 2014	week4-Sep 2014
nb_refugees	165	139	149	152
Time	week1-Oct 2014	week2-Oct 2014	week3-Oct 2014	week4-Oct 2014
nb_refugees	159	134	143	146
Time	week1-Nov 2014	week2-Nov 2014	week3-Nov 2014	week4-Nov 2014
nb_refugees	152	129	137	140
Time	week1-Dec 2014	week2-Dec 2014	week3-Dec 2014	week4-Dec 2014
nb_refugees	146	124	132	134

Time	week1-Jan 2015	week2-Jan 2015	week3-Jan 2015	week4-Jan 2015
nb_refugees	141	119	127	129
Time	week1-Feb 2015	week2-Feb 2015	week3-Feb 2015	week4-Feb 2015
nb_refugees	135	114	122	124
Time	week1-March 2015	week2-March 2015	week3-March 2015	week4-March 2015
nb_refugees	130	110	117	119
Time	week1-April 2015	week2-April 2015	week3-April 2015	week4-April 2015
nb_refugees	125	105	112	115
Time	week1-May 2015	week2-May2015	week3-May 2015	week4-May 2015
nb_refugees	120	101	108	110
Time	week1-June 2015	week2-June 2015	week3-June 2015	week4-June 2015
nb_refugees	115	97	104	106
Time	week1-July 2015	week2-July 2015	week3-July 2015	week4-July 2015
nb_refugees	111	93	100	102

Year 2015

Time	week1-August 2015	week2-August 2015	week3-August 2015	week4-August 2015
nb_refugees	106	90	96	98
Time	week1-Sep 2015	week2-Sep 2015	week3-Sep 2015	week4-Sep 2015
nb_refugees	102	86	92	94
Time	week1-Oct 2015	week2-Oct 2015	week3-Oct 2015	week4-Oct 2015
nb_refugees	98	83	88	90
Time	week1-Nov 2015	week2-Nov 2015	week3-Nov 2015	week4-Nov 2015
nb_refugees	94	80	85	87
Time	week1-Dec 2015	week2-Dec 2015	week3-Dec 2015	week4-Dec 2015
nb_refugees	91	76	82	83

The values obtained seem logic. We notice the same results of the observations conducted before which shows that the number of Syrian refugee families arriving in South Lebanon increasing in the first week of each month and decreasing once again in the last week of the same month.

d. Graph showing the proposed model and the expected values.
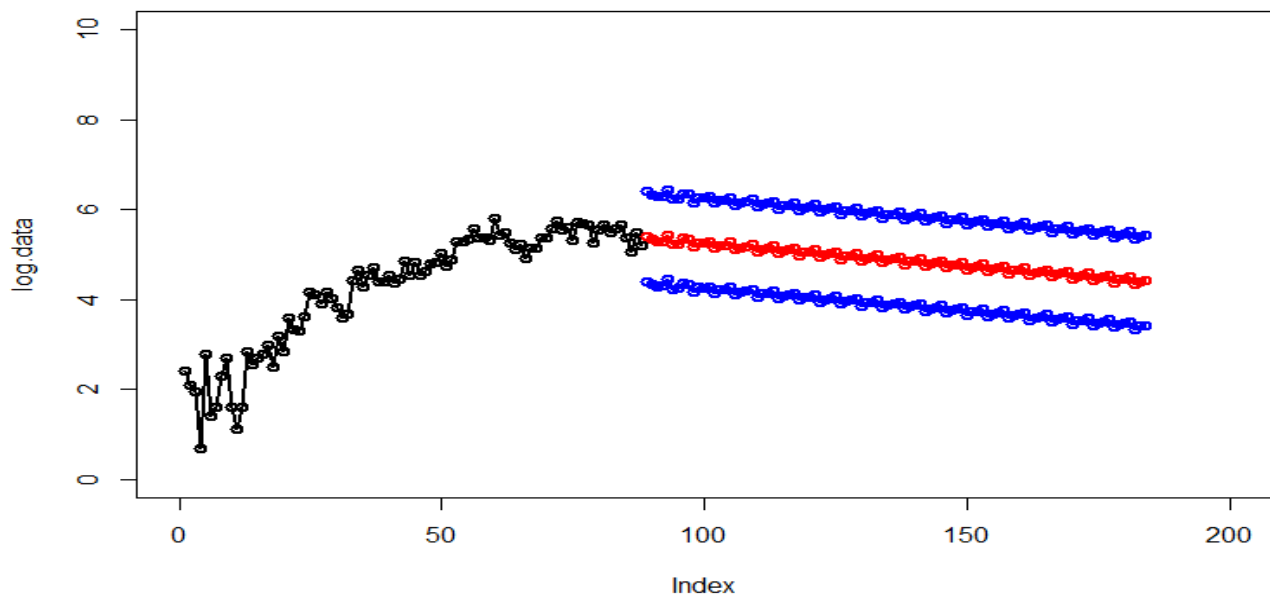
The graph shows the observed values during the 88 past weeks (1 year and 10 months) and the values predicted by the model for the next 96 weeks (years 2014 et 2015). The red curve represents the expected values. The two blue curves represent the upper and lower bounds of the confidence interval of these expected values.

We notice that the curve of the expected values follows the same shape of the observed values. In reference to the proposed **SARIMA $(4,1,3)(1,1,1)_{12}$** model, each expected value estimated for the following week depends on the observed values of the past 5 weeks (regular AR(5)) and of the 2 past seasons (seasonal AR(2)) without ignoring the residuals of a past week (regular MA(1)) and of a past month (seasonal MA(1)).

Yet, regarding the years 2014 and 2015, we observe a curve representing the values of the number of Syrian refugee families arriving in South Lebanon that are similar to the values of the past year 2013. However, the number of families is exhibiting a slight progressive decrease over time, which is clearly displayed in the representative graph of the model. This trend reflects the evolution of the number of Syrian refugee families arriving in South Lebanon, which is influenced by the developments of the Syrian crisis that will lead to a stagnant situation after a period of increase related to the beginning of the Syrian crisis.

Conclusion

In the context of the Syrian crisis, we have just presented the analysis of the census of Syrian refugees in South Lebanon which was conducted by SHEILD organization.

In the first chapter, we have presented the process of data cleaning in order to extract the elements that describe the conditions of the refugees following their forced displacement in southern Lebanon. The results obtained through the collected data gave a clear visibility regarding their conditions, their difficulties and their distribution among the different districts of South Lebanon.

The second chapter is dedicted for the bivariate statistical analysis and deals with the relations that could be possibly found between the different parameters of the census conducted on the Syrian refugees in southern Lebanon. Based on the two statistical tests that are Chi-squared test which is best suited for qualitative variables and ANOVA test which is adapted to suit both qualitative and quantitative variables, the results of this analysis have been discussed.

The third chapter is dedicated for the individual analysis which is based on the personal information linked to each member of the Syrian refugee families in southern Lebanon, from December 2012 until December 2013.

According to these indicators, we obtained descriptive results that helped us understand the social situation of the Syrian families and count the most vulnerable cases at risk that require specific treatments.

The last chapter discusses the prediction of the situation of Syrian refugees and their possible evolution in southern Lebanon. Therefore, a particular statistical data analysis that is based on the observations that are measured at different points in time, has been conducted. The analysis which is called time series allowed us to create a model to predict the evolution of Syrian refugees in South Lebanon. The results obtained by this model as well as its validation were all presented.

Annex Chapter 1

	Governorates
South	4811
Nabatiyeh	6269
Missing data	16

	Districts
Bein Jbeil	1426
Nabatieh	3033
Marjaayoun	1810
Tyr	4811
Missing data	16

Nationality of the newly-arrived families

13			Lebanese
1			Jordanian
74			Palestinian
20			Palestinian-Syrian
3			
2			
10983			Syrian
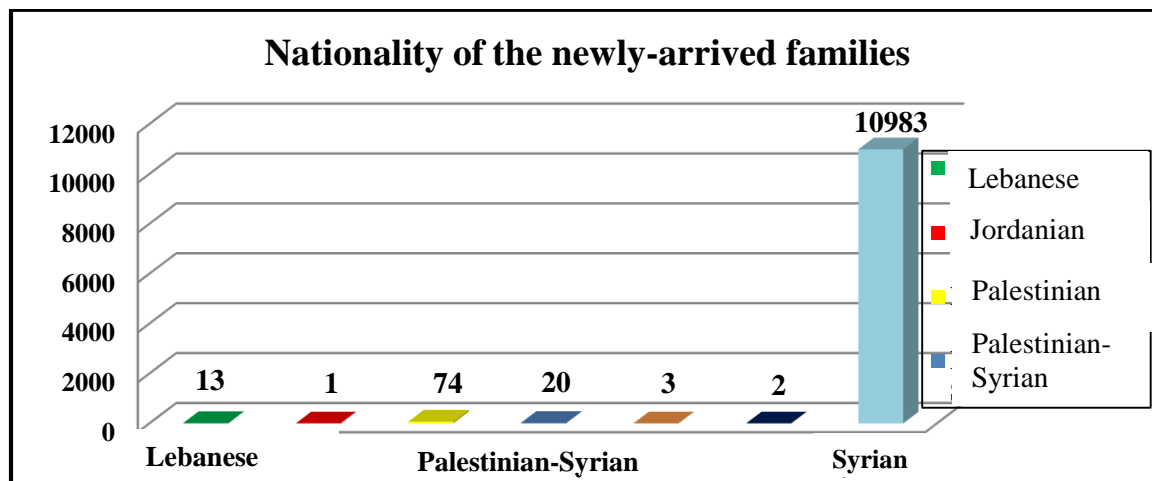
	Passage to Lebanon
official	10894
unofficial	45
Missing data	157
	Official passage
Airport	25
Abboudiyeh	886
Masnaa	9967
Daboussiyeh	1
Missing data	15

	Unofficial passage
Al Bekaa	25
Jabal el Cheikh	2
Wadi Khaled	12
Missing data	6

The reasons of irregular passage
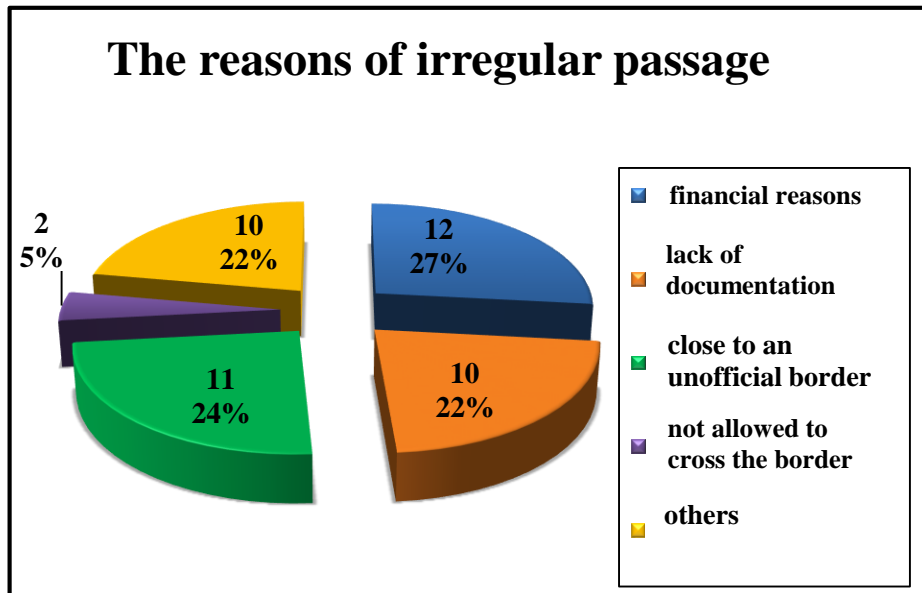
	displacement
direct	9748
indirect	1191
Missing data	157

	The host
friend	213
Relative	1515
stranger	529
Missing data	3

	Nationality of the host
Lebanese	289
Palestinian refugee	39
Palestinian-Syrian refugee	4
Syrian refugee	1515
Other	23
No answer	16
Missing data	374

Annex Chapter 2

Relation between the Syrian Governorates and the border crossing points

Relation between the Syrian Governorates and the border crossing points

Border crossing points

- Aéroport
- Al Abboudiyye
- Al Bekaa
- Al Masnaa
- Daboussiyya
- Jabal el Cheikh
- Wadi Khaled

Syria_ Governorates

Relation between the Syrian Governorates and the separated children

Separated children

- No
- Yes

Syria_Governorates

Relation between the Syrian Governorates and the reasons why some members stayed in Syria
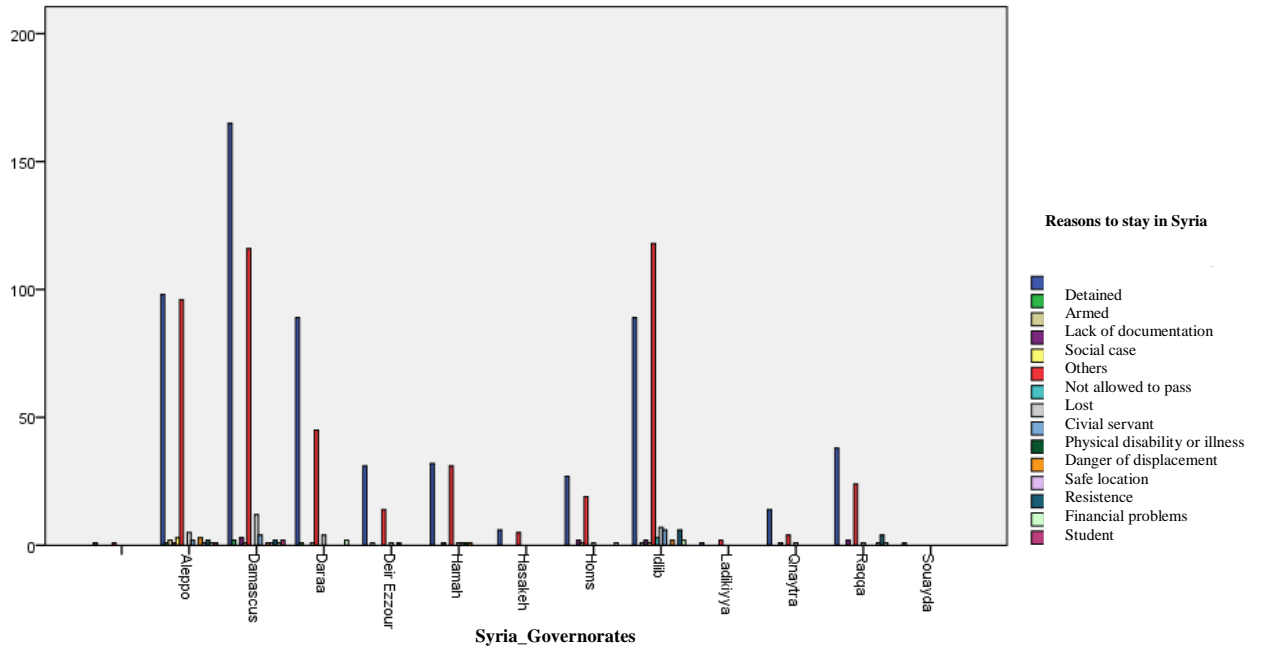
Relation between the Syrian towns and the border crossing points in Lebanon
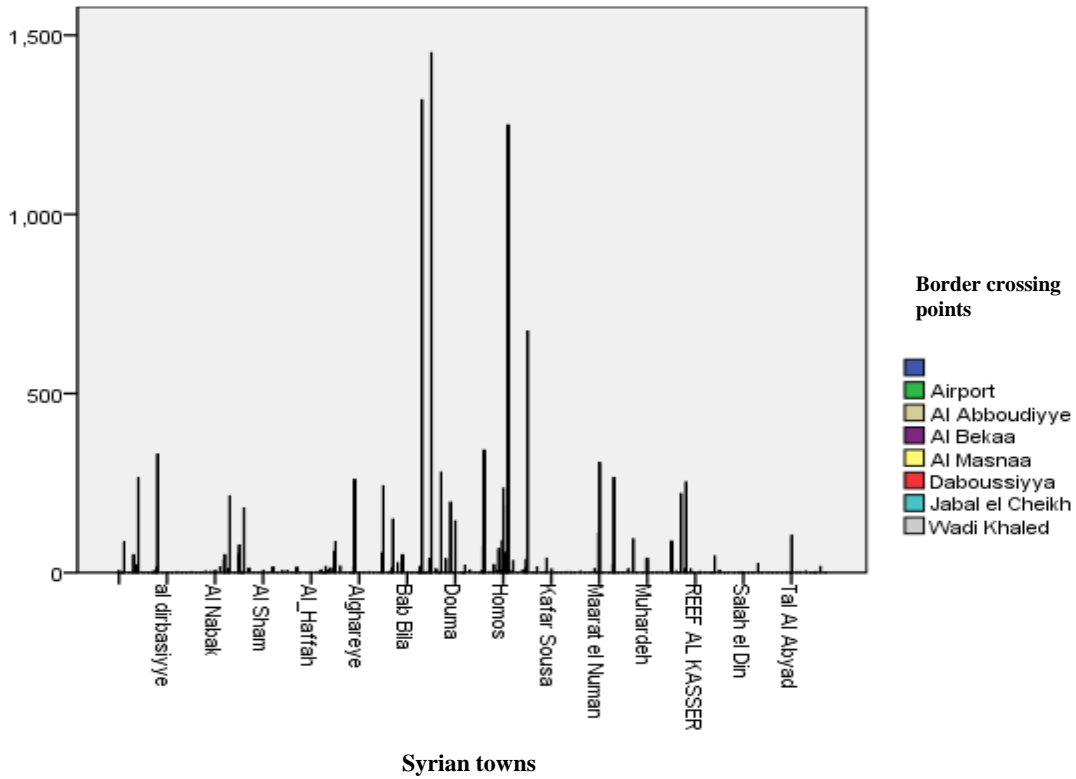
Annex Chapter 3

VulnerabilityCode	VulnerabilityText
CR	Child at risk
DS	Disability
ER	Elder person at risk
FU	Family unity
LP	Specific legal and physical protection needs
PG	Pregnant or lactating
SC	Unaccompanied or separated child
SM	Serious medical condition
SP	Single parent
SV	SGBV
TR	Torture
WR	Woman at risk

VulnerabilityDetailsCode	VulnerabilityDetailsText
-	-
CR-AF	Child associated with armed forces or groups
CR-CC	Child carer
CR-CH	Child-headed household
CR-CL	Child in conflict with the law
CR-CP	Child parent
CR-CS	Child spouse
CR-LO	Child engaged in other forms of child labour
CR-LW	Child engaged in worst forms of child labour
CR-MS	Minor spouse
CR-NE	Child at risk of not attending school
CR-SE	Child with special education needs
CR-TP	Teenage pregnancy
DS-BD	Visual impairment (including blindness)
DS-DF	Hearing Impairment (including deafness)
DS-MM	Mental disability - moderate
DS-MS	Mental disability - severe
DS-PM	Physical disability - moderate
DS-PS	Physical disability - severe
DS-SD	Speech impairment/disability

ER-FR	Older person unable to care for self
ER-MC	Older person with children
ER-NF	Unaccompanied older person
ER-OC	Older person without younger family members
ER-SC	Older person with separated children
ER-UR	Single older person w/out accompy family members
FU-FR	Family reunification required
FU-TR	Tracing required
LP-AF	Formerly associated with armed forces or groups
LP-AN	Violence, abuse or neglect
LP-AP	Alleged perpetrator
LP-BN	Unmet basic needs
LP-CR	Criminal record
LP-DA	Detained/held in country of asylum
LP-DN	Currently detained/held in country of asylum
LP-DO	Detained/held in country of origin
LP-DP	Formerly detained/held in country of asylum
LP-DT	Detained/held elsewhere
LP-ES	Individual excluded or marginalised from society
LP-FR	Family reunion required
LP-IH	In hiding
LP-LS	Lack of durable solutions prospects
LP-MD	Multiple displacements
LP-MM	Mixed marriage
LP-MS	Marginalized from society or community
LP-NA	No access to services
LP-ND	No legal documentation
LP-PV	Durable solutions-related vulnerability
LP-RD	At risk of removal
LP-RP	At risk due to profile
LP-RR	At risk of refoulement
LP-ST	Security threat to UNHCR/partner staff or others
LP-TA	Survivor of torture/violence in asylum
LP-TC	Tracing required
LP-TD	At risk of deportation
LP-TO	Survivor of torture/violence in home country

LP-TR	At risk of refoulement
LP-UP	Urgent need of physical protection
LP-VA	Victim of domestic violence/SGBV in asylum
LP-VF	Victim of domestic violence/SGBV during flight
LP-VO	Victim of domestic violence/SGBV in home country
LP-VP	Alleged perpetrator of violence
LP-WP	Absence of witness protection
PG-HR	High risk pregnancy
PG-LC	Lactating
SC-CH	Child headed household
SC-FC	Child in foster care
SC-IC	Child in institutional care
SC-NC	Neglected child with extended family
SC-SC	Separated child
SC-UC	Unaccompanied child
SC-UF	Child in foster care
SC-UM	Unaccompanied minor
SM-AD	Addiction
SM-CC	Critical medical
SM-CI	Chronic illness
SM-DP	Difficult pregnancy
SM-MI	Mental illness
SM-MN	Malnutrition
SM-OT	Other medical condition
SP-CG	Single HR - caregiver
SP-GP	Single HR - grandparent
SP-PT	Single HR - parent
SV-FM	Threat of forced marriage
SV-GM	Female genital mutilation
SV-HK	Threat of honour killing/violence
SV-HP	Harmful traditional practices
SV-SS	Survival sex
SV-VA	Exposure to SGBV
SV-VF	Exposure to SGBV during flight
SV-VO	Exposure to SGBV in country of origin
TR-HO	Forced to egregious acts
TR-PI	Psych. and/or physical impairment due to torture
TR-WV	Witness of violence to other

WR-GM	Threat of female genital mutilation
WR-HR	Single female household representative
WR-LC	Lactating
WR-PY	In polygamous marriage or relationship
WR-SF	Single woman
WR-UW	Woman unaccompanied by adult male family member
WR-WF	Woman associated with fighting forces (WAFF)
WR-WR	Woman at risk

Categories of vulnerabilities	Codes	gender					
		male	% male	female	% female	Total	% Total
Children at risk	CR	4205	34.79	4009	33.17	8214	67.96
Disability	DS	375	3.10	266	2.20	641	5.30
Elder person at risk	ER	13	0.11	31	0.26	44	0.36
Family unity	FU	56	0.46	37	0.31	93	0.77
Special legal and physical protection needs	LP	15	0.12	15	0.12	30	0.25
Pregnant or lactating	PG	0	0.00	110	0.91	110	0.91
Separated or unaccompanied children	SC	29	0.24	36	0.30	65	0.54
Serious medical conditions	SM	861	7.12	1040	8.60	1901	15.73
Single parent	SP	6	0.05	118	0.98	124	1.03
Sexual violence	SV	0	0.00	2	0.02	2	0.02
Torture	TR						
Woman at risk	WR	0	0.00	862	7.13	862	7.13
Total		5560	46.00	6526	54.00	12086	100

categories of vulnerabilities	Children at risk	Disability	Elder person at risk	Family unity	Special physical and legal protection	Pregnant or lactating	Separated or unaccompanied children	Serious medical condition	Single parent	Sexual violence	Woman at risk	Total
Codes	CR	DS	ER	FU	LP	PG	SC	SM	SP	SV	WR	
Damas	1669	139	12	25	4	14	16	511	52	2	175	2619
Homs	365	33	4	3	11	4	3	96	6	0	40	565
Hamah	456	44	5	1	0	13	1	149	9	0	50	728
Tartous	4	0	0	0	0	1	0	0	0	0	0	5
Ladikiye	5	0	0	0	0	0	0	3	0	0	0	8
Idlib	2449	190	8	18	9	31	16	449	22	0	230	3422
Aleppo	1370	123	5	29	2	13	0	361	20	0	128	2051
Raqqa	349	21	1	1	0	8	0	84	1	0	34	499
DeirEzzour	247	14	1	1	2	4	4	44	3	0	35	355
Hasakeh	53	4	2	1	0	3	0	17	2	0	4	86
Souayda	9	0	0	1	0	0	0	1	0	0	11	22
Daraa	1023	69	6	12	2	19	21	161	9	0	137	1459
Qnaytra	214	4	0	0	0	0	4	21	0	0	18	261
Valeursman quantes	1	0	0	1	0	0	0	4	0	0	0	6
total	8214	641	44	93	30	110	65	1901	124	2	862	12086

(Syrian Governorates)