Bawabat Makkah and Its implications in Improving the Urban Environment for the City of Makkah

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Abstract— This research study is a discussion of the idea of building a new town in the form of satellite town around the city of Makkah, as an alternative to the continuous suburban growth of the city over ever wider areas. The subject has become of great practical importance, and is beginning to engage the attention of town-planners, the municipal and the province authorities throughout the western region of the Kingdom of Saudi Arabia. A large part of the study is occupied by an account of the implications of Bawabat Makkah (Makkah Gateway), the satellite town that is now in the process of being built in the western region of Makkah. There are actually four satellite cities within Makkah. They are the North Makkah-Medinah road, Sharaia road, Al Hada road and the West Makkah-Jeddah road. The center of the new town will be designed in detail to provide facilities of city standards. Not only will there be provision for shopping, entertainment and office accommodation, but these facilities will be set apart from heavy traffic and provided with ample parking space. It is expected that government offices, school, hospital and cultural institutions will be on the scale provided in a provincial city like Makkah, and that the new town will be a true center of a vigorous district with an ultimate population of over thousands. This research examines the emerging trends in urban patterns in the City of Makkah with main emphasis on the role of Bawabat Makkah (Makkah Gateway) as a satellite city in the patterns of growth of the City of Makkah and the huge crowd faced by the city within the Holy place. First, outlining the historical background of the city and then examining different patterns of the population and the change that occurred within the last few decades and the future projection that goes to 2020 and beyond. As the data on patterns of change of population suggests that there has indeed been a considerable tendency towards a satellite city in Makkah region, the research study involves a comprehensive review of secondary source material to establish the theoretical framework for the research. It also explains the social pattern of the City of Makkah by social area analysis using variables, which are drawn from social aspects of the city. The model used in the research study depends not only on statistical analysis but also on interpretation of local conditions. A concluding section draws out the most important implications suggested by the research study.

Index Terms— Urban Environment, Satellite City, City Planning, Supply Gap Analysis, Development Plan, Health Care Infrastructure, Growth Forecasts.

1. Introduction

IN existing large metropolitan areas, or in metropolitan areas where the control of overall patterns of growth is difficult or impossible for whatever reason, it may be possible to encourage the development of satellite cities within the region. These cities can potentially achieve many of the goals of more ambitious metropolitan structure plans while avoiding the need to shape overall patterns of growth. The concentration of high level services within these nodal cities would reduce the necessity for long trips to the city center and would lead to more sustainable patterns of metropolitan development over the longer term by facilitating the use of all means of transportation. Satellite cities can be encouraged by primarily positive measures such as the provision of transport infrastructure, public facilities and zoning bonuses rather than requiring strong restrictive regulatory measures such as building prohibitions in the nodes. Such reasoning has prompted a big range of the role of polycentric development in a number of metropolitan regions in many places over the world.

Makkah is an important example of a city that had developed and is still developing a strong set of metropolitan sub centers of which Bawabat Makkah (Makkah Gateway) on the western region of the Holy City of Makkah might be regarded as a promising development that will absorb the growth in the City of Makkah Metropolitan Region. The purpose of this research study is to interpret the urban patterns of the City of Makkah and to show the role Bawabat Makkah will play in sharing its help by resolving the issues related to the increased physical expansion and the rising number of visitors to the Holy City of Makkah.

Socioeconomic factors, housing characteristics, land use pattern and other classifications will be used as key variables to study the urban patterns of the City of Makkah. Urban patterns occur because of repetition of these elements. The pattern of the City of Makkah will be studied at different hierarchical spatial levels: regional (node / township) and sub-regional (sector / neighborhood).

2. The Problem

The study of the physical form and structure of cities is the study of urban morphology. Why is such a study significant? The urban form of the city influences behavioral, economic and social processes within it (Vance, 1990). Thus, the study of human settlements has an encompassing view of all the activities it supports.

Over the years the number of worshippers visiting the Holy Mosque in Makkah has been increasing successively, especially during the holy month of Ramadan and Hajj season. This increase in number has caused congestion and discomfort for the worshippers particularly on peak days. This research study here involves the search for urban patterns of the City of Makkah and mainly the role Bawabat Makkah plays in supporting and helping to plan and resolve the physical expansion and the huge crowd of visitors coming to Makkah every year.

The literature review shows that many articles and some specific studies on the City of Makkah have been previously documented. Therefore, this research study will augment existing knowledge about social configurations of planned urban development in the Saudi Arabian regions.

A policy emphasizing a uniform distribution of the population is the ideological orientation of the government. An interpretation of the emerging social patterns reveals something of the social character of the city. The patterns suggest not only the outcome of the policy, but also the variables that influence this pattern. The urban patterns also serve as a framework for further research. Thus, the basic research has many applications in long range planning in the City of Makkah and other parts of the Kingdom.

3. Literature Review

Hajj refers to the annual pilgrimage that Muslims make to Makkah with the intention of performing certain religious rites in accordance with the method prescribed by the Prophet Muhammad (Peace Be upon Him). It is the fifth pillar of Islam – is a religious journey to the House of God (Allah in Arabic) in Makkah. This is in response to the call of Prophet Abraham when Allah commanded him to call mankind to perform Hajj. It is the largest gathering of Muslims as about three million or more Muslims from all over the world meet to worship Allah. All barriers including language, color, class and race are broken. It is a demonstration of the solidarity of the worldwide Muslims, and their submission to Allah.

Pilgrims join processions of millions of people, who simultaneously converge to Makkah for the week of the Hajj, and perform a series of rituals: Each person walks counter-clockwise seven times about the Ka'abah, the cube-shaped building which is the Kiblah, Muslim's direction of prayers. Walks or runs back and forth between the hills of Safa and Marwah, drinks from the Zamzam Well, goes to the plains of Mount 'Arafah, and throws stones in a ritual Stoning of the Devil. The pilgrims then cut some of their hair, or for some males, their heads shaved, perform a ritual of animal sacrifice, and celebrate 'Eid Al Adha – Performing animal sacrifices, symbolizing Allah's Mercy on Ibrahim a.s. and replacing His Son with a ram.

According to the daily Arab News dated October 17, 2010, the mayor of the city of Makkah said that around 21,650 people were mobilized to implement Makkah municipality's plans for Hajj 2010 and make the annual event a huge success. Various fields of the plan include over 7,000 cleaners working round the clock in Mina, Muzdalifah and Arafat, Some 200 electric compressors used to dispose of garbage, university students and health institutes were hired to work as temporary health monitors in addition to central units to deal with emergency situations such as rain, flash floods, rockslides, fires and the like. The municipality also had some 1,310 rubbish bins with a total capacity to collect more than 1,300 tons of garbage at the holy sites during the Hajj. The Hajj plan also includes a string of measures to ensure a healthy environment during the annual pilgrimage. The monitoring and supervision of markets, stores, fast-food outlets and restaurants were also beefed up. There are about 2,300 commercial shops and stores for foodstuffs in Makkah and around 2,229 temporary stores were set up in the city during the pilgrimage. This is in addition to some 643

temporary shops, stalls, bakeries and barber shops that were set up in the holy sites.

"The officials concerned will monitor all these places and ensure that they are meeting the required health and safety standards. Samples of all foodstuffs will be tested at the designated laboratories, and the expired foodstuffs will be seized," he said.

The City of Makkah faces every year a drastic and continuous increase in population due to the increased number of visitors to the Holy Mosque. Therefore, this results in a huge increase in demand for land, roads for the traffic of vehicles and pedestrians, accommodation, transportation, and many other necessary services. In this frame, the government of Saudi Arabia is and will continue to implement, expand and execute several projects to meet such demand. The idea of satellite city is therefore encouraged to resolve such issues and respond to the demand in order to meet the needs of the metropolitan area which is in this case the City of Makkah.

A satellite city or a satellite town is defined as self-contained and limited in size, built in the vicinity of a large town or city to house and employ those who would otherwise create a demand for expansion of the existing settlement, but dependent on the parent-city to a certain extent for population and major services. Satellite towns were influenced by Ebenezer Howard's theories. A distinction is also to be made between a *consumer-satellite* (essentially a dormitory suburb with few facilities) and a *production-satellite* (with capacity for commercial, industrial, and other production distinct from that of the parent town, so a New Town).

The term satellite has now come to mean the same as the garden city idea. A garden city is a town designed for healthy living and industry; of a size that makes possible a full measure of social life, but not larger; surrounded by a rural belt; the whole of the land being in public ownership or held in trust for the community.

In brief, a satellite city or a satellite town is a concept in urban planning that refers essentially to smaller metropolitan areas which are located somewhat near to, but are mostly independent of, larger metropolitan areas.

The following are characteristics of satellite cities:

- predate that metropolis' suburban expansion,

- are at least partially independent from that metropolis economically and socially,

- are physically separated from the metropolis by rural territory or by a major geographic barrier such as a large river; satellite cities should have their own independent urbanized area, or equivalent,

- have their own bedroom communities,

- have a traditional downtown surrounded by traditional "inner city" neighborhoods, and

- may or may not be counted as part of the large metropolis' combined statistical area.

The objective of a satellite city is to provide activities and services to new suburbs away from city center, creating new job opportunities in different sectors of the city, reducing the rate of traffic trips to the city center, improving the urban environment in general and promoting the participation of public and private sectors in the process of urban development. The western region of the City of Makkah identified in this study as Bawabat Makkah (Makkah Gateway) is in the

process of being built to improve the process of urban environment for the City of Makkah and help reduce all types of crowds within the Holy place. Such project will also provide commercial and residential accommodations to the City of Makkah from the western region to the principal road to Jeddah.

The government of Saudi Arabia has developed a five year plan, which includes its strategic vision for the region of Makkah, and provided necessary funds and resources. The strategy adopted focuses on human and urban development. The Makkah area development and advancement project is launched on the basis of three references: the system of the provinces, the five-year plans of the government, and the regional planning and development for the province. Therefore, it was necessary to put work strategy and implementation mechanisms that achieve the objectives of these references. The Makkah strategy also depends on a parallel and balanced sustainable development between the human being and place, on the one hand, and all the municipalities, cities and towns, on the other.

Nowadays, visitors enter Makkah cruising down a barren desert highway from Jeddah. The journeys begin at different points of origin, but as each journey gets closer to the Haram and Holy Kaaba, it starts to take on a similar pattern of movement and visual experience – the transition in Jeddah onto local ground transportation to travel along highways and soon-to-be rail lines over mountains, through valleys, across the desert until the gateway.

Fast forward to 2012, the gateway will be in fact marked by a new community – a beautiful clustering of low and medium- rise developments filling the valley with exciting activities and resources, planned to create an affordable and functional edge city which can provide 21st century services for residents and visitors alike within the holy region. A city that embraces and is built around a national park, a city that serves as a pressure valve for Makkah, a place for supply, organization and delivery of the materials and services demanded within the constrained and dense fabric of Makkah. This is the vision for Makkah Gateway Community. With a combination of high visibility along heavily traveled transportation corridors and a proximity to a site of global religious importance, the Makkah Gateway Community is envisioned as a critical new piece of the Makkah urban religion, capable of generating a diverse range of development opportunities.

Bawabat Makkah is a visionary new city to be built on the western edge of the Makkah Holy Region along the Jeddah-Makkah Highway. The site for the city covers approximately 83km² of land and will house and estimated population of approximately 690,000 people. Part of the site for the new city was originally envisioned as a national park land reserve. This vision of the city in a park defines the physical context of the new community. The city will include the government district of Makkah region, a CBD, several residential and mixed-use neighborhoods, a regional university, the first spiritual resort in the vicinity of the holy city and a convention center. All connected with a light transit system, a cable car system overlooking the national park.

Bawabat Makkah is a new township around 13 km (8miles) from Al Haram (Grand Mosque of Makkah), and 40 km (25 miles) from Jeddah. It is built around the biggest national park in Saudi Arabia that was granted to the inhabitants of Makkah by the King; at an

estimated preserved and man-made park of 25 km². The different districts and zones are subdivided by green parks and fingers that are interlaced to build up a green environment throughout the project area.

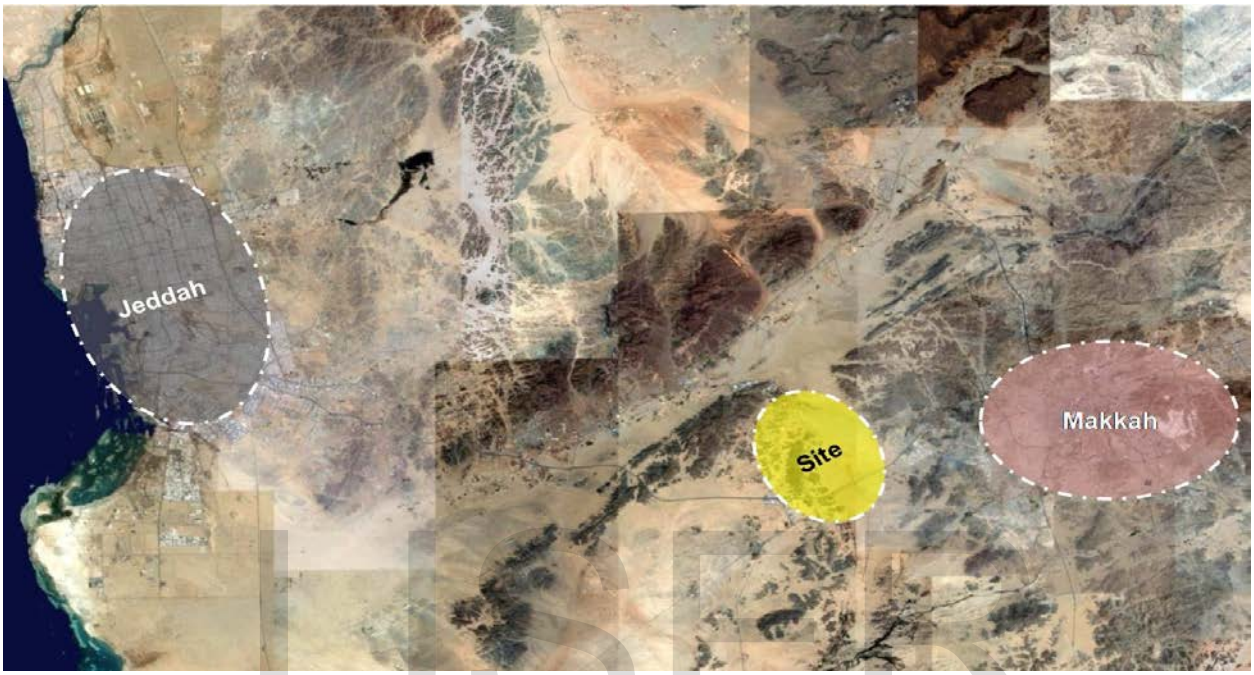


Figure A: Location Map

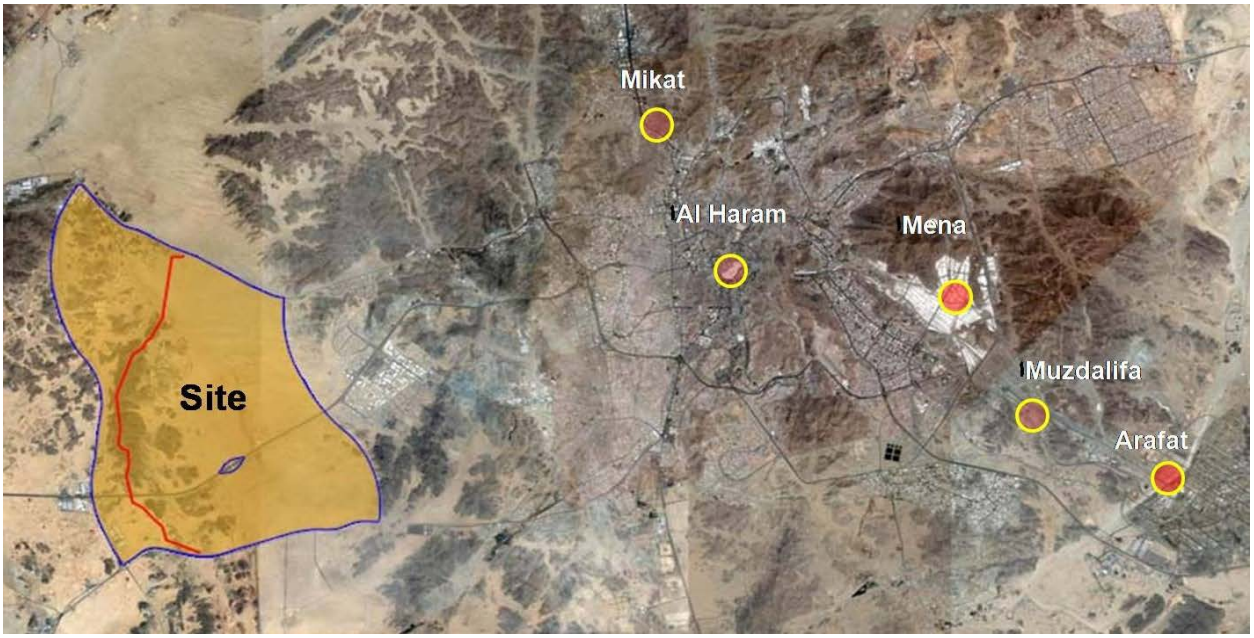


Figure B: Location Site

Figure C: The Project Site

The project is a new city that depicts Makkah in the future; it has the new government district, CBD, university and research center, exhibition center, Prince Sultan Cultural Oasis, King Abdullah Dialogue Centre, craft and heritage village, in addition to mixed-use residential and commercial developments. The project is expected to have the latest technology for infra-structure and utilities, as well as full-fledged services and public amenities, such as schools, mosques and community centers.

This project will have a 20-year span to complete all phases and construction. It is expected to become a role model for the development of new communities in the suburbs of the main cities and become a major economic driver for mainly inhabitants. It will also attract investments from all over the Islamic world as a commercial hub due to its strategic location.

For hajjis and Omrah performers, the Makkah Gateway community might just be passing through point as they continue into Makkah towards Al Haram, but with its magnificent design and strategic location, along it provides, it will definitely be an unforgettable vision.

As they proceed forward in their journey they will arrive at another impressive and glorious sight that will dazzle them.

The major benefits of the western region in Bawabat Makkah can be summarized in the following points:

- Removing bottlenecks in the city in general and in the central area around Haram in particular and to find alternative residential spaces in no time-bound away only few minutes with a reasonable price difference.
- Resolve the problem of slums (random housing problem) around the central region and branching densities of slums in the district western suburbs.
- Reduce the traffic jam in the city and in the central region around Haram and reducing the number of vehicles due to the presence of trains and public transit.
- The provision of improved land and residential units at reasonable prices within Makkah to meet current and future needs expected in 20 years from now.
- The provision of government integrated complex in one place within the Holy city.
- The provision of housing schemes fully serviced.
- Provide a range of residential neighborhoods, at all level of the society with the highest planning and architecture standards.
- The provision of a shopping mall and the offices of the so-called integrated business district serve the whole city.
- The provision of green spaces within residential neighborhoods, in addition to a park in an area of 25 km containing resorts and recreational areas.

4. Research Design

The primary objective of this research study is to determine the urban social pattern of the City of Makkah and the primary interest is the issue of spatial distribution of different kinds of people in Makkah. The research investigates the relationship between the spatial pattern of Makkah and the different urban social patterns discussed above. The analysis looks at the variables at once and at their respective locations in their distribution. The general issue of social areas will be accomplished through social area analysis. The theories put forth by Burgess, Hoyt, and Harris and Ullman will be the theoretical framework for the conceptualization of the social pattern of Makkah.

5. Social Area Analysis

The analysis of social area provides a broad framework for analyzing the social patterns of a city. It was first put forth by Shevky and Williams (1949) in a study of Los Angeles. This analysis classifies census tract data into three main constructs - socioeconomic status, family status and ethnic status. The basic premise of social area analysis is that a city cannot be studied in isolation from the overall society (Shevky and Bell, 1955). The increase in industrialization creates an occupational status system (Timms, 1971). The family as a unit becomes weaker. Better transportation systems increase mobility and lead to a greater sorting of population (Cadwallader, 1985). Under these conditions, immigration of rural population leads to segregation based on language, religion and ethnic background. These factors are taken into consideration in social area analysis.

Cities are complex entities that have many different functions performed by many different people. The pattern of the city may be determined by statistical analysis or by discerning people's mental images of the city. A set of variables describing the social structure of the city can be used in the statistical analysis. These involve population, economic, and housing characteristics. The aim is to identify key combinations of different measures that provide an adequate basis on which to differentiate the sub-areas from one another (King and Golledge, 1978).

Social area analysis shows how family characteristics, economic status and ethnic background produce a certain spatial pattern in the city. The study involves the categorization of a city based on social rank, urbanization and segregation. Earlier, there was considerable criticism about the choice of variables. They were considered to be very narrow and not universally applicable. However, mapping of social area analysis for a large sample of cities showed that socioeconomic status, urbanization index, and ethnicity confirmed the validity of the analysis. These three factors also corresponded to the theoretical models proposed by Burgess, Hoyt and Harris and Ullman. Generally the economic model showed a sectored pattern, the urbanization component showed a concentric ring pattern, and ethnic segregation showed a multiple nuclei arrangement. Although these analyses have been more effective for studying North American cities, studies in Calcutta, Cairo and Helsinki showed some useful generalization. The social area analysis may be done statistically by a factor analysis. It is a device that seeks interrelationships among the set of input variables (Herbert and Thomas, 1990).

Social area analysis based on western thinking cannot be naively applied to the study of urban social patterns in Saudi Arabia. Social structure in the Kingdom is a result of cultural, religious and historic development with both horizontal (kinship, religion) and vertical (occupation, education) dimensions (Hall, 1980). Variables that arise from such cultural determinants need to be used in the factor analysis.

6. Social Variables

Certain variables will be used to operationalize the social area analysis to obtain the urban social pattern. The variables are tabulated below:

Construct	Variable
Socioeconomic status	Profession
	Number of earning members
	Income
	Education
Family status	Demographics
	Women at home
	Family size
	Dwelling size
	Type of house
	Year of occupation
Ethnic status	Religion
	Language

7. Data Collection

The data obtained and used in this research study is available through a feasibility study for Makkah Real Estate Development carried out in April 2010 by Ernst and Young for Sumou Real Estate whose owner is the researcher Dr. Ayedh F. Al-Qahatni. The company is based in Al Khobar, Saudi Arabia which is the developer of Bawabat Makkah project as a satellite city for the City of Makkah. The objective of the feasibility study is to provide assistance to Sumou in performing the market and financial evaluation for the project.

The object of the company will be to build an entirely new and self-dependent town, on a site 13 kilometers from Makkah, as an illustration of the right way to provide for the expansion of the industries and population of a great city. The site has been carefully chosen so as to minimize the obstacles in the way of giving a new turn to the development of Makkah. The aim is to create a self-contained town, with a vigorous life of its own independent of Makkah. In accordance with those principles, the freehold of the estate will be retained in the ownership of the company in trust for the future community. The preservation of the beauty of the district and the securing of architectural harmony in the new buildings will be among the first considerations of the company. The maximum building density will be respected according to the norms set by the company.

8. Methodology

The methodology used to analyze the data is a descriptive analysis of the data setting out the parameters that need to be considered to

define and determine the social pattern at the regional and sub-regional levels.

The descriptive analysis helps understand the finer dimensions of the data, draws out the relationship between the variables and puts together cases which are similar based on the relationship between the variables. The statistics and mapping techniques convert all the statistical information into a graphic representation which shows mainly histograms and pie charts.

9. Descriptive Analysis

The analysis starts by describing the data at the regional scale (the city of Makkah). The data is tabulated and analyzed using different charts. The single variable from that data set is selected and a histogram of it at the regional scale is drawn. The data is interpreted in terms of its frequency and the behavior of the graph. Some comparative figures at the national scale are also given.

Characteristics of the urban social pattern can be revealed by considering the relationship within groups.

10. Results of the Research Study

10.1. Socio- Economic and Demographic Aspects

The Holy City of Makkah is located at a latitude of 21° 25' north and a longitude of 39° 49' north and represents the junction point of Tihama coastal valley and Sarawat hills, which are the beginning of Al-Hijaz Hills. The city is surrounded by hills, which allow easy passage to the surrounding areas. The city is at about 300 meters above the sea level. The area of Makkah represents one of the most complex geological compositions because of the solid granite rocks. Total population of Makkah is estimated at 1.24 million in 2003.

The Haram represents the center of the city, with concentrated development around it. However the rising population forced the city to stretch into low lands and valleys and to the East, South, West and Northwest.

The other major cities in the Province are Jeddah and Taif. Jeddah is considered as one of the most modern cities. Jeddah is about 40-minute drive from Makkah city. Due to the location of Jeddah, it has been the main entry point for millions visitors to Saudi Arabia particularly for visitors arriving for religious reasons. The city's population is estimated to be 2.7 million as of mid-2007.

The third main city in the region is Taif. Taif is located in the high mountains of Saudi Arabia with a pleasant climate year round. Taif is only an hour drive from Makkah. The average population of this city is approximately 300,000 and this figure may increase during the summer when Taif becomes the holiday destination for many residents as the city is one of the popular holiday resorts.

During 2004, a study on the demographic, social, and economic characteristics of Makkah city was conducted by the High Commission for the Development of Makkah Province. A summary of the study findings are presented below.

10.2. Socio-Economic Overview

- The survey showed that the average monthly expenditure was under $800 for families and $ 200 for individuals.
- The survey revealed that 55.2% of families' expenditure was less than $800 per month, while 25.2% of families'

expenditure varied between $800 and $1600 per month.

- 9.5% of the families' expenditure was over $1600 per month.
- The labor force in Makkah is estimated to be around 328,000, 73.4% of which were employed whilst 26.6% were unemployed.
- 76% of Makkah residents obtain their water supply from the public network supply, whilst 24% obtain their water supply through water trucks, water wells and other sources.
- 98.5% of Makkah residents obtain their electric supply from the public network. The remaining residents do not have any electricity supply.
- 69% of Makkah residents benefit from the public water sewerage network, whilst 30% approximately drain their waste waters into wells.
- 93% of Makkah residents use gas as their main source of energy for cooking, while only 2.2% use electricity. The remainders use other sources like, charcoal and wood.

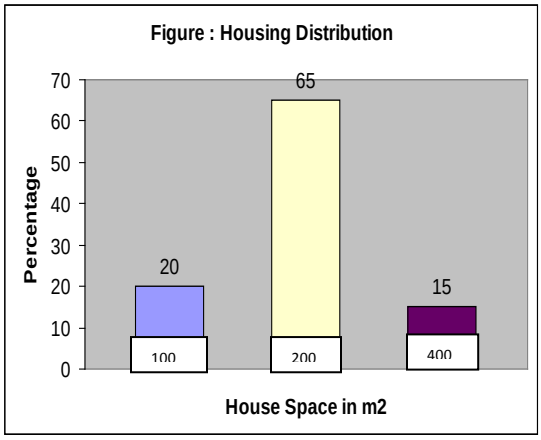
10.3. Demographic Overview

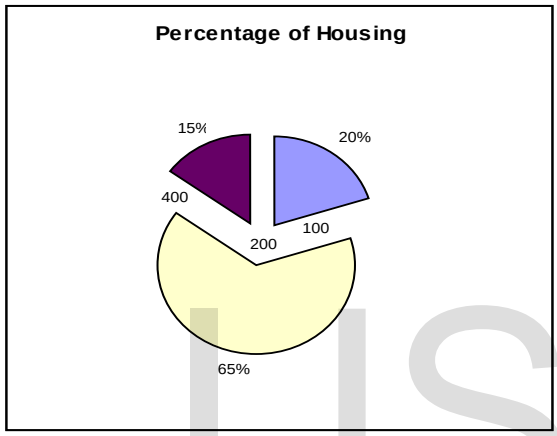
- The average household size in Makkah is approximately 5 people.
- Nearly 73% of households in Makkah have a family size ranging from 3 to 7 people.
- Households with greater than 10 members represent approximately 4% of the total population of Makkah.
- From the study, it appeared that nearly 11% of the families in Makkah are "extended" families. While 89% of the families are considered nuclear.[1]
- Approximately 75% of Makkah residents are Saudi nationals and 25% are non-Saudis.
- The Yemeni community is considered as the biggest non-Saudi community in Makkah and it represents nearly 19% of non-Saudi residents.

10.4. Housing Overview

- Approximately 64.4% of the population lives in apartments while approximately 13% live in houses.
- Approximately 86% reside in concrete houses, while 11% live in brick houses.
- A percentage allocation of houses in Makkah into different house sizes is presented in the charts below.

Figure 1: Housing Distribution





Source: Study conducted by the High Commission for the Development of Makkah Province

- 46% of the Makkah inhabitants own their accommodation, while 51% live in rented accommodation.

10.5. Demographic Overview of Makkah

The General Statistics Department estimated that Makkah city population was about 1.29 million in 2004. The following discusses the population size, predicting population growth and population age profile.

10.5.1. Population size

According to the 2004 census, Makkah's population was 1.37 million, of which 1.03 million were nationals. Makkah's population has witnessed a rapid growth rate since the last census in 1993. The 1993 censuses estimated the population in Makkah to be 965,000. As of mid-2007, the estimated population of Makkah was 1.45 million. The table below shows the historic population estimates for Makkah city.

Table 1: Makkah Population for the Years 1974 – 2004

Description	1974	1983	1993	2001	2004
Population (in millions)	0.369	0.566	0.965	1.275	1.375
% change year on year	--	4.86	5.48	3.53	2.55

Source: The High Commission for the Development of the Makkah Province estimates

The results of earlier consensus show that the growth rate of the Kingdom's population was much higher, however, the 2004 census shows that the growth rate is approximately similar to overall Kingdom's population growth. This is mainly due to a decrease in foreign population as a result of Saudization of the manpower.

10.5.2. Predicting Population growth

There are three main factors determining the population growth. These factors are birth, death rates and migration into (or out of) the city.

In recent studies, based on three scenarios, the government authorities have attempted to project Makkah's population, based on three scenarios, in the year 2050. The first scenario estimates population based on the historical growth rate during the period 1993 through 2004 which was around 3.2% annually. It was assumed that this growth rate would decrease by 0.1% for every five

years during the projected period, reaching a rate of 2.7% by year 2050. The estimation of the growth rate in the second scenario assumed a decrease in population growth by 0.2% for every five years. This would result in a growth rate of 2.2% by the year 2050. The third scenario is based on the assumption that the population would grow at a constant rate of 3% annually. Taking into consideration all three scenarios, the population of Makkah city in the year 2050 is expected to range from 2.69 million and 2.97 million. An important factor that also needs to be considered in estimating the population of Makkah is the visitor population. Each year, on average, more than 2.5 million people visit Makkah for Hajj and more than 10 million visits to perform Omrah (including local visitors) throughout the year. The table below shows the historical visitor population in Makkah.

Table 2: Historical Visitor Population for the Years 2004 – 2008

Description	2004	2005	2006	2007	2008
International Omrah Visitors (in millions)	5.44	5.6	5.8	6.2	7.2
Hajj Visitors (in million)	2.4	2.4	2.8	2.9	3.2

Source: Hajj Research Centre (HRC) estimates

The growth of the Hajj and Omrah performers has significant implications on the demand for retail and residential services. Any projections of demand for such services must take account of these figures.

The visitor population for Hajj has been projected based on the historical trend of Hajj pilgrims (i.e. 9.4% per annum for international pilgrim's).

For internal Omrah visitors, has been forecasted to increase at a rate of 8% per annum until the year 2025, based on discussion with major Omrah operators and industry experts. The internal Omrah visitors is expected to increase by 0.5 million every three years. The table below shows the Hajj and Omrah visitor's projections.

Table 3: Projected Hajj and Omrah Visitors 2006 – 2025

Description	2006	2012	2018	2024	2025
Projected Omrah Visitors (in millions)	5.8	8.7	12.5	17.8	18.9
Projected Hajj Visitors (in million)	2.8	4.4	7.1	11.5	13.1

Source: Ernst and Young Estimates based on Variety of Inputs

10.5.3. Population Age Profile

The table on the following page summarizes distribution of population by age, group and gender in Makkah, for both nationals and non-nationals. From the analyses, it is apparent that Makkah has a very young population structure. The percentage distribution of males and females in the population is approximately equal.

Table 4: Makkah City Population Age Percentage Profile (Saudi and Non-Saudi) (2006)

	% Male		% Female		% of Total Population	
Age Group	Saudi	Non Saudi	Saudi	Non Saudi	Male	Female	Total
0 – 4	10.46	9.95	10.36	12.46	10.33	10.86	10.6
5 – 9	11.93	11.95	12.70	13.40	11.94	12.87	12.4
10 – 14	13.95	12.32	12.70	13.56	13.51	12.90	13.2
15 – 19	13.46	11.75	12.53	12.14	13.0	12.44	12.9
20 – 24	11.05	9.06	11.66	9.85	10.51	11.23	10.9
25 – 29	7.93	8.26	9.17	8.94	8.02	9.12	8.5
30 – 34	5.80	7.47	6.53	6.78	6.25	6.59	6.4

35 – 39	5.49	7.08	6.15	6.63	5.92	6.26	6.1
40 – 44	4.71	6.39	5.11	5.61	5.16	5.23	5.02
45 – 49	3.86	4.74	3.98	4.05	4.10	4.00	4.0
50 – 54	3.40	4.17	3.19	2.74	3.61	3.09	3.4
55 – 59	1.98	2.41	1.78	1.30	2.10	1.67	1.9
60 – 64	2.30	1.95	1.59	1.06	2.21	1.46	1.9
65 – 69	1.5	1.0	1.2	0.8	1.4	1.0	1.2
70 – 74	1.2	0.8	0.8	0.4	1.1	0.8	0.9
75 +	1.0	0.7	0.5	0.3	0.9	0.5	0.7
Total	**100**	**100**	**100**	**100**	**100**	**100**	100

Source: The High Commission for the Development of Makkah Province

10.5.4. Summary

In summary, the implications of the economic and demographic overview of Makkah for the project are as follows:

- According to the 2004 census, Makkah's population was 1.37 million, of which 1.03 million were nationals.
- As of mid-2007, the population of Makkah was 1.45 million.
- In 2008, the population jumped to 1.7 million.
- Each year, on average, more than 2.5 million people visit Makkah for Hajj and more than 10 million visits to perform Omrah (including local visitors) throughout the year.
- With a growing number of Hajj and Omrah pilgrims, demand for lodging, residential and retail projects remains high.

10.6. Conclusion

The following conclude the part on socioeconomic and demographic aspects for the city of Makkah. This includes the population growth forecasts and the socio-economic trends.

10.6.1. Population Growth Forecasts

It is estimated that during 2007, Saudi Arabia's population grew at around 2.45%. The high growth in population, in the past decade, is forecasted to continue over the next twenty years.

The official Ministry of Planning (MOP) population forecasts based on the 2002 census forecast the longer-term growth for the Saudi population at 2.45% per annum for the period 2005 to 2020. The forecast growth in the composite resident population is expected to be 2.49%.

A higher growth rate of population for Saudi Arabia and Jeddah would mean higher demand for entertainment in the future and subsequently higher demand for amusement parks.

10.6.2. Socio-Economic Trends

According to The Saudi American Bank estimates, GDP is increasing and inflation is expected to remain stable in the coming years. This will encourage more spending on goods and services, leading to more demand and spending on entertainment activities.

Furthermore, Saudi Arabia's demographics will also provide opportunities for the future. Across the globe, key ages of the population for driving entertainment expenditure are the teens and the early 20s, when spending on entertainment is at a peak. Citizens in the front edge of the Saudi baby boom that started in 1973 have now reached their late 20s and 30s (over 25% of the total Saudi population is in the range 25-40 years). This can be seen through a growing demand for entertainment activities. With over 50% of the population below

19 years of age, the high demand for entertainment activities can be assumed to continue in the next 20 years.

11. The Market Situation during Hajj and Omrah Seasons

11.1. Pilgrimage to Makkah: Overview

There are two types of Pilgrimage:

- **Hajj:** Hajj is the main pilgrimage to the Haram and is an obligation for all Muslims who are physically and financially capable. Hajj can only be performed during 8 to 12 Dhul Hijjah each year, and therefore, the 60 days surrounding this date are reserved for Hajj pilgrims (Hajis).
- **Omrah:** Omrah is a minor pilgrimage that can be performed throughout the whole year. Nearly all visitors during the non-Hajj months are Omrah pilgrims.

Since all Muslims are obligated to perform the Hajj once in their lifetime there is a strict quota and visa allocation system in place to avoid congestion and overcrowding. Nevertheless, each year more than 2 million people attend Hajj, making it the largest religious gathering of people in the world. Hajj pilgrims come from every corner of the Muslim world and from all classes of society. Non Muslims are not allowed within the confines of Makkah.

According to the Ministry of Hajj, there has been some growth in the number of Omrah pilgrims visiting Makkah during non – Hajj months. Other private market sources, however, argue there has been no growth in the Omrah Pilgrims numbers. We believe, however, that there has been some growth in Omrah numbers as the number has been significant investment in the hospitality sector in Makkah. The increase in Omrah pilgrims is primarily due to changes in visa regulations by the Ministry and other factors.

The characteristics that differentiate Hajj and Omrah pilgrim from mainstream hotel customers are:

- Pilgrims do not require facilities such as a swimming pool, gymnasium, business center, etc. that are normally essentials in a hotel.
- Access to the Haram is of prime importance to pilgrims, especially during prayer times, placing greater emphasis on the "walking distance" as well as amenities for the disabled.
- For pilgrims arriving by car, parking is important as there is no free car parking near the Haram.
- Pilgrimage is highly seasonal with very high attendance during the months of Dhul Hijjah and Ramadan.

11.2. Seasonality

The market for accommodation in Makkah is fairly seasonal with rates and occupancies fluctuating as follows:

- **Dul Hijjah:** During Hajj, Makkah is crowded beyond capacity with buildings being rented for the entire month. Nearly all commercial hotels near the Haram are occupied at full capacity. Also

rooms are packed to a capacity much higher than normal.

- **Ramadan:** Ramadan Season begins approximately eight months after Dul Hijjah and hotel occupancy varies according to the following:
    - Shaban, the month preceding Ramadan, signals the start of the season, with pilgrims booking accommodation in advance. Occupancy and rental rates are comparatively higher than the preceding eight months.
    - The first nineteen days of Ramadan experience an influx of pilgrims to Makkah to mark the beginning of the holly month of fasting enjoined on Muslims. Throughout Ramadan, pilgrims also congregate for Taraweh prayers during the late evenings, and occupancy levels increase as a result.
    - The last ten days of Ramadan represent a more sacred part of the month for Muslims. During the period, accommodation rates reach the levels experienced during Hajj season, with many hotels insisting that customers book early and for the duration of the entire 10-day period. The last day of Ramadan also marks the Eid Alfitr, a celebratory feast signifying the end of a month of fasting. Pilgrims generally extend their stay by 3-4 days to celebrate Eid in Makkah before returning home.

- **Omrah:** The Omrah season represents the remaining eight months of the year particularly during Islamic and school holidays. Many pilgrims take the opportunity to visit Madinah as well, which is located some 500 km to the north of Makkah.

11.3. Summer Holidays

Many Saudis and residents of neighboring Gulf countries take a vacation during June-August and may spend some of this time in Makkah. The number of visitors is usually insufficient to achieve full capacity. Thus a number of hotels give special summer packages to attract visitors.

11.4. Number of Pilgrims

According to the Hajj Research Center of Umm al Qura University (Faqeeha Research Institute) Hajj Pilgrims number projections, the number of foreign Hajis will increase by 9.4% for the next nineteen years. Considering the actual historical growth rate and government restrictions and other limiting factors, this number seems to be on the high side. In line with the historical growth trend of Hajj pilgrims (of 4% per annum) we have made another projection (low scenario). The projections in the Faqeeha report are presented as the high scenario, in the table below.

Based on the projected population growth scenario, we have projected the number of domestic pilgrims to increase from half a million in

1426 to over one million in 1445. We have also established a low growth scenario, based on the assumption that the government will be able to apply more restrictions to domestic pilgrims. Based on this scenario, the domestic pilgrim number will grow from 375,000 in 1426 to 515,000 in 1445.

Table 5: Hajj Pilgrim Projections (High Growth Scenario)

International Visitors Domestic Visitors Total Visitors

Year	Numbers	Growth	Numbers	Growth	Numbers	Grow
2007	2,381,889	9.4%	589,465	3.3%	2,971,354	8.2%
2008	2,606,502	9.4%	608,917	3.3%	3,215,419	8.2%
2009	2,852,295	9.4%	629,011	3.3%	3,481,306	8.3%
2010	3,121,266	9.4%	649,769	3.3%	3,771,035	8.3%
2011	3,414,665	9.4%	671,211	3.3%	4,084,031	8.3%
2012	3,735,644	9.4%	693,361	3.3%	4,423,005	8.3%
2013	4,086,794	9.4%	716,242	3.3%	4,790,115	8.3%
2014	4,470,953	9.4%	739,878	3.3%	5,187,694	8.3%
2015	4,891,222	9.4%	764,294	3.3%	5,618,273	8.3%
2016	5,350,997	9.4%	789,516	3.3%	6,084,590	8.3%
2017	5,853,991	9.4%	815,570	3.3%	6,589,611	8.3%
2018	6,404,266	9.4%	842,484	3.3%	7,136,548	8.3%
2019	7,006,267	9.4%	870,286	3.3%	7,728,882	8.3%
2020	7,664,856	9.4%	899,005	3.3%	8,370,379	8.3%
2021	8,385,352	9.4%	928,672	3.3%	9,065,121	8.3%
2022	9,173,576	9.4%	959,319	3.3%	9,817,526	8.3%
2023	10,035,892	9.4%	990,976	3.3%	10,632,380	8.3%
2024	10,979,266	9.4%	1,023,678	3.3%	11,514,868	8.3%
2025	12,011,317	9.4%	1,057,460	3.3%	12,470,602	8.3%
AVG Growth (2007 – 2025)		9.4%		3.3%		8.3%

Source: Hajj Research Centre (HRC) estimates

Figure 2: Projection of Hajj Pilgrims as High Growth

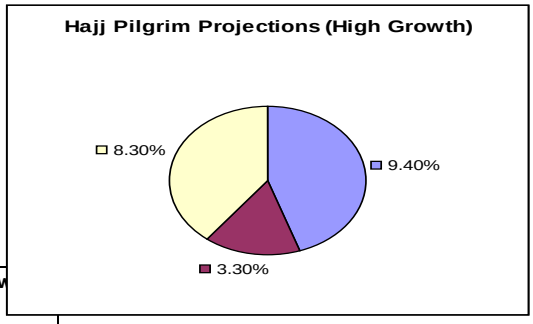


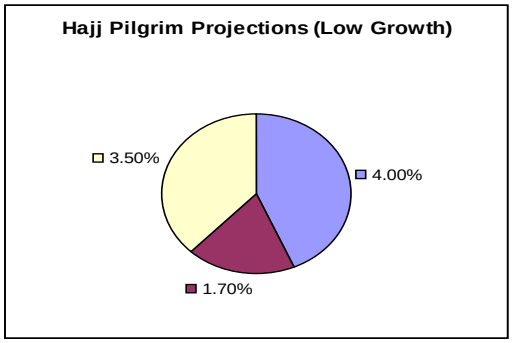
Table 6: Hajj Pilgrim Projections (Low Growth Scenario)

International Visitors Domestic Visitors Total Visitors

Year	Numbers	Growth	Numbers	Growth	Numbers	Growth
2007	1,512,633	4.0%	381,519	1.7%	1,894,152	3.5%
2008	1,572,977	4.0%	387,814	1.7%	1,960,791	3.5%
2009	1,635,728	4.0%	394,213	1.7%	2,029,940	3.5%
2010	1,700,982	4.0%	400,717	1.7%	2,101,699	3.5%
2011	1,769,021	4.0%	407,529	1.7%	2,175,258	3.5%
2012	1,839,782	4.0%	414,457	1.7%	2,251,393	3.5%
2013	1,913,373	4.0%	421,503	1.7%	2,330,191	3.5%
2014	1,989,908	4.0%	428,669	1.7%	2,411,748	3.5%
2015	2,069,505	4.0%	435,956	1.7%	2,496,159	3.5%
2016	2,152,285	4.0%	443,367	1.7%	2,583,525	3.5%
2017	2,238,376	4.0%	450,904	1.7%	2,673,948	3.5%
2018	2,327,911	4.0%	458,570	1.7%	2,767,536	3.5%
2019	2,421,028	4.0%	466,365	1.7%	2,864,400	3.5%
2020	2,517,869	4.0%	474,294	1.7%	2,964,654	3.5%
2021	2,618,584	4.0%	482,357	1.7%	3,068,417	3.5%
2022	2,723,327	4.0%	490,557	1.7%	3,175,811	3.5%
2023	2,832,260	4.0%	498,896	1.7%	3,286,965	3.5%
2024	2,945,550	4.0%	507,377	1.7%	3,402,009	3.5%
2025	3,063,372	4.0%	516,003	1.7%	3,521,079	3.5%
AVG growth (2007 – 2025)		4.0%		1.7%		3.5%

Source: Ernst and Young Estimates based on a variety of inputs

Figure 3: Projection of Hajj Pilgrims as Low Growth



11.5. Projected Omrah Visitors

The Ministry of Hajj estimates that Omrah visas issued during 1425H increased by 16% approximately (from 2.26 million in 1422H to approximately 2.6 million in 1425H). The largest number of Omrah pilgrims came during the Holy month of Ramadan and were from Egypt (697,969) followed by Iran and then Pakistan (304,722 and 184,458 respectively).

According to the Ministry of Hajj, external Omrah visitors are expected to rise significantly in future years. Based on our discussions with representatives of Ministries, the number of Omrah pilgrims is forecasted to increase at a rate of 8% until the year 1445. Based on this, forecast Omrah visitors are as follows:

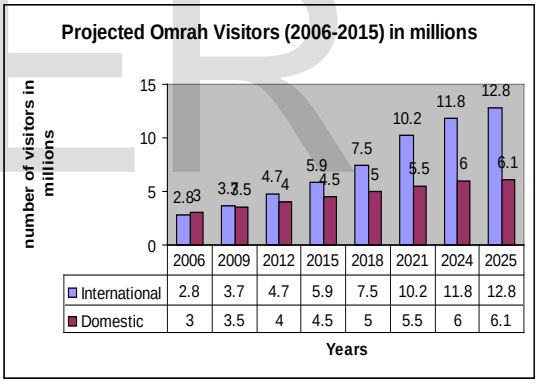
Table 7: Projected Omrah Visitors (2006 – 2015)

All amounts are in Millions

Numbers	International	Domestic	Total
2006	2.8	3.0	5.8
2009	3.7	3.5	7.2
2012	4.7	4.0	8.7
2015	5.9	4.5	10.4
2018	7.5	5.0	12.5
2021	10.2	5.5	15.7
2024	11.8	6.0	17.8
2025	12.8	6.1	18.9

Source: Ernst and Young Estimates based on a variety of inputs

Figure 4: Projected Omrah Visitors from 2006 to 2015 in millions



11.6. Visitors Patterns

The Hijri year is divided into four distinct periods that represent the various stages of pilgrimage travel.

Table 8: Seasons in Makkah

Season	Days	Hajj average stay	Hajj % of distribution	Omrah average stay	Omrah % of distribution
Peak season	33	12	100	6	15
High season	90	N/A	0	4	35
Average season	92	N/A	0	3.5	30
Low season	140	N/A	0	3.5	20
Total	355	12	100	4.05	100

Source: Ministry of Commerce and Ernst and Young Estimates

The table below defines each of the seasons mentioned above.

Table 9: Season Definition

Season	Definition	Days
Peak Season	From 25th Dhul-Qa'da until 18th Dhul-Hijjah, in addition to the last ten days of Ramadan	33
High Season	This includes the first 20 days of the Holy month of Ramadan, 60 days of Rajab and Shaaban and 10 days of the spring holiday break	90
Average Season	This includes Rabia I, Rabia II and some days of Jumada I and Jumada II	92
Low Omrah Season	Remaining days of the year	140
Total		**355**

Source: Other Consulting Firm Definition of Seasons

11.7. Nationalities of the Visitors

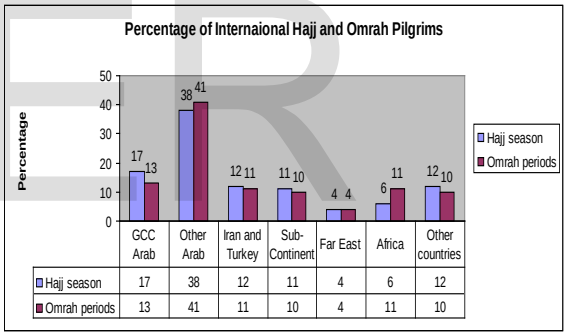
The following table shows a breakdown of the percentages of international Hajj and Omrah pilgrims:

Table 10: Percentage of International Hajj and Omrah Pilgrims

Origin of visitors	Hajj season (in percentage)	Omrah periods (in percentage)
GCC Arab countries	17	13
Other Arab countries	38	41
Iran and Turkey	12	11
Sub-Continent	11	10
Far East	4	4
Africa	6	11
Other countries	12	10

Source: Ernst and Young research finding based on a variety of inputs

Figure 5: Percentage of International Hajj and Omrah Pilgrims



11.8. Average Length of Stay for Omrah visitors

The following table shows the percentages of the average lengths of stay for Omrah pilgrims.

Table 11: Average Length of Stay for Omrah Visitors

Residence period (in days)	Percentage
1 – 5	45.7
6 – 10	37.8
11 – 15	10

16 – 20	2.8
20+	3.8
Total	**100**

Source: Ernst & Young Estimates based on Variety of input

12. Health and Healthcare Infrastructure

12.1. Introduction

Every year's health plan for Hajj consists of preventive, curative and emergency services to the guests of God at all air, land and sea inlets. Medical examinations and tests are conducted on pilgrims at these entry points. Vaccinations are given to those who have not already taken them. Pilgrims who are sick will get necessary treatment and medicines while critical and emergency cases will be transferred to hospitals. Usually, the Health Ministry advise Saudi embassies abroad not to grant Hajj visas to aspiring pilgrims unless they meet health requirements. Pilgrims with no vaccination certificates will be vaccinated at the entry points.

Health is a major matter of concern as pilgrims come from almost all parts of the world with health issues of varying degrees and the Kingdom strives to provide them the best possible health care. The number of pilgrims from aboard arriving for the Hajj season for the year 2010 was 1.7 million.

Of all the benefits that have accrued to the citizens of the Kingdom, none is greater than the provision of free healthcare of the highest standard, a provision extended to all those who visit Makkah in pilgrimage. Health care is provided by the Saudi government free of charge to all pilgrims.

Comprehensive health care plan are in place at the Grand Mosque in Makkah every year. Usually, five dispensaries are located on the ground and on the first floors. These dispensaries offer full medical care, including cases requiring emergency treatment.

Health centers are also established behind the Hilton Hotel, and in the As-Shobaika and Al-Marwah areas. In all, 29 health centers in the city including those around the Grand Mosque offer prompt medical service to pilgrims.

King Abdul Aziz Hospital, AZ-Zaher; King Faisal Hospital, Sheesha; Hera General Hospital; Ibn Sina Hospital and Noor Specialist Hospitals were tasked with serving patients referred to them by the health centers.

A fleet of ambulances was kept on standby at the Grand Mosque to take patients requiring intensive care or accident cases to the aforesaid hospitals.

The Ministry of Health has deployed over 17,000 health officials in Makkah, Madinah and ports of entry in western region to serve Hajj pilgrims. A total of 5,930 health officials stationed in Makkah, 12,078 in Madinah and 1,229 at the ports of entry. The officials include consultants, specialists, general practitioners, pharmacists, technicians, nurses, administrative

Staffers and drivers.

After the Hajj season, the Makkah Mayoralty will use Ministry of Agriculture planes to spray insecticide over the holy sites in an effort to sterilize germs, fight mosquitoes and maintain cleanliness. The mayoralty would secure the material and insecticides and supply them to the

Ministry of Agriculture, which will conduct regular flights to spray the holy sites. The insecticides and other substances do not harm human beings, animals or plants.

The mayor emphasized that during the Hajj season, the mayoralty would continue its high level of work, including cleaning, sterilization, maintenance and operations in Makkah and other holy sites.

Saleh Bin Abdul Samad Izzat, director general of Cleaning in Makkah Mayoralty, said the number of workers cleaning the holy sites and Makkah before and after the Hajj season has been increased considerably.

More than 13,000 workers have been allocated, along with 1,200 pieces of equipment and more than 40,000 garbage dumpsters, he said. Officials are also using 131 underground stores and 200 compression boxes for temporary storage of garbage, he added. As Hajj pilgrims flock to the Kingdom from across the world, the Ministry of Health has intensified its campaign to make Makkah and Madinah completely tobacco-free. According to the daily Arab News of November 1st, 2010, Dr. Sameer Al-Sabban, executive director of the Anti-Smoking Campaign in Makkah said that they require the cooperation of pilgrims to make the two holy cities among those with the lowest tobacco consumption in the world, adding that the program has been intensified this year.

The sale of tobacco is strictly banned in the five-km radiuses of the Grand Mosque and Holy Mosque in Makkah and Madinah. Billboards and posters with anti-smoking messages, information regarding anti-smoking clinics and fatwas on the subject is on display in the two cities. Buses carrying pilgrims have anti-smoking posters on them, and folders containing pamphlets, flyers, postcards and stickers will also be handed to pilgrims at the Jamrat during Haj. A team of scouts and health officials take positions at the Grand Mosque in Makkah to raise awareness about the health risks caused by this habit. To assist pilgrims, the ministry has set up six anti-smoking clinics in the holy city as part of the campaign. The clinics are open to male and female smokers and services are offered free-of charge. A group of Saudi physicians and psychiatrists is helping the anti-smoking campaign, while a host of well-known websites are assisting with the campaign's promotion.

It is estimated that in the Kingdom 35 to 40 percent of people above the age of 15 smoke. Around 24 percent of male students between the ages of 13 to 15 years smoke, while eight percent of female students smoke. The Kingdom joined the anti-tobacco agreement in May 2005. Saudi Arabia ranks fourth among world countries in tobacco imports and consumption. More than 15 billion cigarettes, worth $168 million, are smoked by Saudis each year, according to figures issued by the Gulf Cooperation Council's Health Ministers Council. More than 500 pilgrims quit smoking during the current Haj season thanks to the efforts of a voluntary anti-smoking society called, Kafa (Enough).

Hundreds of pilgrims of various nationalities visited Kafa's mobile clinic, the largest of its kind, stationed closed to the Grand Mosque. The clinic cost an estimated 270, 000 dollars. It is located in a large bus, equipped with all the required medical instruments and facilities needed for smokers to quit. There are two sections in the clinic. The first is for receiving pilgrims who want treatment to

quit. More than 25 members of the society have been tasked with carrying out awareness among pilgrims about the harms of smoking, and guiding those who want to quit smoking to the mobile clinic.

The society prepared and distributed 250,000 brochures and CDs in both Arabic and English among Hajj pilgrims. Some buses are fitted with two large screens on the outside. The screens display statistics related to smoking, including real-life stories of smokers and how they gave up. Messages conveyed covered the Islamic viewpoint on smoking, the adverse effect of smoking on people's health, and social and economic lives. Makkah and Madinah have both been declared no-smoking zones by the Ministry of Health and shops there are prohibited from selling cigarettes. During the Hajj season, the ministry intensified its campaign on making the holy cities completely tobacco-free. The ministry has set up six anti-smoking clinics in Makkah as part of the campaign. The clinics are open to male and female smokers and services are offered free of charge.

12.2. Healthcare Infrastructure

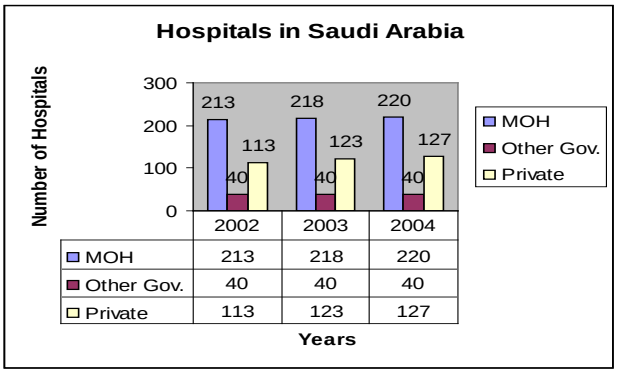
A summary of the healthcare infrastructure available in the Kingdom between 2002 and 2004 is set out in the following tables:

Table 12: Hospitals in Saudi Arabia from 2002 to 2004

	2002		2003		2004	
Sector	**Hospitals**	**%**	**Hospitals**	**%**	**Hospitals**	**%**
MOH	213	58.2	218	63.93	220	63.4
Other Gov.	40	10.93	40	0	40	0
Private	113	30.87	123	36.07	127	37.46
Total	366	100	381	100	387	100

Source: Ministry of Health

Figure 6: Hospitals in Saudi Arabia from 2002 to 2004



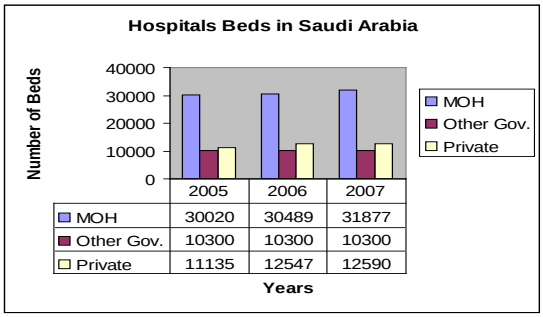
There were 366 hospitals in Saudi Arabia in 2005, of which 253 were in the public sector and 113 in the private sector, compared to 387 hospitals in 2007, of which 260 were in the public sector and 127 in the private sector. While the growth in MOH and quasi government hospitals has been relatively low, 14 more private sector hospitals were established during 2005 and 2007. The MOH accounts for around 63% of all the hospitals in the Kingdom, while the private sector currently has around 37% of all the hospitals.

Table 13: Hospital beds in Saudi Arabia

	2005		2006		2007	
Sector	**Beds**	**%**	**Beds**	**%**	**Beds**	**%**
MOH	30,020	58	30,489	67	31,877	58
Other Gov.	10,300	21	10,300	19	10,300	19
Private	11,135	21	12,547	24	12,590	23
Total	51,455	100	53,336	100	54,767	100

Source: Ministry of Health

Figure 7: Hospital beds in Saudi Arabia from 2005 to 2007



From 2005 through 2007, the hospital beds have increased by approximately 4,000 beds. MOH sector beds have shown an increase of 2% per annum, while private sector beds have shown an increase of about 4% per annum. Other government beds have increased by a percentage. Additionally, the MOH reported that the number of private clinics in the Kingdom has shown a healthy growth over the last few years. Jeddah, Riyadh, Makkah, Madinah and the Eastern Province account for around 88% of all private clinics in the Kingdom.

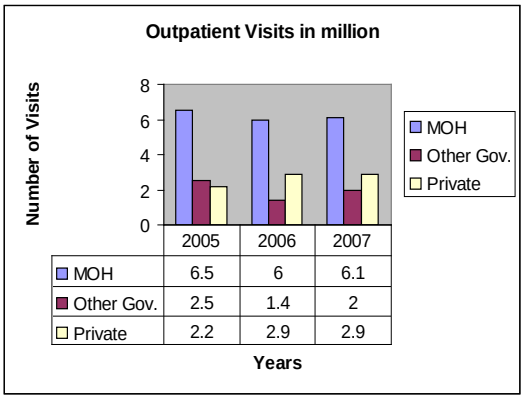
The number of outpatient visits between 2005 through 2007 is set out in the table below:

Table 14: Outpatient Visits (2005 to 2007) in million

	2005		2006		2007	
Sector	**Visits**	**%**	**Visits**	**%**	**Visits**	**%**
MOH	6.5	57.6	6.0	58.3	6.1	55.4
Other Gov.	2.5	22.6	1.4	13.6	2.0	18.0
Private	2.2	19.8	2.9	28.1	2.9	26.5
Total	11.4	100	10.3	100	11.1	100

Source: Ministry of Health

Figure 8: Outpatient Visits in million



The total outpatient visits to all facilities in the Kingdom increased to 11.1 million in 2007 (representing a CAGR of 1.17%). The visits to the private sector have increased by approximately 900,000 (from 2003 through 2007), and its share among all sectors has also increased by 6.6%.

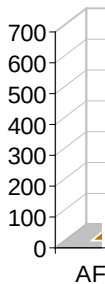
The number of inpatient visits between 2005 and 2007 is set out in the table below. There has been a substantial growth in the number of patients in private hospitals during recent years, but almost no increase at MOH and other Government hospitals was insignificant.

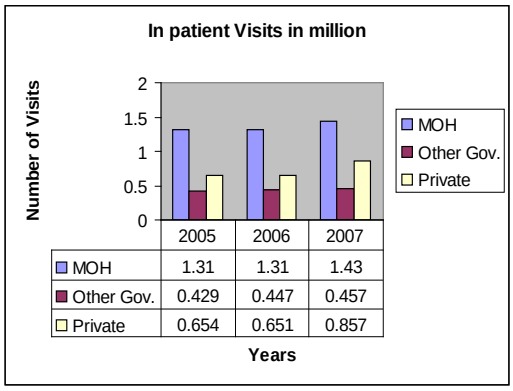
Table 15: In-patient visits (2005 to 2007) in million

	2005		2006		2007	
Sector	**Visits**	**%**	**Visits**	**%**	**Visits**	**%**
MOH	1.31	54.77	1.31	54.54	1.43	52.14
Other Gov.	0.429	17.94	0.447	18.52	0.457	16.66
Private	0.654	27.29	0.651	26.94	0.857	31.20
Total	2.39	100	2.41	100	2.74	100

Source: Ministry of Health

Figure 9: In-patient visits in million





	2005	2006	2007
MOH	1.31	1.31	1.43
Other Gov.	0.429	0.447	0.457
Private	0.654	0.651	0.857

The share of in-patients in private hospitals has increased from around 27% (in 2005) to 31% (in 2007).

The Saudi Arabian healthcare industry is becoming increasingly complex and competitive. As major healthcare providers compete to introduce expensive medical technologies and are increasingly investing in major expansions, they are faced with an educated, demanding, and increasingly quality conscious patient base.

Demand for private healthcare services in Saudi Arabia is changing, driven largely by:

- population increasing at around 2.45% per annum (higher than the West);
- the Government's mandate of comprehensive healthcare insurance for all expatriates;
- rising healthcare costs which are shaping employee healthcare benefits into a standardized benefit;

Figure 10: Number of Beds in all Saudi regions

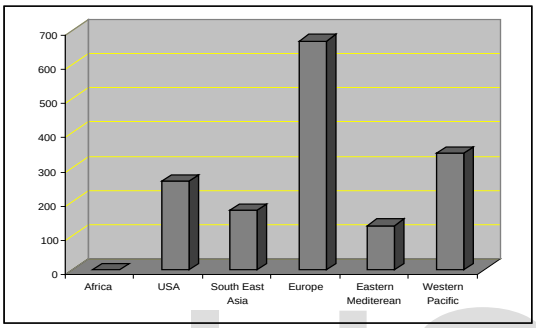
- the overall apparent dissatisfaction with the current status of healthcare providers (especially in the public sector);
- the national workforce becoming less dependent on public healthcare services and more dependent on private healthcare providers;
- an educated young population that is possibly more perceptive to different alternatives; and
- increased use of advertising by private sector medical facilities.

The population growth in Saudi Arabia is very high, particularly among the nationals. This growth, coupled with a move by the Government for compulsory healthcare insurance, is likely to increase the number of nationals using the private sector for health care services. At the same time, the apparent dissatisfaction with the current providers of healthcare services, particularly government hospitals, may also push more patients into the private sector.

In order to assess the demand and supply gap, we would need to look at international benchmark for the number of hospital beds per 1000 people. The number of beds per 1000 population in health care institutions is a useful indicator of the comparative supply of health care services. The international index is currently on average 6.7 for developed

countries, and in the Kingdom this ratio is 2.09 hospital beds for every 1000 people. That clearly shows that there is a gap between the developed countries norms and the Kingdom's number of beds available per 1000 people. The graph below illustrates the beds per 100,000 population by region.

Figure 11: Number of Beds in different continents per 100,000 People



Source: World Health Organization

If we assume that we would need to bring the Saudi index of 2.09 to a reasonable level of 3.5 beds per 1000 people, we would need 87,430 hospital beds in the Kingdom (currently there are 54,767 beds available and the population is estimated to 24.98 million). Based on the census statistics, the Makkah region presents 25% of the Kingdom's population and that the population of Jeddah is nearly 50% of the total population of the Makkah region. Taking these facts into consideration, it is estimated that the supply and demand gap in Jeddah is more than 4,000 beds.

12.3. The Real Estate Market in Makkah

The parts that will be discussed in the real estate market in Makkah includes the land plots in Makkah, land prices on main roads in Makkah. The annual land price increases across the Kingdom and finally a summary will conclude this section.

12.3.1 Introduction

According to a recent real estate reports, real estate investment in Makkah is estimated to be 27.73 billion dollars from 2006 through 2010. During the past few years, government-initiated infrastructure projects have boosted the real estate development, which have made parts of the city more accessible and opened up land availability. Private realtors anticipate a greater arrival of visitors as the government increases its focus on religious tourism. Real estate development in Makkah has been characterized by a flow in luxury residential units in the town center.

The private sector's desire to build within the city center was boosted by the infrastructure projects made by the government in Makkah. Plans are underway to construct residential towers in Jabal Omar, a mountainous area close to the Grand Mosque, at an estimated cost of 3.2 billion dollars. Within the city's center, a five-star hotel, shopping mall and four residential towers, known as the Abraj Al Balt Towers, is approaching completion and the project value is estimated at 1.6 billion dollars. Another project under construction is a 22 story Meridian Towers and the estimated cost of the project is 267 million dollars. Soaring land prices in this area have forced small shopkeepers to operate on diminishing margins or relocate elsewhere.

12.3.2 Land Plots in Makkah

According to property agents in Makkah, the type of land ownership in Makkah ranges between

individual, governmental, quasi-governmental, municipality properties, endowments, and gifts. The different methods of acquiring land vary from case to case in order to avoid legal and regulatory issues. The lack of clear data about land plots forms a big obstacle for the planners and construction development parties when studying the various uses for a particular plot of land. One of the key factors is that prices of land in Makkah are extremely high, particularly in the central region, which makes it the most expensive (on average) prices Kingdom-wide and even at international level. Land prices are affected by several factors such as:

- The topographic nature of the lands and flatness range
- Width and road fitness
- Area suitability to construct investment projects
- Availability of utilities and services
- In the central region there are other factors such as the remoteness or proximity of the Holy Mosque, and view to the Holy Mosque and Kaa'ba.
- Proximity to the main road.

The following sections show the average price per square meter within the central region on the main roads leading to the Haram.

12.3.3 Land Prices on Main Roads in Makkah

The following table summarizes the land prices for plots within 4 kilometers proximity from the Haram Area on Umm Al Qura Road.

Table 16: Land Prices for Plots on Umm Al Qura Road

All Amounts are in Saudi Riyals

Distance from Haram in meters	Price per square meter on the main road	Price per square meter further from the main road
50 – 100	Up to 265,000	Up to 200,000
100 – 1,000	100,000 – 70,000	60,000 – 50,000
1,000 – 2,000	30,000 – 20,000	15,000 – 10,000
2,000 – 3,000	10,000 – 7,000	6,000 – 4,000
3,000+	3,500	Up to 3,500

Source: Ernst and Young Field Research

The following tables summarize the land prices for plots within 4 kilometers proximity from the Haram Area on other main roads leading to the Haram.

Table 17: Land Prices for Plots on Ibrahim Al Khalil Road

All Amounts are in Saudi Riyals

Distance from Haram in meters	Price per square meter on the main road	Price per square meter further from the main road
50 – 100	250,000 – 200,000	80,000 – 50,000
100 – 1,000	200,000 – 150,000	60,000 – 40,000

1,000 – 2,000	150,000 – 100,000	50,000 – 30,000
2,000 – 3,000	50,000 – 30,000	25,000 – 20,000
3,000+	15,000 – 10,000	5,000 – 3,000

Source: Ernst and Young Field Research

Table 18: Land Prices for Plots on Ajyad Road

All Amounts are in Saudi Riyals

Distance from Haram in meters	Price per square meter on the main road	Price per square meter further from the main road
50 – 100	300,000 – 100,000	50,000 – 30,000
100 – 1,000	80,000 – 50,000	30,000 – 10,000
1,000 – 2,000	50,000 – 20,000	20,000 – 5,000
2,000 – 3,000	30,000 – 10,000	15,000 – 3,000
3,000+	30,000 – 5,000	10,000 – 5,00

Source: Ernst and Young Field Research

Table 19: Land Prices for Plots on Al Masjid the Haram Road - *All Amounts are in Saudi Riyals*

Distance from Haram in meters	Price per square meter on the main road	Price per square meter further from the main road
50 – 100	120,000 – 100,000	90,000 – 80,000
100 – 1,000	80,000 – 70,000	70,000 – 60,000
1,000 – 2,000	60,000 – 50,000	45,000 – 40,000
2,000 – 3,000	30,000 – 25,000	30,000 – 25,000
3,000+	22,000 – 20,000	20,000 – 18,000

Source: Ernst and Young Field Research

Table 20: Land Prices for Plots on Ajyad Alsad Road - *All Amounts are in Saudi Riyals*

Distance from Haram in meters	Price per square meter on the main road	Price per square meter further from the main road
50 – 100	200,000 – 180,000	50,000 – 5,000
100 – 1,000	150,000 – 100,000	40,000 – 5,000
1,000 – 2,000	120,000 – 80,000	30,000 – 3,000
2,000 – 3,000	100,000 – 50,000	20,000 – 2,000
3,000+	15,000 – 3,000	5,000 – 2,000

Source: Ernst & Young Field Research

Note: There might be a 10% to 30% increase every year on the price per m^2 every year.

12.3.4 Summary

In summary, the implications of the real estate market overview for the project are as follows:

- According to market research, Makkah's real estate investment amounts to 27.73 billion dollars through 2010.
- According to property agents, the type of land ownership in Makkah ranges between individual, governmental, quasi-governmental, municipality properties, endowments, and gifts.
- The high selling prices proposed by the development may affect

affordability of the different components.

- Non –execution or delay in any of the development projects within close proximity to the plot of land may adversely affect the project.

13. Overview of the Housing Market in Makkah

The housing market in Makkah will be explained by a description of the current housing market infrastructure, the current supply of the residential infrastructure, demand estimates under the eighth development plan, distribution of housing in Makkah, the market for unfurnished apartments, the characteristics of demand, demand estimates for unfurnished apartments, and finally, the critical success factors and the key risks.

13.1. Description of Current Infrastructure

The current housing infrastructure in Makkah is concentrated around the Haram and surrounding areas. The infrastructure varies between multi-storey buildings around the Haram area to houses that were constructed close to each other at elevated locations.

According to Makkah municipality, there are 275 plots distributed near the Haram area. From the total number of plots, 100 plots are located outside the limits of the third ring road, 68 plots are located inside the third ring road, and 76 plots are situated outside the limits of the proposed fourth ring road. The remaining plots are located outside the limits of the second ring road.

The size of the residential area has increased from 9.75 square kilometers from 1986 (a ratio of 9.7% of whole area of the city) to 97.13 square kilometers (a ratio of 23.10% of the whole area of the city) in 2005. In terms of growth in areas of holy places, which currently represent 27.2% of the total area, area for grew the most between the years 1986 and 2005. This is followed by the residential area.

13.2. Current Supply of the Residential Infrastructure

The population statistics of 2004 showed that the Makkah resident population is estimated at 1,375,000 people. Therefore, in order to estimate the number of the housing units, the number of m^2 required for each person was assumed to be 16 m^2. As outlined in the Makkah socio-economic and demographic overview, the housing unit area average is calculated to be 100 m^2 for a family of 6.25 members.

The table below shows the number of housing units in Makkah for the year 2004. The total number of housing units is obtained by dividing the total number of the population (1,375,000) by the population per 100 m^2 (6.25). The Appendix shows a detailed breakdown of the number of housing units by area.

Table 21: Number of Housing Units 2004

	Population	Built area in sq. km	Number of housing units
Total	1,375,000	137.4	220,000

Source: The High Commission for the Development of Makkah Province estimates based on a variety of inputs.

13.3. Demand Estimates under the Eighth Development Plan

Demographic and socio-economic factors are the most important determinants of quantitative and

qualitative demand for housing. Growth rates and demographic features determine the trend of expected growth of housing and related infrastructure while socio-economic conditions determine the type, standard and size of housing units. In accordance with the preliminary outcomes of the General Census of Population and Housing 2004, and based on the data made available by social security and charitable societies, the total demand for housing during the period 2005- 2009 is estimated at about 1 million housing units, or about 200,000 units per annum. The following tables shows the distribution of expected demand for housing by administrative regions and type (new and replacement) and the cumulative unsatisfied demand for housing by the end of 2004, which was estimated at around 270,000 units. The table suggests demand in 2005–2009.

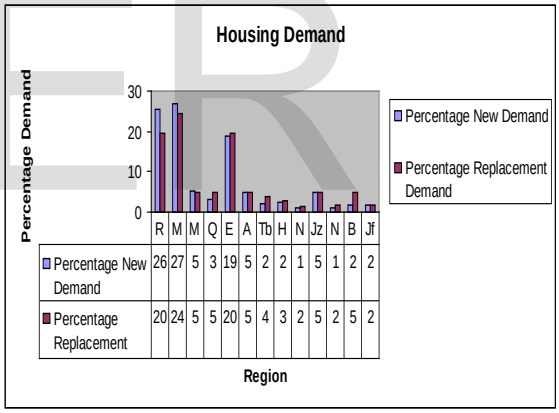
Satisfying the demand for housing, as shown in the following two tables would require developing sufficient residential land plots in all administrative regions of the Kingdom. The total space required is estimated at about 280 million m^2 during the period 2005-2009, at an annual average of 56 square kilometers.

Table 22: Demand for Housing by Administrative Region and Type of Demand (2005-2009) - *All amounts Represent Number of Houses Unless Otherwise Stated*

	New Demand		Replacement Demand		Total	
Region	Number in 000's	%	Number in 000's	%	Number in 000's	%
Riyadh	160	25.5	20	19.5	180	24.7
Makka	**170**	**27.0**	**25**	**24.4**	**195**	**26.7**
Madina	34	5.4	5	4.9	39	5.3
Qassim	20	3.2	5	4.9	25	3.4
Eastern Region	118	18.8	20	19.5	138	18.9
Assir	30	4.8	5	4.9	35	4.8
Tabuk	13.5	2.2	4	3.9	17.5	2.4
Hail	15	2.4	3	2.9	18	2.5
Northern Borders	7	1.1	1.5	1.5	8.5	1.2
Jazan	30	4.8	5	4.9	35	4.8
Najran	7	1.1	2	1.9	9	1.2
Baha	11	1.8	5	4.9	16	2.2
Jouf	12	1.9	2	1.9	14	1.9
Total	**627.5**	**100**	**102.5**	**100**	**730**	**100**

Source: Analysis of demand, Eighth Development Plan, Ministry of Economy and Planning

Figure 13: Demand for Housing by Administrative Region and Type of Demand (2005-2009)



Makkah region includes the main cities of Makkah, Jeddah and Taif and the towns surrounding these main cities.

Table 23: Unsatisfied Cumulative Demand for Housing By Administrative Region (2004) - *All amounts Represent Number of Houses Unless Otherwise Stated*

Region	Unsatisfied Demand for Housing (000)	Percentage

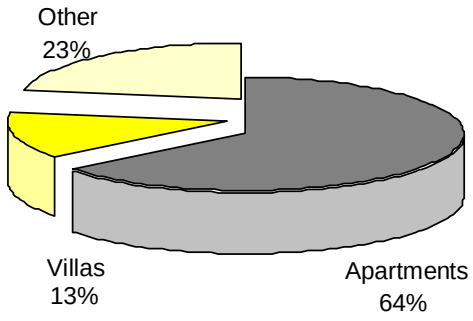
Region	Unsatisfied Demand for Housing (000)	Percentage
Riyadh	40	14.8
Makkah	**44**	**16.3**
Madinah	20	7.4
Qassim	12	4.4
East Region	27	10.0
Asssir	32	11.9
Tabuk	12	4.4
Hail	19	7.0
Northern Borders	8	3.0
Jazan	30	11.1
Najran	8	3.0
Baha	8	3.0
Jouf	10	3.7
Total	**270**	**100**

Source: Ministry of Economy and Planning

13.4. Distribution of Housing Units in Makkah

The following table shows the current distribution of housing units in Makkah.

Figure 14: Distribution of Housing Units in Makkah



Source: Ernst and Young Research based on a variety of inputs

13.5. The Market for Unfurnished Apartments

According to market research, the supply of unfurnished apartments is expected to increase by 12,373 units over the next ten years. In the following table we summarize the current and potential additions to the apartment supply in Makkah. Comment on each project is included in the paragraphs thereafter. These comments have been based on our discussions with the respective management.

Table 24: Current and Selected Potential Addition to Apartment Supply in Makkah

Name	Distance from Haram	Number of Units	Percentage Sold	Year of Operations
Burj Al Jiwar	200 meters	280	75%	2006
Al Mhesni Complex 7	5 minutes driving	245	70%	2007
Al Mhesni Complex 3	5 minutes driving	164	85%	2007

Name	Distance from Haram	Number of Units	Percentage Sold	Year of Operations
Al Shurfah Tower	50 meters	2,750	N/A	2007
King Adbul Aziz Endowment	50 meters	4,848	N/A	2009
Shamiya Project Phase 1	N/A	414	N/A	2010
Shamiya Project Phase 2	N/A	1,778	N/A	2013
Shamiay Project Phase 3	N/A	1,643	N/A	2015
Shamiya project Phase 4	N/A	251	N/A	2015
Total Units		**12,373**		

Source: Ernst and Young Research based on a variety of inputs N/A: information not available

13.6. Characteristics of Demand

The main characteristics of demand can be summarized as follows:

According to our field research, approximately more than 60% of the annual demand for serviced apartments in Makkah comes from Saudi Nationals while GCC nationals comprise the bulk of the remaining. Saudi and other GCC nationals usually visit Makkah in family groups and usually stay for periods of one week or longer. This has become the trend particularly during the school summer holidays market where Saudi families often request kitchen facilities because privacy is considered one of the most important factors sought after by Saudi and GCC nationals and with the capacity to prepare their own meals this is more likely to be achieved in a serviced apartment than in hotel accommodation. Many buildings in the central area are reserved for certain Muslim nations, such as Pakistan, Senegal, Indonesia, India and others. Most of these tend to be older apartment buildings that fall into the medium to low category. Most of the lower-quality apartment buildings close during the low season. Due to a shortage of supply, quality apartments have higher occupancies than the quality hotels. Developers have recognized the demand for such accommodation as demonstrated by the new projects coming up near the Haram area. Throughout the year, the bulk of reservations for apartments are made on an independent basis except during the Hajj period, where tour operators book most apartments for international pilgrims. Apartments have a high level of rental demand, during the low Ramadan and Omrah seasons, predominantly from Saudi nationals. During the peak periods of Hajj and high Ramadan, the apartments operate principally just as rooms, particularly those belonging to the low/medium category. Pilgrims during these periods are generally less inclined to use cooking facilities other than water boiling, and the sheer number of people in each room precludes them from performing this task. Many apartment blocks have shared kitchen facilities or “pantries” for pilgrims to use a stove or boil water. Sale prices for apartments increase according to the distance from the Haram. An apartment near the Haram may cost close to 1 to 2 million dollars, while the same apartment may be bought for 500,000 dollars in the more distant yet upscale area of Aziziyah.

13.7. Demand Estimates for Unfurnished Apartments

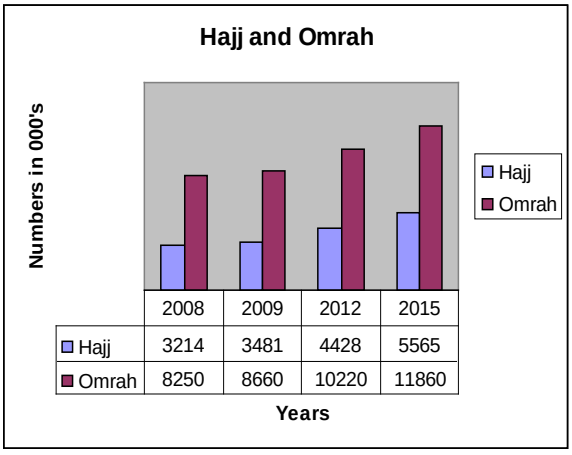
There is no market data that estimate the demand for such facilities in Makkah. Since these apartments would cater for visitors as well as the locals, the demand would need to be derived based on the number of Hajj and Omrah visitors as well as local population. The local demand can be calculated by looking at the socioeconomic classifications and based on housing distribution pattern and using that number as potential demand. However, to estimate the demand from religious visitors, the following basis has been used.

In order to estimate the demand from religious visitors, a translation factor was calculated based on the following three elements:

1. an estimate of the number of "households" as opposed to individuals;
2. an estimate of how many of these households have the income levels (based on the social economic classification or level of per capita income of the country visitors are coming from) to afford such facilities.
3. an estimate of how many of these households who can afford such facilities and are willing to buy.

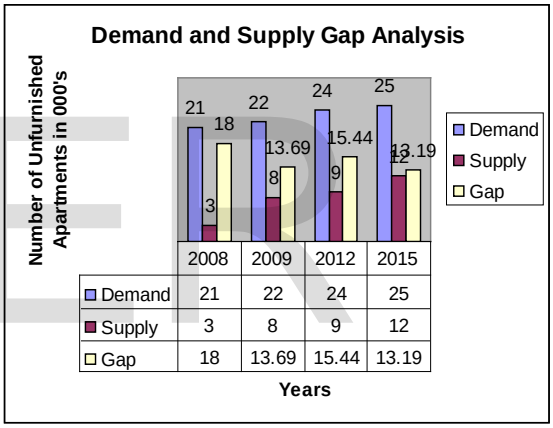
The analysis of current and future supply and demand gap analysis for unfurnished apartments based on the above approach is shown in the following:

Figure 15: Hajj and Omrah (2008, 2009, 2012 and 2015)



	2008	2009	2012	2015
Hajj	3214	3481	4428	5565
Omrah	8250	8660	10220	11860

Figure 16: Hajj and Omrah Demand and Supply Gap Analysis for Unfurnished Apartments (2008, 2009, 2012 and 2015)



	2008	2009	2012	2015
Demand	21	22	24	25
Supply	3	8	9	12
Gap	18	13.69	15.44	13.19

From the tables above, it is apparent that there is excess demand for unfurnished apartments in Makkah. This situation may likely to continue into the future; however, the demand gap will gradually decrease as more and more unfurnished apartments are coming into the market. Please note that the calculations in the above tables are based on estimates of the percentages of the population "willing to buy" which is quite subjective and different analysis may lead to changed results.

13.8. Summary

In summary, the implications of the residential market overview are as follows:

- Apartment units and duplex houses are estimated to increase significantly by 2020, which indicators should be noted for the residential component of the project.
- Mortgages are expected to be introduced in the market, which could result in high demand for duplexes and villas.
- Currently, Makkah is estimated to have 220,000 housing units.
- Demand for housing in Makkah region is estimated to be 195,000 units over the period 2005-2009.
- The unsatisfied cumulative demand for Housing for the Makkah region in 2004 was 44,000 units.

13.9. Critical Success Factors and Key Risks

13.9.1 Critical Success Factors

Critical success factors necessary for the residential component of the site in Makkah are described below:

- Road Planning and Networks: Enhancement in the roads and routes is needed to make it convenient for residential individuals as they would require ease of mobility to and from the main roads.
- Accessibility: The residential component of the project is easily accessible from the Jeddah Makkah Highway.

13.9.2 Key Risks

Some reasons identified for failure of the residential component of the project include:

- High price offerings to potential tenants.
- Lack of sufficient recreational services in surrounding areas.
- Inadequate transportation infrastructure.
- The key barrier for home ownership in Saudi Arabia is finding the proper financial support to fund a residential housing unit purchase.
- Currently, there are no laws that regulate the mortgage banking sector in Saudi Arabia which limits the expansion in financing residential units.
- Mortgage banking in Saudi Arabia accounts for 3% of total financing.

14. Conclusions

The purpose of this research is to determine the urban social pattern of the City of Makkah, Saudi Arabia. The reasons of choosing this research are multiple. First, it is particularly due to the importance of the Holy city of Makkah in the heart of the Muslim world. Second, the City of Makkah is the first capital city of the western province, and third I myself had a great interest in developing such a study to incorporate Bawabat Makkah as a way of helping reduce the overcrowd

of visitors coming to Makkah during the Hajj and Omrah seasons in particular and throughout the whole year in general as well as for the people and the residents of Makkah.

Every year, millions and millions of visitors come to Makkah either during the Hajj season or Omrah or throughout the whole year. It is one of the most important touristic regions in Saudi Arabia; it is also regarded as the economic capital of Saudi Arabia. The holy city of Makkah is separated from the metropolis of Bawabat Makkah only by 15 to 20 minutes. Every effort was taken by the government to make the City of Makkah an independent city and not a suburb or satellite city to Bawabat Makkah. However, the City of Makkah will still dependent on Bawabat Makkah for much of its activity.

The literature review as a secondary source material shows that urban social patterns have been studied across the world. Some theories explain the urban social pattern and its change over time and the analysis of economic variables.

The methodology used was that of social area analysis. Social area analysis broadly classifies variables some constructs such as the socioeconomic construct and the family status. Heterogeneity of the population is detected if these constructs emerge from the analysis. That would indicate that enclaves have not been caused by individual variables. The constructs of the social area analysis have been found to correspond to the theories. Generally the socioeconomic model showed a sectored pattern and the family component showed a concentric ring pattern. The variables selected under each construct were drawn out of experience of the researchers. In the City of Makkah, special emphasis has to be given to the socioeconomic components, demographics, family size and type of house under family status.

Analysis of data was done at two scales. These scales were the regional scale of the nodes (Bawabat Makkah), and the sub-regional scale of the sectors (neighborhoods) of the City of Makkah.

The software Excel was used to do the analysis and the method is a descriptive analysis. The data at both scales is tabulated, and histogram drawn of the variable selected from each data set. The final stage was mapping and graphically representing the analysis.

The interpretation of the analysis involves comparing the descriptive analysis to the urban social patterns.

The analysis also included different perspectives for Saudi Arabia in general and for the city of Makkah in particular. It started by analyzing the socio-economic and demographic aspects including the housing aspects, population size, growth forecasts and age profile.

The second part of the analysis was the market situation during the seasons of Hajj and Omrah including the number of pilgrims and visitors and their projections by 2015.

Another analysis is the health and the healthcare infrastructure showing the number of hospital in Saudi Arabia including the City of Makkah and the number of beds and the in and out patient visits.

The next analysis shows the real estate market and the investments made in Makkah including the land plots and prices. The housing market was analyzed including a description of the current

infrastructure, the current supply and the residential infrastructure, demand estimates and distribution of housing units.

The last past analyzed was the market of tourism in the western region showing the percentage of tourist trips and the number of nights spent. It also analyzed the international tourism from the year 2002 to 2012 including the growth rate.

In conclusion, although the policy is noble in its aims and aspiration, it needs more attention and follow up to succeed.

15. Recommendations

Taking the following recommendations into consideration might help implementing and speed up the satellite city described in this research study. This is not limited to only these suggestions, however, other steps in planning, collaboration and effective communication between all involved parties are at high degree of importance in order to successfully reach the main objective set by different level of the government and the private sectors including of course Sumou Real Estate as the major developer.

The recommendations are listed below:

1- The perfect satellite should not be too accessible to a great city lest the employees at Bawabat Makkah develop the habit of daily travel. For instance, many people may be satisfied to live in the City of Makkah and work at Bawabat Makkah or vice versa if the travelling facilities are equally cheap and convenient. This would make it difficult to induce workers to settle in the new town and is the main reason that the planners are aiming at a balance of industry, commerce, amenities and population. The population will grow only if the new town is as attractive as the old.

2- The plan for the new city must also satisfy the people of the old town and the new town, for the success of failure of any new town project hangs by the slender thread of making it the best place for people to live.

3- Sharing the functions between Bawabat Makkah and the City of Makkah as a regional economic center and complement each other and promote each other that there is no rural villages and other towns in population and new developments in industry and the relocation of population and industry, downtown competition for satellite sites.

4- Government authorities and other related departments concerned to speed up the development of the new town, should also focus on the parts of the development, and develop the new town's potential, so that it improves the function and concentration of population to play the rural regional economic center of the City.

Finally, I recommend further research studies to be carried out for future development within the western region in general and the city of Makkah in particular as it is expected that the number of visitors will grow drastically and hence more work must be done. This could include determining the pattern at intervals of time to study the change in pattern, putting forth generalities and models to

social pattern in city planning, and examining the policy means and goals.

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