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The Health Status of the Iraqi Population in Jordan

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Foreword

The present study is a collaborative effort between the Johns Hopkins University Bloomberg School of Public Health, Statistical Information Technologies, UNICEF and WHO. The assessment aims to provide critical information about the welfare of the Iraqi population in Jordan for policy-makers, donors, and program managers working in the fields of health and development. We hope information in this report will contribute to the ongoing efforts of donors, policy makers, and organizations that are working to serve displaced Iraqi populations, by providing a basis for the formulation of innovative policies and develop evidence-programming that will benefit the displaced Iraqi population in the Kingdom of Jordan.

Conducting a national survey of displaced populations presents challenges in any context and this survey was no exception. We are grateful for the assistance of the Department of Statistics which played a critical role in reviewing the survey sampling plan and questionnaire, and which did an outstanding job in data entry. Lastly, we would like to acknoweldge the excellent contribution of Statistical Information Technologies (SIT) for their work in database design and the management of data collection. Their team of field researchers performed with care and professionalism under difficult circumstances and they are to be commended.

We would like to extend our appreciation to the many international agencies and non-governmental organizations that assisted in the review and design of the study. We are especially grateful for the technical contributions of UNFPA to the reproductive health section of the survey and to Save the Children for their review of the education components of the survey and support in sample planning. Valuable input was also provided by UNHCR and UNICEF in the design of the sample frame and questionnaire content.

The study was approved by the Jordan Ministry of Planning and International Cooperation and funded through generous contributions from UNICEF and WHO.

Members of the team from Johns Hopkins Bloomberg School of Public Health included Dr. Shannon Doocy (Center for Refugee and Disaster Response), Rima Khalidi (Jordan Health Communication Partnership), Lina Qardan (Center for Communication Programs), Dr. Douglas Storey, (Center for Communication Programs), and Dr. Gilbert Burnham (Center for Refugee and Disaster Response); Basil Safi (Center for Communication Programs) provided administrative support. The lead investigators from Statistical Information Technologies included Jamal Salah al Deen and Yaser Salah al Deen. Technical support from the World Health Organization was provided by Dr. Nada Al Ward and Adam Sirois. GIS support for sampling and mapping was provided by Landon Schroeder who served as a consultant to the project. Jon Cunliffe from UNICEF also contributed to the study's conception, design, and content. The report was prepared by Dr. Shannon Doocy and Adam Sirois.

Inquiries about the study can be directed to Dr. Shannon Doocy (sdoocy@jhsph.edu) or Lina Qardan (linaq@jhcp.com.jo).

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Executive Summary

The objective of the national assessment of Iraqis in Jordan was to quantify a variety of measures of health and well-being among the displaced Iraqi population in Jordan. The survey included a geographically representative sample of Iraqis in Jordan, with 75% of the sample in Amman and 25% in other governorates which is representative of the actual distribution of Iraqis in Jordan. While all Iraqis were eligible for inclusion in the study, particular attention was paid to those displaced by the current conflict in Iraq who arrived in Jordan in 2003 or after. A summary of the key health findings that are detailed in the report is provided below:

- ***Access to Medical Care.*** The majority of Iraqi households (64%) reported they are able to get medical care whenever it is needed, and 86% reported seeking care the last time a household member needed medical attention. Iraqis sought medical care primarily at private facilities (61%), followed by NGO and Red Crescent facilities (23%), and government facilities (11%).
- ***Expenditures on Health.*** The median monthly household expenditure on health was 19JD, and medication accounted for the majority of health-related expenses. Cost was the greatest barrier to care seeking, with 59% of respondents indicating medical care is not affordable. Economic status was strongly linked to expenditures on healthcare with households in the highest economic quartile spending five times as much on healthcare as households in the lowest economic quartile.
- ***Disabilities.*** Overall, 3.4% of the population was disabled, with disability rates of 2.1% among children, 4.2% among adults, and 5.9% among older adults. The physical disability rate was 1.7%, and 54% of physical disabilities were conflict related; males were 1.6 times more likely to be physically disabled then females. Mental disabilities were reported in 1.7% of the population, and 81% were attributed to conflict with depression as the leading cause of mental disability.
- ***Chronic Medical Conditions.*** The prevalence of chronic medical conditions among adults was 36%. The most commonly reported chronic conditions included hypertension (20%), musculoskeletal problems (19%); digestive conditions (11%); diabetes (9%); and cardiovascular conditions (7%).
- ***Mental Health Disorders.*** The Hopkins Symptom Checklist (HSCl-25) was used to assess emotional distress and depressive symptoms in adults. Depressive symptoms were observed in 16.2% of the population when the more rigorous DSM-IV-based algorithm was used, and severe emotional distress was observed in 44.1% of the population when a fixed cutoff of 2.5 was applied (on a scale of 4). Amman residents were 1.3 times more likely to report emotional distress than those living outside Amman, and women were 1.6 and 2.2 times more likely to be classified as having depressive symptoms and emotional distress, respectively, as compared to men.
- ***Reproductive Health.*** Nearly a third (32%) of currently or previously married women had given birth in Jordan. Antenatal care was sought by 91% of women during their last pregnancy, and 94% of births occurred at a health facility. The contraceptive prevalence rate was 40% and 24% of married women of reproductive age reported a current need for contraception; 58% of current pregnancies were unplanned. Cost and not knowing where to seek care were the primary barriers to accessing reproductive health services.
- ***Children's Health.*** Overall, 49.9% of children age 12 and under were reported as having one or more illnesses in the past month, with the most common illnesses being respiratory infections (30%), fever (25%), and diarrhea (15%). Of children under five, 98% were ever vaccinated, with 74% reporting having been vaccinated in Jordan and 26% in Iraq.

- ***Children's Nutrition.*** Prevalence of acute malnutrition in children 6-59 months of age by mid-upper arm circumference (MUAC) was low with 1.1% and 0.6% falling in the moderately and severely malnourished categories, respectively. The actual prevalence of wasting is likely higher because MUAC can under-identify malnutrition in older children. A higher proportion of children would likely to be found malnourished if underweight and stunting had been measured.

Key Summary Statistics for the Iraqi Population Displaced in Jordan

Population Characteristics	
Average household size	4.5
Crude birth rate (per 1000/year)	20.6
Crude death rate (per 1000/year)	2.0
Female headed households	20.2%
Households with children under 18 years of age	52.0%
Households with children under five years of age	30.0%
Health	
Prevalence of disabilities	3.4%
Prevalence of chronic health conditions among adults	36.2%
Acute malnutrition among children under five (by MUAC)	1.7%
Proportion of children under five that were ever vaccinated	98.2%
Care Seeking	
Households seeking medical attention within the past month	71.2%
Care seeking rate (the last time medical attention was needed)	85.8%
Median monthly household expenditure on health (JD)	20
Households with a hospitalization in the past year	30.2%

Introduction

The 2003 invasion of Iraq resulted in widespread displacement, with large numbers of Iraqis moving internally within Iraq as well as across international borders. The majority of those seeking refuge in other countries settled in Syria and Jordan, with smaller numbers residing in Egypt, Iran, Lebanon, and other gulf countries. Although the absolute number of Iraqis in Jordan remains unclear, some estimates place the number of Iraqis residing in Jordan as high as 450,000 to 500,000.[1] Jordan hosts the largest number of refugees per capita of any country in the world with 84 refugees per 1,000 Jordanians, with refugees primarily originating from the Palestinian Territories and Iraq.[2] Nearly 10% of the population in Jordan is comprised of displaced people which represents a significant strain on the government and its resources, impacting the national economy and placing additional burdens on public services and national resources. This is particularly true given the global economic downturn, rising unemployment, inflationary pressures and potential reductions in funding support to refugee programs worldwide.

As violence in Iraq increased during the conflict, large influxes of Iraqi refugees arrived in Jordan with migration peaking in 2006. Beginning in 2007, at the request of the Iraqi government, Iraqis were required to obtain visas which made migration to Jordan more difficult. Jordan, like many countries in the Middle East, is not a signatory to the 1951 convention on refugees or the 1967 protocol on the status of refugees. Iraqis in Jordan are not accorded refugee status and protections, and are designated as "Persons of Concern by UNHCR." Most Iraqis in Jordan do not possess official residency, and therefore, they are not permitted to work legally. Although they may apply to become residents, the requirements to do so make it unattainable for the vast majority and, only several thousand Iraqis have residency status in the Kingdom. Fortunately, the government and legal authorities in Jordan have allowed Iraqis to overstay their visas and have offered waivers for the associated fines. Until the security situation in Iraq improves it is unlikely that a significant number of Iraqis will return and it is anticipated that the majority will remain in Jordan for the immediate future.

Iraqis in Jordan face legal uncertainty, which limits the type of work they can engage in and places economic and emotional strains on Iraqi families, whose financial sources have dwindled over time, making it increasingly difficult for them to meet their basic needs. Additionally, many Iraqis face challenges in accessing public services such as primary healthcare, even though the Government of Jordan passed policies in 2007 that allowed Iraqi families to access government health centers at reduced cost.

In spite of these challenges, the Kingdom of Jordan must be commended for extending its hospitality and resources to the hundreds of thousands of Iraqis who have been afforded safety and asylum in the Kingdom since 2003. Without Jordan as host nation for Iraqis, their situation would have been much worse. It is with this in mind that this report aims to provide information that will assist the Government of Jordan, the international community, and local agencies to design policies that can ease the burden of the Iraqi population on Jordan's health system. This assessment reflects the health profile of the Iraqi community in Jordan in the last quarter of 2008. It is hoped that its findings can enable the Government of Jordan and the international community to more effectively allocate resources and design health programs that will address the needs of the Iraqi population displaced in Jordan.

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[1] FAFO. Iraqis in Jordan: Their Numbers and Characteristics. Oslo, Norway: FAFO, 2007.

[2] UNHCR. Key Indicators--Top Host Countries for Refugees, 2006. Accessed 2 February 2009. URL: http://www.unhcr.org/country/jor.html.

Methods

Sample Size Calculations

The objective of the survey was to assess a variety of health and well-being measures among the Iraqi population displaced in Jordan. Because numerous indicators were assessed, sample size calculations were based on the maximally conservative prevalence rate of 0.50 and the assumption that geographic location was the most important comparison in terms of informing planning of health services and humanitarian assistance. An estimated 70-80% of the Iraqi population in Jordan resides in Amman. This proportion reflects a general understanding of UN agencies and NGOs providing humanitarian assistance and is supported by both UNHCR registration data and UNICEF statistics on school enrollment of Iraqi children. Data from UNHCR's beneficiary information system (BIS) suggest that 76.1% of Iraqis in Jordan resided within Amman, including both the registered and non-registered population.[3] School enrollment data provided to UNICEF by the Government of Jordan indicated that 74% of Iraqi children in Jordan enrolled in public schools were in Amman with the remaining 26% enrolled in schools in other governorates.[4]

Sample size calculations were based on these proportions and assumed that 75% of the sample will be in Amman. Minimum sample size was determined to obtain adequate power for comparison between Amman and non-Amman populations. An advantage to this approach is that the sample size is also likely to be adequate for comparison between different population sub-groups within Amman such as households of different income levels, or the UNHCR registered versus unregistered population. Sample size calculations assume 80% power (1-β) and a significance level of α=0.05; required sample sizes to detect a minimum difference in prevalence between a select characteristics in the population of study are presented in Table 1. Sample size calculations were performed at the household level because both household and individual level indicators were assessed, thus minimum sample size was needed to reflect the total number of households in the sample (multiple individuals in one household yield a substantially larger individual sample size).

Table 1: Sample Size Calculations—Number of Households Required

Minimum Difference to be Detected	**Unadjusted Sample Size**			**Adjusted Sample to Account for Cluster Design**
	Sample Size for non-Amman Population	Corresponding Amman Sample Size	Total Sample Size	
10%	270	810	1080	2160
15%	**121**	**363**	**484**	**968**
20%	70	210	280	560
25%	45	135	180	360

The study was powered to detect a statistically significant difference in prevalence rates of 15% or greater between Amman and non-Amman populations. This resulted in a minimum required sample size of 242 households outside Amman and 726 households in Amman (total n=968). The planned sample size was increased to 1200 households to allow for households that declined to participate and to increase the power, narrow the width of confidence intervals, and improve the ability to detect significant differences for comparisons between populations in Amman and other regions of Jordan.

[3] UNHCR. "Data on Iraqis in Jordan from the Beneficiary Information System (BIS)" (unpublished data). Amman, Jordan: UNHCR, November 2007.

[4] UNICEF. "Data on enrollment of Iraqi school children in Jordan" (unpublished data). Amman, Jordan: UNICEF, June 2008.

Sample Design

A multistage cluster sampling design was used to distribute the sample proportionally to residence locations of the Iraqi population in Jordan. Designing a household survey of Iraqis displaced in Jordan is difficult because Iraqi households are integrated in Jordanian communities. There is no listing of Iraqi residences or an alternative other than a door-to-door search for Iraqi households. Smaller clusters sizes were easier to complete and ideal to overcome this challenge. An additional advantage to distributing the sample across a large number of clusters was greater spatial coverage and reduced design effect. A 120 x 10 cluster survey design was identified because it was anticipated that interview teams would complete a minimum of ten household interviews per day, since household identification could require a lot of time. The 120 clusters were divided so 90 clusters (75%) were allocated to Amman and the remaining 30 clusters (25%) were allocated to other governorates proportionate to the distribution of Iraqis. Standard probability sampling methods were used to allocate clusters using sampling intervals and randomly identified start numbers.

Sample Allocation. Information sources on the geographic distribution of the Iraqi population within Jordan included UNHCR (populations registered as of November 2007) and school enrollment data from UNICEF and Save the Children (SC). UNICEF school enrollment data was provided by the Government of Jordan and included geographic location only for students in public schools. SC data included geographic location for children enrolled in both private and public schools. All three data sets had limitations that were considered in designing the sample. The UNHCR data set was the largest with approximately 50,000-60,000 registered beneficiaries, but was non-representative because the location of UNHCR beneficiaries within Amman that are not registered (including many of those receiving assistance from UNHCR implementing partners) was not included. To minimize bias from any single data source, the average population proportion from the three sources was used as a basis for sampling.

Within Amman directorates, the average proportion of the Iraqi population in each district from the two sources was used for cluster allocation, and a similar process was repeated for neighborhoods within each district. UNICEF school enrollment data was determined to be less biased and preferable for planning the non-Amman sample. Because a relatively small proportion of Iraqis attending private schools resided outside of Amman, the data was considered adequate for sample planning. Most Iraqis displaced in Jordan reside in urban areas; in cases where the city of residence was not provided, clusters were assigned to the primary urban center of the Nahias (the largest sub-division within governorates).

Identification of Cluster Locations. A multistage sampling process was used to assign clusters to the smallest available administrative sub-units (either cities or directorates outside of Amman and neighborhoods in Amman). Within each administrative area, start points were identified using a geographic information systems (GIS) based approach where coordinates within the area were randomly selected. Maps were produced locating the starting coordinate within neighborhoods, and cross streets and nearest residential blocks were identified to aid the interview teams in reaching the specified start location. Once the cluster start point was reached interview teams located the nearest Iraqi households; the ten households closest to the start location that agreed to participate comprised the cluster. Because of the difficult nature of locating Iraqi households that may be thinly dispersed, referrals from respondents were permitted in order to make the sampling methodology feasible. While this is a limitation, it was necessary if data collection was to be completed, and because households are already likely to be similar to their neighbors, it was believed the method did not introduce substantial bias or additional selectivity into the sample.

Questionnaire Design

A series of official meetings with relevant Government of Jordan (GOJ) agencies were held in order to review the study objectives and design and to seek their approval. To incorporate the perspective of agencies working directly with displaced Iraqis, an additional meeting was held with relevant UN agencies and NGOs to discuss the proposed survey design and questionnaire content. A draft questionnaire was developed in early 2008 by Johns Hopkins University Bloomberg School of Public Health (JHSPH) and content was based on consensus from the meeting as well as specific requests by UN and GOJ agencies. The questionnaire was provided to UNICEF, WHO, NGOs working with Iraqis in Jordan, and to the Ministry of Planning and International Cooperation (MOPIC) for review and comment. Following several months of review and feedback from stakeholders, a draft version suitable for pilot testing was agreed upon; UNICEF had the final version translated to Arabic by a certified translator. This version was reviewed by WHO/Jordan, the Jordan Health Communication Partnership (JHCP), and SIT (Statistics Information Technology), and minor changes such as vocabulary, phrasing and formatting were made to the instrument after the pilot. Back translation of the final Arabic version to English was performed to ensure accuracy and quality of the Arabic translation.

The final survey tool included three separate instruments: 1) a survey for heads of household which included demographic information, living conditions, household economy, registration status and humanitarian assistance, education, adult health status, disabilities within the household, and health seeking behavior; 2) a survey for females of reproductive age (15-49) with questions on children and pregnancy, household food security, the health status of children under 12, and children's vaccination status; and 3) the Hopkins Symptoms Checklist for assessment of anxiety and depression, for which an adult household member was randomly selected as a respondent. In addition, the presence of a BCG scar was assessed for children 17 and under, and mid-upper arm circumference (MUAC) was measured among children between 6 and 59 months of age.

Survey Implementation

The Jordanian company, Statistical Information Technology, has extensive experience in survey research and was responsible for the of oversight data collection. A total of 24 Jordanian interviewers with prior survey experience were hired as data collectors along with six field supervisors. Three days of training was conducted on survey design, interview techniques, the questionnaire, medical terminology and disease classifications. Training provided an Iraqi physician from WHO/Jordan for Jordanian interviewers and supervisors included measuring MUAC, verification of BCG scars, and sensitivity training on Iraqi language and cultural practices. Training was immediately followed by a pilot survey of 57 households which provided the team with an opportunity to finalize the questionnaire. Additional training and directions following the first few days of field work were provided to address minor problems encountered.

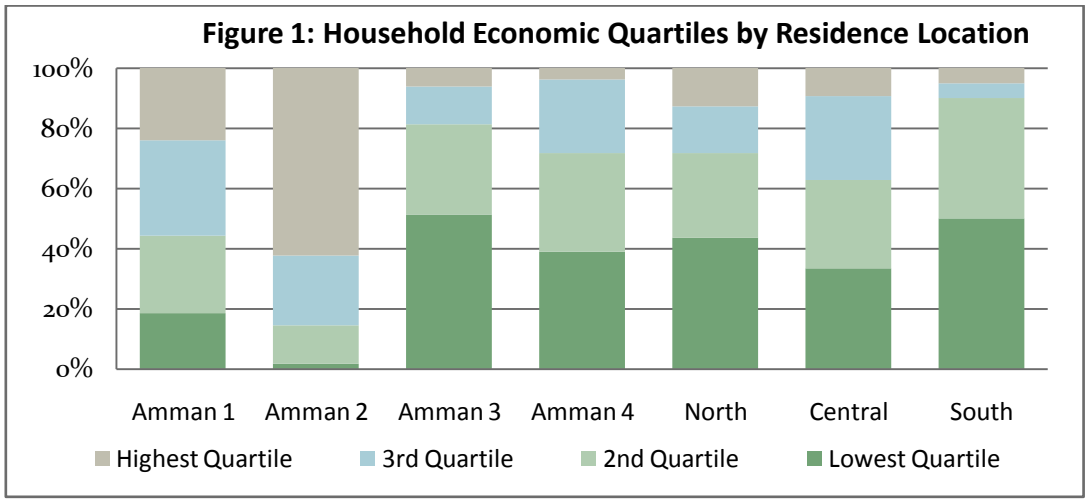
In preparation for the survey, cluster start points within each administrative unit were randomly selected and then plotted on Google Earth open source mapping software. Training was provided to supervisors on utilization of GPS handsets. The nearest intersection to each randomly selected GPS coordinate was specified as the starting location for the cluster. The fieldwork was conducted by six teams of surveyors. Each survey team (n=6) consisted of five people: four interviewers, two males and two females, and one supervisor who also served as the cluster locator and driver. Upon arrival at the start point, interviewers split into two male-female pairs that worked independently to locate Iraqi households in the areas. Male interviewers interviewed male heads of household when present while female interviewers interviewed women of reproductive age, preferably the mother of children in the household. If the household head was not present, the female interviewer would address all of questions from both the head of household and female questionnaires to a woman in the household. Conversely, if there was no woman of reproductive age, the head of household questionnaire

along with some sections of the female questionnaire that focused on household information were completed by the male respondent.

All participants were informed of the voluntary nature of participation and that the interviewer was not affiliated with the government, but rather was conducting the survey for UNICEF and WHO. To protect the anonymity of respondents, reporting names of the household head or family members was limited to only first names which were required for tracking individual characteristics within the household. Other unique identifiers such as telephone numbers and addresses were not recorded. In the case of incomplete clusters or missing households, survey teams re-visited each cluster site three times using new randomized GPS start point coordinates to identify new households for inclusion. Efforts were made to conduct interviews in private locations, almost always within the respondent's home. As much as possible, female respondents were interviewed privately from other family members. On average, interviewers spent 45-60 minutes in a household to complete all survey components. Data collection was conducted between October 18th and November 6th, 2008.

Data Management and Analysis

During and after the fieldwork several measures were taken to ensure proper mapping, identification of households, data collection, and summation. WHO and JHCP staff were present throughout the fieldwork, and carried out daily spot checks and additional training for the survey teams. Interviewer and supervisor teams reviewed all questionnaires on a daily basis to confirm completion and finalize coding. Data were entered and verified by the Jordan Department of Statistics (DOS) and bilingual staff at SIT. Data was analyzed using SPSS, Stata, and Excel software packages. All statistically significant variables ($p<0.01$) in univariate analysis were considered in the multivariate regression models. Forward conditional and stepwise methods were used for multivariate logistic and linear regression models.



Health outcomes were analyzed by a number of variables including household characteristics and location. Economic status quartiles were determined by averaging monthly household expenditures and household income and then identifying the corresponding quartile for each household. The economic status distribution by quartiles was as follows: lowest quartile, <295 JD/month; second quartile, 295-448JD/month; third quartile, 450-1000JD/month; and the highest quartile, >1000JD/month (the exchange rate at the time of the survey was 1.41JD/USD). When households only reported income or expenditures, the corresponding quartile for reported income or expenditure data was used to categorize the household's economic status. In cases where no income or expenditure data were reported, the median economic status score for the cluster was imputed. The distribution of the population across the four economic quartiles by geographic areas is summarized in Figure 1 (see annex for maps).

Approvals

The study was reviewed and approved by the Johns Hopkins University Bloomberg School of Public Health Institutional Review Board.

Results

The Study Population

The study was designed to capture a representative sample of Iraqis living in Jordan and to provide findings that could characterize the health status of the Iraqi population in Jordan. A total of 1231 households were approached to obtain the target sample size of 1200 households, resulting in a refusal rate of 2.6%. Among the 31 households that declined participation, the primary reasons for refusal were survey fatigue, security concerns, and lack of time/interest. At each participating household, the household head was interviewed regarding the status of the household and its members. In addition, separate interviews were conducted with women of reproductive age that included reproductive health, children's health, and food security, and the Hopkins Symptoms Checklist (HSCL-25) was administered to a randomly selected adult household member. In instances where the household head or woman of reproductive age was not present for the interview, other adult household members were identified as respondents, where appropriate. Results presented in the following sections include the three survey instruments and multiple respondents from within each household.

Overall, 74.6% of surveyed Iraqis resided in Amman with the remaining 25.4% in other governorates approximating the distribution of Iraqis in Jordan. The Amman sample was divided across the four directorates as follows: Directorate 1, 38%; Directorate 2, 33%; Directorate 3, 9%, and Directorate 4, 20%. Outside of Amman, the sample was distributed across the three regions of Jordan with each region comprising the following proportion of sampled households: South—3.3%, including the governorates of Ma'an, Aqaba, and Karak; Central—12.6%, including the governorates of Zarqa, Balqa, and Madaba; and North—9.5%, including Mafraq, Ajloun, and Irbid.[5] Data presented throughout the report will be presented by geographic region to characterize differences in well-being by location. Amman residents were significantly more likely to have arrived after the conflict began than non-Amman residents, with 2003 or later arrival dates reported by 81.0% and 64.7% of Amman and non-Amman residents, respectively.

Respondents and Household Characteristics

Household survey respondents ranged from 18 to 86 years in age, with an average of 42 (SD=13). Of respondents, 43% were males and 57% were females, and 47% identified themselves as the head of the household. The 1,200 participating households had a total of 4,997 current household members of which 48.8% were males and 51.2% were females. In total, 52.0% households had children under age 18 and 30.0% of households had children under 5 years of age. The highest level of educational attainment among all household members was as follows: none, 1.9%; primary school, 8.8%; secondary school, 23.8%; institutional (technical or 2-year) degree, 16.8%; and university degree or higher, 48.8%. A shared dwelling space with other unrelated individuals was reported by 5.2% of households.

Vulnerable Groups

Among displaced populations certain sub-groups are often characterized as vulnerable according to both individual and household characteristics. Groups commonly identified as vulnerable include children, women, older adults, the disabled, and members of female headed households. Vulnerable age groups comprised a total of 44.0% of the population, with

[5] No households were sampled in Tafilah (Southern region) and Jerash (Northern region) governorates.

the following proportions falling into vulnerable age groups as follows: children 0-5 years of age, 11.6%; children 6-12 years of age, 14.3%; children 13-17 years of age, 10.3%, and older adults aged 60+ years, 7.8%. A total of 2.9% of the population was disabled, including 1.7% with physical disabilities and 1.2% with mental disabilities. Female headed households comprised 20.2% of surveyed households; however, by many measures female-headed households were comparable to male-headed households.

Iraqi Health Service Use in Jordan

Health Care Seeking

To ascertain information about access to healthcare, respondents were asked about health needs within the past month, if and where they sought care the last time a family member was in need of health services, and about barriers to care seeking. Overall, 71.2% of households reported that a family member needed medical care within the past month. When asked about care seeking the last time a household member needed medical attention, 85.8% of households reported that care was sought last time medical attention was needed. An analysis of care seeking rates and the sector of the facility type where households last sought care by select household characteristics is presented in Table 2.

Table 2: Rates of Care Seeking by Select Household Characteristics

	Rate of Care Seeking	p-value	**Care Seeking by Sector****			p-value
			Private	NGO	Public	
Overall	**85.8%**	---	**59.0%**	**23.3%**	**11.3%**	---
Greater Amman	86.6%	.167	64.1%	23.4%	7.6%	<.001*
Outside Amman	83.3%		50.0%	23.2%	22.8%	
Amman Directorate 1	82.0%	.003*	64.1%	21.6%	9.1%	<.001*
Amman Directorate 2	90.7%		79.8%	9.9%	5.3%	
Amman Directorate 3	82.5%		53.0%	25.8%	15.2%	
Amman Directorate 4	90.6%		42.9%	47.2%	5.5%	
Northern Region	78.2%	.184	57.0%	23.3%	16.3%	.135
Central Region	86.7%		47.7%	25.4%	22.3%	
Southern Region	85.0%		41.2%	14.7%	41.2%	
No education	91.3%	.005*	33.3%	33.3%	28.6%	<.001*
Primary education	79.0%		45.8%	28.9%	18.1%	
Secondary education	83.2%		52.1%	29.4%	12.6%	
Institute or 2 yr degree	93.0%		48.7%	34.2%	13.4%	
University degree	85.8%		72.8%	15.0%	8.0%	
Female household head	84.8%	.051	60.5%	23.9%	11.1%	.798
Male household head	89.7%		61.3%	21.2%	11.3%	
Household size ≤6	83.0%	<.001*	59.0%	23.9%	11.9%	.369
Household size >6	92.5%		64.3%	22.0%	9.9%	
Lowest economic quartile	80.9%	.013	39.3%	40.1%	14.9%	<.001*
Second economic quartile	87.4%		46.8%	31.9%	16.0%	
Third economic quartile	84.6%		69.8%	17.7%	8.9%	
Highest economic quartile	89.9%		84.4%	5.5%	5.8%	
Arrived before 2003	85.9%	.765	61.5%	23.2%	10.2%	.213
Arrived 2003 or after	85.2%		57.6%	23.7%	14.8%	
UNHCR registered	86.7%	.062	54.9%	29.2%	11.2%	<.002*
Not registered	82.2%		81.1%	2.3%	11.7%	

*indicates statistically significant difference

** care seeking at other locations/provider types (4.8% of visits) is not presented in the table

Iraqi households sought medical care primarily at private facilities (60.6%), followed by NGO and Red Crescent facilities (23.3%), government facilities (11.3%), and other types of providers (4.8%). The Iraqi population in Amman had significantly higher rates of care seeking at private institutions as compared to the population outside Amman, with rates of 64.1% and 50.0%, respectively. In contrast, the population outside Amman was more likely to seek care at government facilities, with 22.8% reporting seeking care at public facilities as compared to 7.6% of the Amman population. Outside Amman, care seeking rates within the private, NGO, and public sectors were similar by region. Within Amman, the sector where care was sought varied greatly by directorate, with substantially higher usage of the private sector in Directorate 2, the NGO sector in Directorate 4, and the public sector in Directorate 3.

Increased use of the private sector correlated with both higher educational attainment and higher economic status; households with lesser education and lower economic status were more likely to use NGO and government facilities. A small proportion (5.8%) of households in the highest economic quartile used government health facilities. This could be because some highly specialized procedures or treatment therapies are only available at government hospitals, such as cancer treatment or organ transplant surgeries. UNHCR registration was associated with greater use of NGO clinics; those not registered with UNHCR had higher rates of care seeking in private sector facilities. No significant difference in care seeking location was observed by head of household sex, household size of 6 and above, or arrival before or after 2003.

Care seeking rates were similar between populations in greater Amman and elsewhere in Jordan. Within Amman, households in Directorates 1 and 3 had care seeking rates that were significantly less than those in Directorates 2 and 4, with care seeking rates of 82% and 91%, respectively. Care seeking rates also differed by the highest level of educational attainment within the household, however no clear relationship was observed between increased education and higher rates of care seeking. Interestingly, households without a member that completed primary education or beyond had the highest rate of care seeking (91%). Marginally significant differences in care seeking rates were observed by head of household sex and UNHCR registration rates, where female headed households and those not registered with UNHCR reported slightly lower care seeking rates. Socioeconomic status was clearly associated with care seeking where those in the lowest economic quartile reported a care seeking rate that was 9% lower than those in the highest economic quartile. No significant difference in care seeking rates was observed by pre-/post-conflict arrival period.

While no significant difference in care seeking rates was observed between the Amman and non-Amman population, significant differences in care seeking were observed among the four directorates in Amman, necessitating a separate regression model for the Amman population. Results from multivariate logistic regression for the Amman population are presented in Table 3. Within Amman, Iraqi residents of Directorate 1 were 2.09 (95 CI: 1.14-3.83) times more likely not to seek care as compared to those in Directorate 4, which had the highest rate of care seeking. Economic

Table 3: Risk Factors for Not Seeking Medical Care in Amman

	Adjusted Odds of Not Care Seeking		
	Point Estimate	95 % CI	p-value
Amman Directorate 1	2.09	1.14-3.83	.017*
Amman Directorate 2	1.24	0.60-2.58	.558
Amman Directorate 3	1.68	0.77-3.69	.192
Amman Directorate 4	Reference	--	--
Lowest economic Quartile	2.49	1.23-5.04	.011*
Second economic Quartile	1.19	0.61-2.33	.607
Third economic Quartile	1.45	0.82-2.58	.206
Highest economic Quartile	Reference	--	--
Household size ≥6	0.47	0.28-0.80	.005*
Not UNHCR registered	1.93	1.19-3.12	.008*

*indicates statistically significant difference

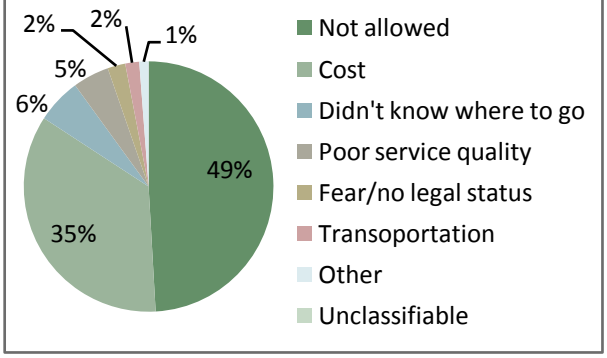
status was also significantly associated with care seeking, where those households in the lowest economic quartile were 2.49 (CI: 1.23-5.04) times less likely to seek care compared to those in the top quartile. Interestingly, smaller households were 2.12 (CI: 1.25-3.57) times less likely to seek needed medical care than larger households, and those households not registered with UNHCR were 1.93 (CI: 1.19-3.12) times more likely not to seek care than households registered with UNHCR. For populations outside of Amman, the only household characteristic that was significantly associated with care seeking was household size. Similar to Amman, larger households had greater rates of care seeking than smaller households, where households <6 members were 2.31 (CI: 0.99-5.38) times more likely not to seek medical care than households with ≥6 members (p=.053).

Table 4: Reasons for Seeking Health Services by Facility Sector

	Overall	***By Sector***		
		Private	NGO	Public
Care seeking by sector type of facility	**100.0%**	**60.6%**	**23.3%**	**11.3%**
Top Reasons for Seeking Care at the Facility				
Like the staff and/or efficiency of treatment	21.4%	33.6%	0.0%	1.7%
Provider is close to place of residence	20.0%	23.7%	5.3%	28.4%
Treatment is free	18.5%	0.3%	74.9%	0.0%
Not aware of other facilities	8.3%	11.0%	11.1%	6.9%
Personal knowledge of facility or staff	6.8%	8.6%	0.0%	4.3%
Unable to go to another facility due to distance	5.2%	0.0%	0.0%	45.7%
It was a medical Emergency	4.6%	4.8%	0.0%	9.5%
Have insurance with the institution	4.4%	6.6%	0.0%	3.4%
Do not have insurance	3.2%	0.0%	5.1%	0.0%

Reasons for deciding to seek care at the selected location are summarized in Table 4, and were similar among populations inside and outside Amman, and among the three regions of the country. The primary reasons for seeking care at a facility included a positive perception of the staff or efficiency of treatment (21.4%); the facility was located close to the respondent's place of residence (20.2%); and treatment was free (18.5%). Reasons for seeking care varied significantly by the facility sector (private, NGO, or public). The primary reasons for choosing to seeking care at private facilities included liking of the staff and/or efficiency of treatment (33.6%), the provider is located close to the place of residence (23.7%), lack of awareness of other facilities (11.0%), and personal knowledge of the facility or staff (8.6%). Among those who sought care at NGO facilities, reasons cited for preferring seeking care included free treatment (74.9%) or low cost of treatment (7.4%), and location close to the place of residence (5.3%). For care seekers at government facilities, the primary reasons included inability to seek care elsewhere due to distance (45.7%), the facility is located close to the place of residence (28.4%), it was an emergency (9.5%), and lack of awareness of other facilities (6.9%). Among the 15.2% of households that did not seek care the last time that it was needed, the primary reasons for not seeking care included: care seeking was not allowed by the husband/household head (49.1%); cost (35.1%); did not know where to go (5.8%;) and dislike of services or perceived poor quality or (4.7%) (Figure 2).

Figure 2: Reasons for Not Seeking Needed Medical Care



Use of Government Health Facilities

When asked if any household member had ever used a government health facility since their arrival in Jordan, 27.6% of households reported one or more visits. Among households that had ever used government health services, there was a median of two visits by household members to a government facility within the past six months. Households outside Amman were 2.6 (CI: 1.9-3.5) times more likely to have ever used a government health facility than households in Amman, with 41.3% and 23.0%, respectively, reporting use of government health facilities. Public sector facility use varied by region in areas outside of Amman as follows: North, 38.2%; Central, 47.8%, and South 72.2% ($p<.001$). The significant differences in government facility use were assessed using multivariate logistic regression for households in Amman and the other regions of Jordan.

For the Amman population, the household characteristics significantly associated with care seeking at government health facilities were economic status, household size, and presence of a child in the household. As compared to those households in the highest economic quartile, the odds of ever having sought care at a government health facility were as follows: third quartile, 2.13 (CI: 1.32-3.45); second quartile, 3.50 (CI: 2.19-5.87); and lowest quartile, 3.69 (2.23-6.10). Those households with ≥6 members were 1.45 (CI: 1.00-2.08) times more likely to report ever having used a government health facility as compared to households with >6 members. Amman households with children were 1.49 (CI: 1.03-2.17) times more likely to have ever used a government health facility than those without children.

For the population outside Amman, household characteristics that were significantly associated with ever having used a government health facility included educational attainment, presence of a child in the household, and region. As compared to households in the North, households in the Southern region were 5.66 (CI: 2.29-13.90) times more likely to have sought care at a government health facility; no significant difference was found when the Northern and Central regions were compared. As compared to households where at least one member had completed a university degree, households where no member had completed any level of education were 21.43 (CI: 2.44-188.12) times more likely to have used a government health facility, though economic status is a likely confounder. Comparisons between households completing primary, secondary, or institutional degrees and university level education were not significant. Households with children were 2.64 (CI: 1.50-4.65) times likely to have ever used a government health facility than those without children.

Both in Amman and other regions of Jordan, households that were disadvantaged by some measure of socioeconomic status, either educational attainment or economic quartiles, or those with children were more likely to have sought care at a government health facility. Economic quartiles proved to be a strong predictor of government health facility use in Amman, whereas educational attainment was the better predictor in areas outside of Amman. By both measures, those households that were disadvantaged were the most likely to have used government services. Households with children were more likely to have used government health facilities than those without children, and this finding held true in both Amman and other areas. One likely explanation for this finding is that vaccinations are available at government health facilities free of charge, and high vaccination rates among young children suggest that households with children are taking advantage of these services.

Household Spending on Health

On average, total household spending on medical consultations and medications in the month preceding the survey was 50JD (median 19JD), and nearly all expenditures were for medications and/or medical treatments (Table 7). Only 2.9% of households reported any expenditure on medical consultation and/or diagnostic fees within the past month, and all reported expenditures were less than 10 JD. In comparison, the majority of households (76.2%) reported expenditures on medication; the median monthly medication expenditure

was 20 JD. Monthly medication expenditure quartiles were as follows: lowest quartile, <4JD; second quartile 4-19JD; third quartile, 20-49JD; and highest quartile, 50JD and above. Medication expenditures account for nearly all of household spending on health which suggests that an effective means of reducing out of pocket health expenses among the Iraqi population would be to subsidize the cost of medications, particularly among those in the top quartile, for medication expenses.

Mean health expenditures in Amman households was 59JD (median=20JD) in the month preceding the survey as compared to 24JD (median=14JD) outside Amman. When assessed by region, households in the South had the lowest average monthly medical expenditures at 12 JD (median 6JD), followed by the North where average expenditures were 24 JD (median 15JD), and the Central region where monthly health expenditures were the greatest and averaged 28 JD (median 15JD). Significantly increased monthly spending on health was observed for households with children and those reporting a chronic medical condition (Table 5). Those households registered with UNHCR also had significantly lower health expenditures as compared to those that were not registered.

Table 5: Household Spending on Health—Past Month (JD)

	Household Spending on Health		
	Median	Mean	p-value
Overall	**19**	**50 (259)**	**---**
Greater Amman	20	59 (298)	.047*
Outside Amman	14	24 (38)	
Amman Directorate 1	20	60 (281)	.153
Amman Directorate 2	34	86 (422)	
Amman Directorate 3	20	27 (28)	
Amman Directorate 4	10	27 (58)	
Northern Region	15	24 (34)	.053
Central Region	15	28 (45)	
Southern Region	6	12 (16)	
Households w/o disabled	19	45 (173)	.100
Household w/ disabled	20	811 (550)	
Household w/o children	17	37 (56)	.022*
Household w/ children	20	72 (415)	
Household w/o chronic dis.	10	21 (40)	.006*
Household w/ chronic dis.	24	65 (314)	
Lowest economic quartile	9	16 (24)	<.001*
Second economic quartile	14	39 (291)	
Third economic quartile	23	42 (54)	
Highest economic quartile	46	103 (417)	
Arrived before 2003	20	27 (45)	.096
Arrived 2003 or after	15	57 (293)	
UNHCR registered	18	39 (174)	.007*
Not registered	27	88 (441)	

Multivariate linear regression was used to further examine household spending on health within the past month. Significant predictors in the multivariate model included household size, economic status, and having a household member with a chronic medical condition or disability. As anticipated, household spending on health was correlated with household size: on average, monthly household expenditures on health increased by 7.3 JD (CI: 0.2-14.4) per additional household member. Health related spending increased by an average of 31.1 JD (CI: 17.4-44.9) per economic status quartile. Households with disabled individuals and members with chronic medical conditions, respectively, spent an average of 43.4 JD (CI: 10.8-74.1) and 42.4 JD (CI: 0.1-86.7) more on health related expenses than other households.

On average, 7.5% of monthly household expenditures were allocated to health. A statistically significant increase in proportional health expenditures was observed by economic quartiles, where the proportional health expenditures increased with economic status: households in the lowest economic quartile reported an average of 6.3% of expenditures on health as compared to a health expenditure rate of 8.7% among the households in the top quartile (p=.019). Households with a disabled member spent an average of 10.1% of monthly expenses on health as compared to 7.0% among households where no disabilities were reported (p<.001). Among

households where a member had a chronic medical condition, health expenses accounted for 9.2% of monthly spending as compared to 4.0% of monthly expenditures in households where no chronic conditions were reported (p<.001).

Hospitalizations

Nearly one-third of households (30.2%) reported the hospitalization of a family member in the past year. The vast majority of hospitalizations were at private facilities (77.9%), followed by government facilities (14.6%) and the Red Crescent Hospital (6.6%). Among Amman households with a hospitalization, 83.5% were in private hospitals, followed by 8.5% in public hospitals, and 7.4% in the Red Crescent Hospital. In comparison, outside of Amman private hospitals accounted for 57.7% of hospitalizations, followed by public hospitals at 37.2%, and the Red Crescent Hospital at 3.8%. Hospitalization rates and facility type by select geographic and household characteristics are summarized in Table 6.

Table 6: Rates of Care Seeking by Select Household Characteristics

	Households w/ Hospitalization	p-value	**Sector of Hospital Facility**			p-value
			Private	Public	Red Crescent	
Overall	**30.2%**	---	**77.9%**	**14.6%**	**6.6%**	---
Greater Amman	31.6%	.069	83.5%	8.5%	7.4%	<.001*
Outside Amman	26.0%		57.7%	37.2%	3.8%	
Amman Directorate 1	30.0%	.707	85.7%	4.8%	8.6%	.125
Amman Directorate 2	33.8%		87.8%	7.1%	4.1%	
Amman Directorate 3	28.8%		60.9%	21.7%	17.4%	
Amman Directorate 4	32.2%		81.0%	12.1%	6.9%	
Northern Region	26.4%	.639	58.6%	41.4%	0.0%	.524
Central Region	27.3%		61.0%	31.7%	4.9%	
Southern Region	20.0%		37.5%	50.0%	12.5%	
Households w/o disabled	28.6%	.004*	72.3%	18.5%	9.2%	.632
Household w/ disabled	39.9%		79.1%	13.8%	6.1%	
Household w/o children	20.4%	<.001*	83.7%	9.8%	6.5%	.471
Household w/ children	36.1%		75.9%	16.3%	6.7%	
HH w/o chronic disease	37.1%	<.001*	74.2%	19.4%	6.5%	.756
HH w/ chronic disease	15.9%		78.7%	13.7%	6.7%	
Female household head	30.6%	.530	77.8%	15.4%	5.8%	.585
Male household head	28.5%		78.3%	11.6%	10.1%	
Household size ≤6	26.3%	<.001*	77.2%	13.8%	7.6%	.565
Household size >6	39.7%		79.0%	15.9%	5.1%	
Lowest economic quartile	26.4%	.006*	65.8%	25.3%	8.9%	.006*
Second economic quartile	25.9%		70.5%	19.2%	9.0%	
Third economic quartile	30.7%		77.8%	12.2%	7.8%	
Highest economic quartile	37.6%		91.3%	6.1%	2.6%	
Arrived before 2003	28.5%	.551	68.4%	26.6%	3.8%	.009*
Arrived 2003 or after	30.2%		80.6%	11.3%	7.4%	
UNHCR registered	31.0%	.216	76.0%	15.0%	8.0%	.259
Not registered	27.0%		84.9%	13.7%	1.4%	

*indicates statistically significant difference

Significant predictors of the sector of hospital care included residence in greater Amman as compared to other regions of Jordan; pre-/post-conflict arrival timeframe; and economic status. Households arriving during the current conflict reported higher rates of private facility

hospitalizations than those arriving before 2003, at 80.6% and 68.4%, respectively; earlier arrivals reported 26.6% of hospitalizations at public facilities as compared to only 11.6% among households displaced by the current conflict. As would be anticipated, private hospital facility utilization increased with economic status; less affluent households reported higher utilization rates of public and Red Crescent hospitals. Hospitalization at a public facility was reported by 6.1% of households in the highest economic quartile as compared to 25.3% in the lowest economic quartile; in contrast, 91.3% of hospitalizations among households in the top economic quartile were in private facilities as compared to 65.8% among households in the bottom economic quartile.

As illustrated in Table 8, hospitalization rates were significantly greater among larger households, households with children, and households whose members had a chronic health conditions or disability. Hospitalization rates also increased with economic status; hospitalizations were reported by 26.1% of households that fell in the lower half of the economic spectrum as compared to 37.6% of households in the highest economic quartile. The most affluent quartile of Iraqi households were 1.7 (CI: 1.3-2.3) times more likely to report a hospitalization than those households falling in the lower half of the economic distribution.

Table 7: Household Factors Associated with Hospitalization

	Adjusted Odds of Hospitalization		
	Estimate	95 % CI	p-value
Households with children	2.32	1.74-3.08	<.001
Households with disabled	1.49	1.04-2.14	.030
HH w/ chronic disease	3.27	2.38-4.48	<.001
Lowest economic quartile	0.64	0.44-0.93	.017
Second economic quartile	0.52	0.36-0.74	<.001
Third economic quartile	0.74	0.52-0.96	.091
Highest economic quartile	Reference	--	--

When adjusted odds of hospitalization were calculated using multivariate logistic regression (Table 7), households with children were 2.32 (CI: 1.74-3.08) times more likely to have reported a hospitalization in the year preceding the survey than those without children. Households with disabled members or individuals with chronic health conditions, respectively, were 1.49 (CI: 1.04-2.14) and 3.27 (CI: 2.38-4.48) times more likely to have reported a hospitalization as compared to households where these conditions were not reported. When economic quartiles were compared, households in the top quartile were 1.56 (CI: 1.08-2.21) and 1.96 (CI: 1.36-2.82) times more likely to report a hospitalization than those in the lowest and second economic quartiles, respectively.

Table 8: Hospitalization Length and Cost

	Median Days	Median Cost (JD)	
		Total	Per Day
Overall	**2.0**	**200**	**100**
By Location			
Amman	2.0	672	150
Non-Amman	2.0	76	45
By Facility Type			
Private	2.0	350	200
Public	3.0	40	20
Red Crescent	2.5	0	0

The length and cost of hospitalizations by facility type and residence area is summarized in Table 8. Hospitalizations ranged from 1 to 120 days, with mean of 4 days and a median of 2 days, respectively. When assessed by facility type, mean hospital stay was the shortest in private facilities (3 days), followed by public hospitals (5 days), and the Red Crescent Hospital (13 days) however, this difference was not statistically significant, which is potentially the result of confounding (p=.643). Median length of stay is perhaps a better measure of the average Iraqi experience: median stays were similar by facility type and ranged from 2-3 days. No significant difference in average length of stay was observed between populations in Amman and other locations (p=.406).

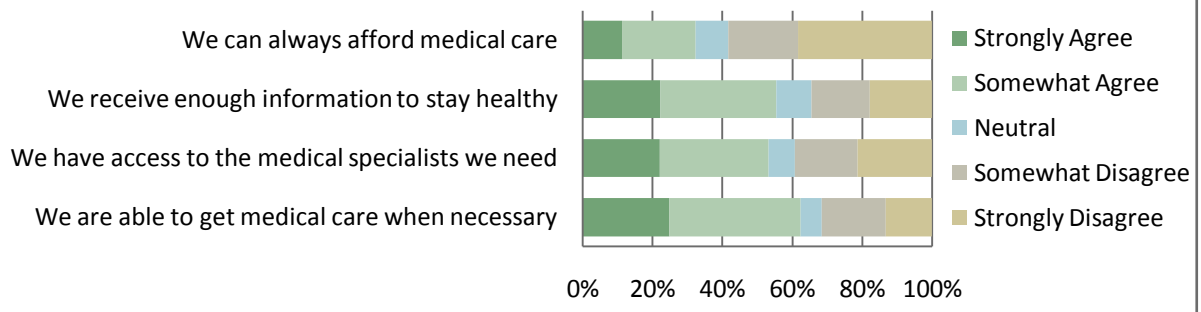
The cost of hospitalizations ranged from 0 to 72,070JD with mean a cost of 1053 JD and a median cost of 200 JD. When assessed on a per day basis, the mean hospital stay cost was 429

JD per day, with a substantially lower median value of 100 JD per day. The average cost of hospital stay differed substantially at 1259 JD (median= 672JD) in greater Amman as compared to 336 JD (median 76 JD) in other regions of Jordan, however this finding was only marginally statistically significant (p=.100). A likely reason for the substantial difference in hospital costs in Amman as compared to elsewhere is the sector of the facility. Private hospitals were considerably more expensive than public hospitals, with median costs of 200JD per day and 20JD per day, respectively, and accounted for a larger proportion of hospitalizations (84% in Amman as compared to 58% outside Amman). Another potential reason for cost differences may be the severity of the illness or complexity of the procedure, where patients hospitalized in Amman may have undergone more complicated procedures which were more expensive or that were performed by larger teams of specialists. Causes of hospitalization were widely varied; pregnancy was the leading cause with deliveries accounting for approximately 10% of all hospitalizations.

Perceptions on Care

A series of questions related to perceptions of access to health care were asked of respondents and are summarized in Figure 3. The majority of Iraqi households (63.5%) in Jordan reported they agree they are able to get medical care whenever it is needed. Slightly more than half of respondents reported adequate access to specialists (53.3%) and health information (55.4%).

Figure 3: Perceptions of Access Medical Services



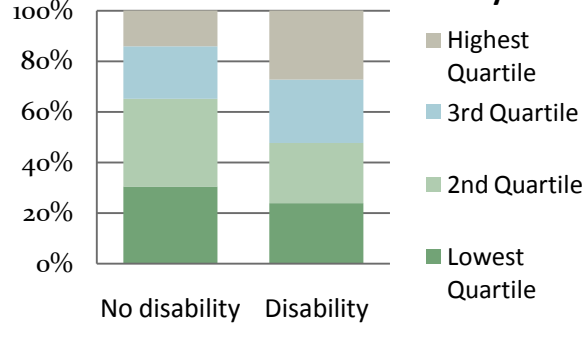
The cost of medical care appeared to present the greatest barrier to care for Iraqi households with 59.2% of respondents indicating they disagreed with the statement that "medical care is affordable." Residents outside Amman reported lesser agreement on all questions related to perceptions of access to health services. Of households outside Amman, 54.4% reported adequate access to care as compared to 65.1% of those in Amman (p=.003). Medical services also appeared to be less affordable for non-Amman populations, with 68.0% of non-Amman residents reporting they cannot always afford medical care as compared to 54.5% of Amman residents (p<.001). These findings suggest that overall, perceived access to health services and information remains lower among populations outside of Amman.

Measures of Population Health

Disabilities

Physically or mentally disabled family members were reported in 13.5% of households. Overall, 3.4% (CI: 3.0-3.9) of the household population was disabled, including 2.7% (CI: 2.0-3.5) of children and 4.2 % (CI: 3.5-4.9) of adults. Disability reporting rates by households were statistically similar by location of residence

Figure 4: Economic Quartiles and Household Member Disability



in Jordan, province of origin in Iraq, and pre-/post-conflict arrival period. A disabled household member was associated with lower household economic status. Disabilities were reported by 16.7% and 18.5% of households in the two lower economic quartiles, respectively; this compares to rates of 11.6% and 7.5% among the third and highest economic quartiles, respectively (p<.001). Figure 4 summarizes the distribution of households with and without disabled members across economic quartiles. Households in the lower half of the economic spectrum were 2.6 (CI: 1.6-4.4) times more likely to have a disabled household member than those in the top economic quartile.

Table 9: Disabilities by Type, Age and Sex

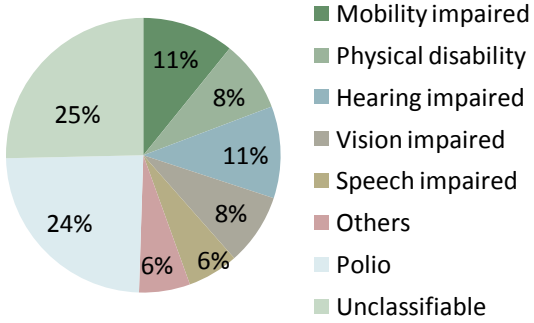
	All Disabilities*		**Physical Disabilities**		**Mental Disabilities**	
	Population Prevalence	Conflict Attributed	Population Prevalence	Conflict Attributed	Population Prevalence	Conflict Attributed
Overall	**3.4%**	**66.1%**	**1.7%**	**54.2%**	**1.7%**	**81.4%**
By Age						
Children (0-17)	2.7%	70.8%	1.2%	59.1%	1.3%	87.0%
Adults (18-59)	4.0%	71.4%	1.6%	64.4%	2.1%	79.7%
Older Adults (60+)	5.9%	30.4%	4.1%	18.8%	1.0%	75.0%
By Sex						
Males	5.1%	66.7%	2.1%	64.0%	1.7%	80.5%
Females	3.5%	65.4%	1.3%	39.4%	1.8%	82.2%

*Includes disabilities that were not classifiable or unspecified

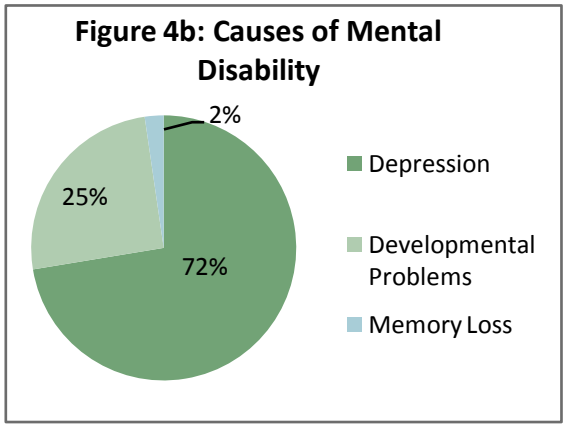
In addition to important differences in disability rates by economic status, variations were also observed by individual characteristics including age and sex (Table 9). Overall the disability prevalence was 3.4%, with a relatively even division between mental and physical disabilities. Two-thirds of disabilities were conflict attributed, including 54.2% of physical disabilities and 81.4% of mental disabilities. As would be anticipated, disability prevalence increased with age, and among older adults physical disabilities accounted for the majority of disabilities with a 4:1 physical to mental disability ratio. In children, physical and mental disabilities were roughly similar with a 1:1 ratio. In adults 18-59 years of age, the physical to mental disability ratio was approximately 3:4, whereas in adults aged 60+ years the ratio was 4:1. Overall, males were 1.37 (CI: 1.00-1.85) times more likely to be disabled than females with disability rates of 5.1% and 3.5%, respectively. The odds of a physical disability were 1.58 (CI: 1.00-2.53) times greater among males as compared to females, and 64.0% of physical disabilities in males were attributable to conflict as compared to 39.4% in females; mental disability rates by sex were statistically similar as were the proportions of disabilities caused by conflict.

Causes of physical and mental disabilities that were reported are summarized in Figures 4a and 4b. The leading causes of physical disability included polio (24%), mobility and hearing impairments (11% each), and vision impairments and physical defects (8% each); one quarter of reported physical disabilities could not be classified with the information that was provided. The leading cause of mental disability was depression which accounted for 72% of reported mental disability; other causes of mental disability reported were developmental delay/retardation (25%) and memory

Figure 4a: Causes of Physical Disability



loss/dementia (2%). That depression was the primary cause of mental disorder is not unexpected; according to the World Health Organization,[6] depression is a leading cause of disability worldwide, and it is not unexpected that prevalence of depression would be elevated in a conflict-affected displaced population. Because depression was the primary cause of mental disability, psychosocial interventions could have significant impact on reducing the disability burden on the Iraqi population if depression cases could be identified and treated.



Chronic Health Conditions in Adults

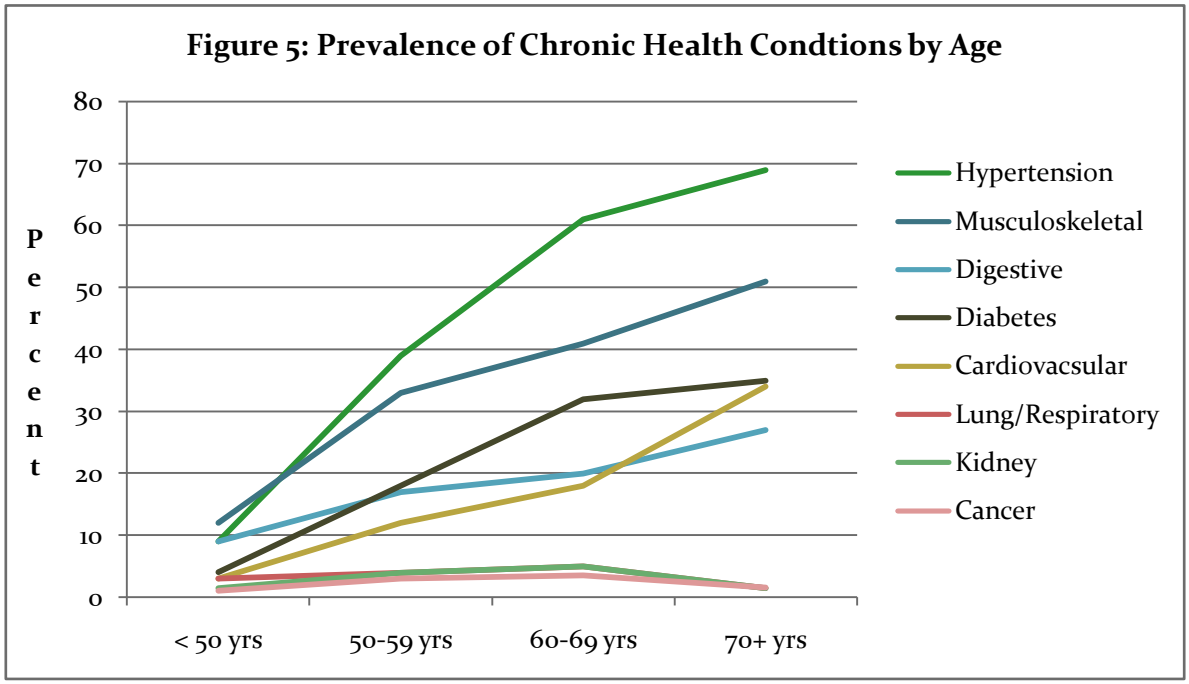
For this study, a chronic health condition was defined by one of two criteria: 1) a condition which required four or more medical visits per year, or 2) a condition which required regular (daily, weekly, or monthly) medication or treatment. In total, 61.1% of households reported having one or more members with a condition that required 4+ medical visits per year and 63.6% reported one or more household members where regular medications and/or medical treatment for a condition was required. When either definition was used, over two-thirds (67.4%) of households reported one or more members had a chronic health condition. When assessed at the individual level, the overall prevalence of chronic health conditions among adults aged 18+ was 36.2%. Prevalence of chronic conditions by age and sex is summarized in Table 10.

Table 10: Prevalence of Chronic Health Conditions Among Adults by Age and Sex

	Overall	***By Sex***		***By Age Group***			
		Males	Females	Under 50	50-59	60-69	70+
All Chronic Diseases	**36.2%**	**35.6%**	**36.8%**	**25.3%**	**61.0%**	**76.7%**	**83.0%**
Hypertension	19.6%	17.9%	21.0%	9.3%	38.8%	61.0%	68.8%
Musculoskeletal	18.5%	15.3%	21.4%	12.0%	32.9%	40.6%	51.1%
Digestive	11.3%	11.8%	11.0%	8.7%	16.6%	20.1%	27.0%
Diabetes	9.1%	10.7%	7.8%	3.8%	18.4%	32.1%	34.8%
Cardiovascular	6.7%	7.3%	6.2%	3.0%	12.2%	18.1%	34.0%
Lung/Respiratory	3.1%	2.6%	3.5%	2.6%	3.6%	5.2%	5.7%
Kidney / Dialysis	1.9%	2.1%	1.8%	1.4%	3.8%	4.8%	1.4%
Cancer	1.3%	1.7%	1.0%	0.9%	2.8%	3.6%	1.4%

The most commonly reported chronic health condition among adults was hypertension (19.6%), followed by musculoskeletal problems (18.5%), including conditions such as arthritis and osteoporosis; digestive conditions (11.3%); diabetes (9.1%); cardiovascular conditions (6.7%); lung and respiratory conditions (3.1%); kidney problems (1.9%); and cancer (1.3%). Other chronic health conditions were reported by 3.6% of the adult population and included high cholesterol (1.2%), thyroid and other glandular problems (1.2%), as well as peripheral nerve conditions, epilepsy, and anemia, among others. Prevalence of chronic health conditions was similar by sex and, as expected, increased with age as illustrated in Figure 5. The proportion of households reporting one or more individuals with a chronic health condition was statistically similar across economic quartiles, suggesting no association between chronic health conditions and economic status (p=.112).

[6] WHO, URL: http://www.who.int/mental_health/management/depression/definition/en/



Among those reporting a chronic medical condition, 91.0% reported being prescribed medication to manage the condition and 91.7% reported they were currently taking medication.

Mental Health Disorders Among Adults

The Hopkins Symptom Checklist (HSCL-25) was used to assess psychological symptoms among a sample of adults. The HSCL-25 contains a 15-item scale of depression symptoms and a 10-item scale of anxiety symptoms, and is used to gauge emotional distress. Respondents were asked if they experienced each symptom, and the following response scale was applied: 1=not at all, 2=rarely, 3=sometimes, and 4=often. Scale components were then averaged to create an average total score and an average score for depressive symptoms. The HSCL-25 has been translated to numerous languages and used in diverse cultural contexts, including refugee populations, and has been validated against clinical diagnoses. Unfortunately, no similar assessment could be found for the Jordanian population for comparative purposes. Among conflict-affected and displaced populations, high prevalence rates for mental health disorders are not uncommon.

The standard cutoff points of an average score greater than 1.75 for total distress and depressive symptoms were used; a higher cutoff of 2.5 was also employed as a more conservative measure of severe emotional distress. Because the cutoff points for psychiatric diagnoses have not yet been established in Iraqi refugee population, an algorithm method that replicated the DSM-IV criteria for major depression was also used and was more conservative in classifying respondents with depressive symptoms.[7] To be classified as symptomatic for depression, respondents must have scored ≥3 on a measure of depressed mood (crying easily, feeling hopeless, feeling lonely, feeling sad) or a measure of diminished interest/pleasure (no interest in things, loss of sexual interest) and have scored ≥3 on at least 4 of the following DSM-IV symptoms: significant weight loss/change in appetite; insomnia/hyper-insomnia; fatigue/loss of energy; feelings of worthlessness; diminished ability to think/concentrate; and recurrent thoughts of death.

[7] Mollica et al. (2007). Longitudinal Study of Posttraumatic Stress Disorder, Depression, and Changes in Traumatic Memories Over Time in Bosnian Refugees. *J. Nervous and Mental Disease 195(7):572-579.*

Within each household, one adult household member was randomly selected to complete the checklist. Two-thirds of respondents (66%) were female and one third (34%) were male; the average age of HSCL respondents was 41, and respondents ranged from 18 to 86 years in age. The emotional distress and depressive symptoms scores, and differences in prevalence rates by age and sex are summarized in Table 11. Emotional stress and severe emotional distress were observed in 82.5% (CI: 80.2-84.6%) and 44.1% (CI: 41.3-46.9) of respondents, respectively, when the fixed cutoffs of 1.75 and 2.5 were applied to the total average HSCl-25 score. Depressive symptoms were observed in 85.0% (CI: 82.9-87.0) of the population when the standard cutoff of 1.75 was applied and 16.2% (CI: 14.1-18.4) of the population when the DSM-IV-based algorithm was used.

Table 11: Hopkins Symptom Checklist Scores Among Adults by Age and Sex

	Emotional Distress				**Depressive Symptoms**			
	1.75 Cutoff	p-value	2.5 Cutoff	p-value	1.75 Cutoff	p-value	Algorithm	p-value
Overall	**82.5%**	---	**44.1%**	---	**85.0%**	---	**16.2%**	---
By Sex								
Males	75.7%	<.001*	30.9%	<.001*	80.6%	.002*	12.0%	.005
Females	86.0%		50.9%		87.2%		18.3%	
By Age								
18-29	74.1%	.004*	32.8%	.001	79.3%	.106	14.2%	.837
30-39	85.5%		46.7%		86.9%		16.4%	
40-49	83.4%		45.0%		85.8%		18.0%	
50-59	85.9%		52.5%		87.0%		15.8%	
60+	82.4%		44.1%		85.3%		15.4%	

*indicates statistically significant difference.

Significant differences in the prevalence of emotional distress and severe emotional distress were observed by age and sex. In general severe emotional distress increased with age, though a decline was observed in the 60+ age group. The odds of severe emotional distress were 2.3 (CI: 1.8-3.0) times greater in women as compared to men. In univariate analysis, no significant difference in rates of severe emotional distress was observed by pre/post conflict arrival period, province of origin in Iraq, household sex, whether the household reported income from employment, household sex, or economic quartiles. Location of current residence was the only household level measure significantly associated with severe emotional distress. Households in Amman reported marginally higher rates of severe emotional distress than households outside of Amman, at 51.2% and 48.8%, respectively (p=.053). No significant difference in severe emotional distress was observed between the regions outside of Amman; within Amman, emotional distress rates by Directorate differed significantly as follows: Directorate 1, 42.4%; Directorate 2, 36.6%; Directorate 3, 41.5%, Directorate 4, 52.4% (p=.008).

Predictors of severe emotional distress from multivariate logistic regression are summarized in Table 12. The adjusted odds of severe emotional distress for women as compared to men were 2.2 (CI: 1.7-2.9). As compared to the 18-29 year age group, the three subsequent 10 year age groups faced significantly increased odds of emotional distress.

Table 12: Risk Factors for Severe Emotional Distress

	Adjusted Odds of Severe Emotional Distress		
	Point Estimate	95 % CI	p-value
18-29 yrs of age	Reference	---	---
30-39 yrs of age	1.67	1.17-2.38	.005*
40-49 yrs of age	1.73	1.19-2.52	.004*
50-59 yrs of age	2.12	1.39-3.23	<.001*
60+ yrs of age	1.47	0.92-2.33	.105
Female Sex	2.20	1.69-2.85	<.001*
Resides in Amman	1.34	1.02-1.77	.037

*indicates statistically significant difference

Amman residents were 1.3 (CI: 1.0-1.8) times more likely to report emotional distress than those living outside Amman.

Significant differences in the prevalence of depressive symptoms (using the DSM-IV algorithm approach) were observed by sex, where women were 1.6 (CI: 1.1-2.4) times more likely to be classified as having depressive symptoms than men. A significant difference in the prevalence of depressive symptoms was observed by Amman Directorate, with depressive symptom rates as follows: Directorate 1, 18.6%; Directorate 2, 10.9%; Directorate 3, 16.9%; and Directorate 4, 17.3% (p=.047). Age, residence location (Amman as compared to elsewhere and between the three regions of Jordan), pre/post conflict arrival period, governorate of origin in Iraq, head of household sex, household income from employment, and economic quartile were not significantly associated with depressive symptom risk.

Women's Health

Women of reproductive age (15-49 years) were found in 75% (n=900) of the surveyed households. The majority were married (75.7%), though there were a significant proportion of widows (10.3%) and women that had never married (8.8%); divorced and separated women accounted for 3.1% and 2.1% of respondents, respectively. When combined, married, widowed, divorced, and separated women accounted for 91.2% (n=821) of female respondents; this group served as the respondent population for questions relating to women's health.

Births in Jordan

Overall, 93.3% of currently or previously married had given birth to one or more children, including 32.3% (n=265) that gave birth in Jordan. A total of 497 births in Jordan were reported among the 1200 households surveyed, with 26.6% of households reporting one or more births since their arrival in Jordan (1991 and later). Of reported births, 371 (74.6%) occurred in the 2003-2008 period, resulting in a crude birth rate of 20.6 births/1000/year among Iraqis in Jordan. The mean and median numbers of pregnancies per woman in Jordan were 1.6 and 1.0, respectively, and there was a total of 393 live births, or 1.48 births per woman, reported. Of the 681 married women, 6.1% (36 of 587 that responded) were currently pregnant, of which 41.7% (n=15) reported the pregnancy was planned.

Among the 265 women that gave birth in Jordan, 94.0% reported giving birth in a health facility; the majority of hospital births (68.4%) were at private facilities, followed by public (25.3%) and NGO (6.3%) facilities, respectively. The average cost of giving birth was 244 JD (median=120 JD), and cost varied significantly by facility type with reported mean expenditures as follows: private facilities 326 JD (median=200 JD); public facilities 89 JD (median=50 JD); and NGO facilities, 7 JD (median=0 JD).

Antenatal and Postnatal Care

In total, 90.6% of Iraqi women in Jordan sought antenatal care during their most recent pregnancy, with mean and median numbers of antenatal visits of 7.2 and 8.0, respectively. Most women sought prenatal care at private clinics (63.3%); public facilities and NGOs were reported as the source of antenatal care for 22.9% and 10.4% of women, respectively; 3.3% of women sought care from other types of providers. Among the 9.4% of women that did not seek antenatal care, the primary reasons included cost (33.3%), did not want to (22.2%), and did not know where to seek services (18.5%).

Post-natal care was sought by nearly half (47.8%) of women. The majority (64.7%) of care was sought at private facilities, followed by public facilities (25.2%), and NGO facilities (7.6%). Care was sought within the first week by 31.1% of women, and 54.6% of women sought care after one week, but within the month following the birth; 12.6% and 1.7% sought care within 2 months and 6 months of the birth, respectively. Among 52.2% of women that did not seek post-natal care, more than half (51.5%) reported not perceiving a need or not wanting care.

Cost was the primary barrier for care and was reported as the reason for not seeking care by 30.8% of women; this was followed by not knowing where to seek services (4.8%) in addition to a variety of other reasons that were each reported by less than 1% of respondents.

Family Planning

Married women accounted for 75.7% (n=681) of female respondents and were asked about access to family planning. Of the 636 married respondents, 94.8% (n=508) reported they were currently menstruating. Of those that were menstruating, 39.8% reported using contraception methods. Commonly used methods included the hormonal pill (34.7%), intrauterine devices (34.7%), condoms (13.4), coitus interruptus (7.9%), and rhythm/calendar (7.4%). The most common source of contraceptives was private pharmacies or clinics (63.9%), followed by government clinics or pharmacies (31.4%), NGO clinics and pharmacies (4.1%), and various other sources (10.1%). Of the 508 currently married menstruating women, 24.2% reported a current desire for family planning services or contraception. The primary reasons for not seeking family planning services or contraception were not knowing where to seek services (46.4%) and the cost of using family planning methods (42.3%).

Children's Health

Recent Illness

Caretakers were asked about the general health of children ages 12 and under in the household, including the occurrence of any illness within the past month. Overall, 49.9% of children reported one or more illnesses in the past month. The most common illnesses were respiratory infections (29.6%); fever (24.6%); and diarrhea (15.1%) (Table 13). The survey was conducted in late October, making it likely that the high rate of respiratory infections is associated with a seasonal trend.

Table 13: Illness Within the Past Month Among Children 12 years and Younger

	Overall	By Age Group	
		0-5 yrs	6-12 yrs
Any Illness	**49.9%**	**53.1%**	**47.0%**
Resp. Infection	29.8%	29.3%	29.%
Fever	24.6%	27.1%	22.3%
Diarrhea	15.1%	18.8%	11.6%
Asthma	5.6%	5.8%	5.4%
Others	13.7%	13.8%	13.6%

Care seeking for children with illnesses was reported in 87.1% of cases, with no care being sought for illnesses in 12.9% of cases. Among families with children who did seek care, 61.9% sought services at private facilities, 19.2% at government facilities, and 19.0% at NGO facilities. Of children that had been ill within the past month and sought medical care, 87.2% had been prescribed medication and 88.3% of these had taken medication.

Vaccination

A total of 316 households had children less than five years of age, of which 81.6% reported having vaccination cards for their children. Of households with children under five years of age when they arrived in Jordan, 52.8% reported receiving vaccinations upon arrival. Of children under five, 98.2% were ever vaccinated, with 74.0% reporting having been vaccinated in Jordan and 25.8% in Iraq. Among those vaccinated in Jordan, 77.2% received inoculations at public facilities, 19.4% at private facilities, and 3.4% at NGO facilities. Parental permission to examine children for BCG scar (ages 17 and under) and measure mid-upper arm circumference (ages 6-59 months) was granted in 99.3% of households. A scar from BCG vaccination was present in 86.1% of children age 17 and under. Prevalence of BCG scar increased with age, with scars observed in 91.0% of 13-17 year olds, 85.7% of 6-12 year olds, and 83.7% of 0-5 year olds.

Mid-Upper Arm Circumference (MUAC) Among Children Under Five

Mid-upper arm circumference was assessed in 351 children between 6 and 59 months of age. Findings of this screening should be interpreted with caution because MUAC is an ideal

screening tool in emergency contexts where high rates of acute malnutrition are anticipated. In more stable populations that are not facing acute food shortages, such as the Iraqi population in Jordan, MUAC is likely to under-estimate the rate of acute malnutrition and is not a replacement for standard anthropometric assessment where child weight and height/length are assessed and compared to a reference population and used to measure both acute and chronic malnutrition. Consequently, malnutrition rates from MUAC screening should be viewed as a conservative estimate of acute malnutrition in children.

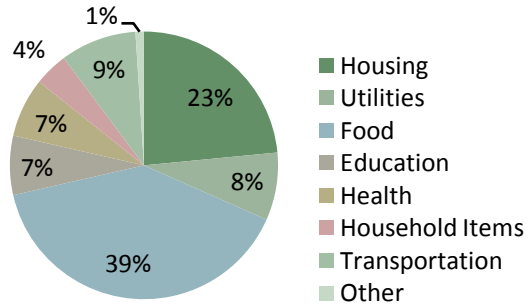
Overall, 98.3% of children had normal MUACs (13.0 cm and greater) with 1.1% falling in the moderately malnourished category (12.0-12.9 cm) and 0.6% in the severely malnourished category (<12.0 cm). Of the 1.7% (n=6) of children that were malnourished, three were female and three were male. The four moderately malnourished children ranged from 8-24 months in age while the two severely malnourished children were older, at 29 and 48 months of age. All of the malnourished children came from male headed households that had completed secondary education or higher. Half of the children that were malnourished came from households in the lowest economic quartile, while two children were from third economic quartile and one child was from the top economic quartile. Five of the six malnourished children were from Amman, which is not unexpected considering the sample was concentrated in Amman; the remaining malnourished child was from a household in Karak.

Food Security

Household Spending on Food

Respondents were asked to estimate their household's expenditures on common categories of expenses in the month preceding the interview. Mean and median monthly household expenditures were 708 JD and 475 JD, respectively, and ranged from 45-6400 JD. The average proportion of monthly household expenditures by category is presented in Figure 6. Food was the primary expenditure among Iraqi households and, on average, accounted for 39% of monthly household expenditures. Mean and median monthly food expenditures were 262 JD and 188JD at the household level, and ranged from 0-2500JD. The distribution of household food expenditures was as follows: approximately 5% of households spent less than 50JD; 25% of households spent 50-100 JD; 35% of households spent 101-200 JD; 20% of households spent 201-400 JD; and 15% of households spent more than 400 JD. Health expenditures were reported by 75% of households; approximately one-third of these fell into each of the following reported expenditures ranges of less than 25 JD, 25-50 JD, and more than 50 JD; 10% of households reported spending 100 JD or more per month on health related expenses.

Figure 6: Monthly Household Expenditures by Category



Approximately 5% of households spent less than 50JD; 25% of households spent 50-100 JD; 35% of households spent 101-200 JD; 20% of households spent 201-400 JD; and 15% of households spending 400JD or more. As would be anticipated, household food expenditures varied by

Table 14: Monthly Household Expenditures on Food (JD) by Economic quartiles

	Monthly Food Expenses		Proportion of all Expenses
	Mean	Median	
Lowest Quartile	104	98	41.1%
2nd Quartile	163	154	40.0%
3rd Quartile	267	228	38.0%
Highest Quartile	519	459	35.1%
p-value	<.001*	---	<.001*

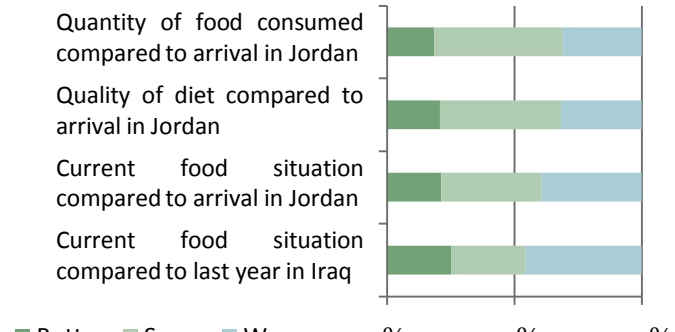
*indicates statistically significant difference.

economic status as illustrated in Table 14; household food expenditures among the top economic quartile were approximately five times greater than in bottom quartile, and accounted for a smaller proportion of the household budget.

Food Security Perceptions

When asked about household expenditures on food, 63.5% of households reported an increase in the amount their household spends on food and 66.2% indicated the proportion of the household budget spent on food increased since arriving in Jordan. Recently the cost of living, including food prices, has increased in Jordan; it is likely that increased food expenditures are at least partially attributable to increasing price trends. Constant food expenditures were reported by approximately 20% of households (20.6% same amount / 19.0% same proportion) and lesser food expenditures were reported among 15% of households (15.9% lower amount / 14.8% lower proportion. Perspectives on changes in the household food situation are summarized in Figure 7. Of the three measures of change in household diet and food situation since arrival in Jordan, approximately 30-40% of households reported their situation was worse; 40-50% indicated there was not change; and 20% reported an improvement.

Figure 7: Perspectives on Change in Household Diet and Food Expenditures



Quality and Quantity of Diet

Iraqi households consumed an average of 2.5 meals (median=3) on the day preceding the survey, with 6.8% and 36.7% reporting consumption of one and two meals, respectively. In highly food insecure households, meat and dairy products, which are important sources of protein and often relatively expensive, are consumed in lesser quantities, if at all. On average, meat, poultry, or fish were consumed 3.0 days per week (median=2) and dairy products were consumed 4.7 days per week (median=5). No meat consumption in the week preceding the survey was reported by 12.2% of households and 34.5% of households reported meat consumption one time per week. Dairy consumption was slightly more prevalent, with 3.9% reporting consuming no dairy products and 11.1% reporting consumption only once in the week prior to survey. When dairy and meat consumption were combined, the frequency of households with relatively low animal protein intake was as follows: 0 times/week, 2.2% of households; 1 time/week, 5.2% of households; and 2 times/week, 11.9% of households. As

Figure 8a: Protein Consumption (weekly) by Economic Quartiles

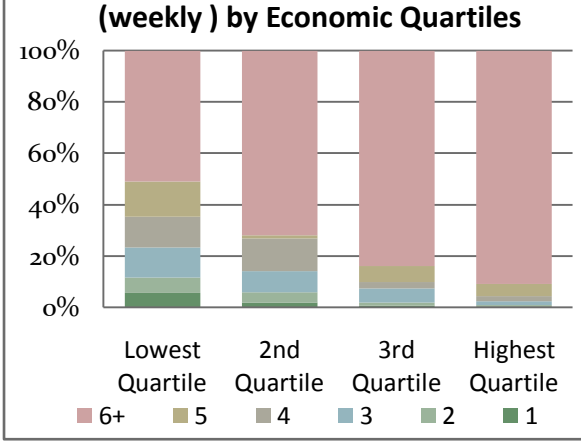
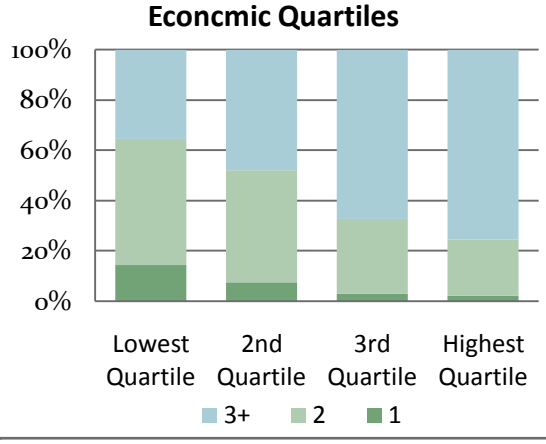


Figure 8b: Meals per Day by Econcmic Quartiles



would be anticipated, both quality of diet as measured by meat and dairy consumption and frequency of food consumption as measured by meals consumed on the day preceding the survey were significantly associated with economic status (p<.001 for both comparisons). Figures 8a and 8b summarize trends in quality and quantity of diet by economic status.

Use of Diet-Related Coping Mechanisms

Diet-related coping mechanism use was relatively high, with over 44.3% of households reporting reduced food consumption (smaller portion size, skipping meals, or going entire days without eating) while in Jordan. Table 15 summarizes the frequencies of each of the different measures. That over 40% of households reported asset sales in order to purchase food and nearly 20% of respondents indicated they had felt hungry due to lack of food suggests that food security among Iraqi households is an area deserving of additional attention in spite of the low observed rates of acute malnutrition.

Table 15: Diet Related Coping Mechanism Use while in Jordan

Ever sold assets/personal belongings to purchase food	41.9%
Ever reduced portion size of meals due to lack of food	43.2%
Household member(s) ever skipped a meal because there was not enough food	31.2%
Household members ever went an entire day without eating due because there was not enough food	13.7%
Respondent ever felt hungry because there was not enough of food	19.7%

Food Aid and Receipt of Humanitarian Assistance

Receipt of food aid was reported by 18.0% (CI: 15.9-20.3) of households. Among those households receiving food aid, 97% reported receipt of food from one organization, and 2.5% and 0.5%, reported food was received from two and three sources, respectively. Sources of food aid are summarized in Table 16. The primary providers of food aid were NGOs (both international and Jordanian), religious charities, and UNHCR. Among NGO food aid providers, the most frequently reported included the Red Crescent, Caritas, Care, the Chechen Society, Tikyit Um Ali, and Princess Basma Center.

Table 16: Sources of Food Aid*

	% of all households	% of households w/ food aid
NGOs	5.9%	34.8%
Religious Charity	4.8%	28.4%
UNHCR	5.0%	29.4%
WFP	0.2%	1.5%
Other	1.4%	8.3%

*multiple responses permitted

Among households reporting any ration receipt, the frequency of rations was as follows: weekly—0.9%; monthly—26.4%; and less than monthly 72.7%; of households reporting less frequent receipt of rations, most reported receiving rations 2-6 times per year. Food aid comprised the majority of the household food in approximately one-quarter of households reporting ration receipt. The proportion of the household diet that was provided for by rations was as follows: less than one-quarter—37.5% of households; one-quarter to one-half—37.5% of households; more than one-half but less than three-quarters—18.1%; and three-quarters or more—6.9%. Of those households receiving food aid, 26.9% reported selling all or part of a ration in order to pay for other items they needed.

A total of 13.9% (CI: 12.0-16.0) of households reported receiving other types of assistance or support from organizations in Jordan. Among those households receiving assistance, types of assistance reported included cash (73.1%), non-food items (19.2%), electricity (4.2%), medical treatment (2.4%) and other (1.2%). At the survey population level, cash was received by 10.2% (CI: 8.5-12.0) of households; non-food items by 2.6% (CI: 1.8-3.7) of households; and other types of assistance, including electricity and medical treatments, by 1.1% (CI: 0.6-1.8) of households.

Receipt of food aid was similar among populations in greater Amman and elsewhere in Jordan, and no significant difference in frequency of food aid receipt was observed between the Northern, Central, and Southern regions. Within Amman, significant differences in food aid receipt were observed by directorate as follows: Directorate 1, 17.1%; Directorate 2, 4.1%; Directorate 3, 17.5%, and Directorate 4, 38.3% (p<.001). Household size and head of household sex were not significantly associated with ration receipt. Interestingly, households that arrived in Jordan in 2003 or later were equally likely to report receipt of food aid as those households arriving prior to 2003. Presence of children in the household was a significant predictor of food aid receipt, with 20.5% of households with children 17 and under receiving food aid as compared to 13.9% of households without children (p=.004). Receipt of food aid among households with disabled members was significantly higher, with 27.6% of households with disabled members receiving food aid as compared to 16.5% of households where no disability was reported (p=.001). UNHCR registration was also significantly associated with ration receipt: 22.9% of UNHCR registered households received food aid as compared to 1.5% of households not registered with UNHCR (p<.001). As would be anticipated, economic status was also a predictor of ration receipt, with the proportion of households receiving food rations by economic quartile as follows: lowest economic quartile, 27.4%; 2nd economic quartile, 27.2%; 3rd economic quartile, 14.7%; and highest economic quartile 2.9% (p<.001).

Predictors of food aid receipt from multivariate regression are summarized in Table 17. Directorate of residence in Amman was also significantly associated with food aid receipt in multivariate regression, but was excluded as a predictor so that one model could be fit for the entire Iraqi population in Jordan, and because the adjusted odds of other predictors remained relatively similar when directorate of residence was excluded. Predictors of food aid receipt in the final multivariate model included economic quartiles, presence of one or more children in the household, and UNHCR registration. Households in the lowest and second economic quartiles were 8.6 (CI: 4.2-17.8) and 1.9 (CI: 1.3-2.9) times more likely to have received food aid than households in the highest economic quartile. Households with children were 1.8 (CI: 1.3-2.6) times more likely to receive food aid than households with no children. Lastly, those households registered with UNHCR were 11.6 (CI: 4.2-32.0) times more likely to have received food aid than those that were not registered with UNHCR.

Table 17: Predictors of Food Aid Receipt

	Adjusted Odds of Food Aid Receipt		
	Point Estimate	95 % CI	p-value
Lowest economic quartile	8.62	4.18-17.79	<.001*
2nd economic quartile	1.92	1.25-2.94	.003*
3rd economic quartile	1.02	0.71-1.48	.901
Highest economic quartile	Reference	---	---
Household w/ children	1.82	1.30-2.56	.001*
UNHCR Registered	11.63	4.23-31.95	<.001*

*indicates statistically significant difference

Receipt of cash assistance was reported by 9.3% of Amman residences and 12.7% of non-Amman residents (p=.098). Receipt of cash assistance was significantly different across the four directorates in Amman, with cash receipt rates as follows: Directorate 1, 5.4%; Directorate 2, 3.1%; Directorate 3, 21.2%; and Directorate 4, 21.7% (p<.001). Cash assistance also varied between the three regions, with 16.7% of households in the Central region receiving cash as compared to 10.9% of households in the North and 2.5% of households in the South (p=.045). Receipt of cash assistance was most prevalent among households in the lower half of the economic status continuum, with cash receipt rates by economic quartile as follows: lowest economic quartile, 17.4%; second quartile, 18.6%; third quartile, 4.4%; and highest quartile, 0.3% (p<.001). Interestingly, households that arrived before the 2003 were more likely to receive cash than those that arrived in 2003 or later, with cash receipt rates of 9.0% and 14.0%, respectively (p=.014). Households with children were also more likely to receive cash with

11.5% reporting cash assistance as compared to 8.0% of households without cash (p=.050). No significant differences in receipt of cash assistance were observed by household size, household head sex, or presence of a disabled household member. Households registered with UNHCR were also more likely to receive cash: 12.7% UNHCR registered households received cash assistance as compared to 1.5% of unregistered households (p<.001).

Receipt of cash assistance was associated with economic status, presence of children in the household, and UNHCR registration in multivariate regression models (Table 18). Households in the lowest, second, and third economic quartiles, respectively, were 49 (CI: 7-356), 51 (CI: 7-376), and 12 (CI: 2-90) times more likely to receive cash assistance than households in the highest economic quartile. Households with children were 1.8 (CI: 1.2-2.7) times more likely to report receipt of cash as households with no children. Cash receipt among UNHCR registered households was 4.3 (CI: 1.6-12.1) times greater than among those not registered with UNHCR.

Table 18: Predictors of Receipt of Cash Assistance

	Adjusted Odds of Cash Receipt		
	Point Estimate	95 % CI	p-value
Lowest economic quartile	48.51	6.61-356.36	<.001*
2nd economic quartile	51.33	7.01-375.72	<.001*
3rd economic quartile	11.59	1.50-89.50	.019*
Highest economic quartile	Reference	---	---
Household w/ children	1.79	1.16-2.72	<.001*
UNHCR Registered	4.33	1.55-12.10	.005*

*indicates statistically significant difference

Limitations

All assessments face limitations, and this survey was no exception. In the planning stages, a major challenge was developing a representative sampling frame because there were relatively few sources of data on the location of the Iraqi population. It is possible that the sample is biased towards areas with UNHCR registration or areas with high school enrollment rates, though the triangulation process ideally should have minimized sampling bias from a particular source. Another challenged faced in the planning stages was questionnaire development: numerous organizations and individuals had input into questionnaire content, and because the interview needed to be reasonable in length, some content areas were excluded. Additional data could have been useful on employment and children's mental health status; however these topics were excluded from the final questionnaire.

The team of interviewers had extensive prior survey research experience however, they were not Iraqi nor were they physicians which may have resulted in lesser reliability of the data. It is possible that the respondents may have provided more honest responses had the interviewers been Iraqi. Using physicians or surveyors with a medical background may have resulted in improved quality on health-related sections of the questionnaire; this is particularly true for open-ended responses, some of which could not be accurately categorized. Management of field data collection was a challenge because of the large number of clusters and the difficulty associated with finding Iraqi households in less densely populated areas. This may have resulted in some households being inadvertently skipped, though this is unlikely to have resulted in additional bias because households living within the same neighborhood are likely to be relatively similar. Additionally, because data entry occurred after data collection was completed some minor discrepancies and problems went unnoticed because the team was unable to check data entry while field work was ongoing.

Finally, the survey was subject to numerous approvals and other delays such as not being able to collect data during Ramadan. While findings are still of immense value, a more timely presentation would have allowed the data to be used for the planning of 2009 humanitarian assistance programming and in the 2009 United Nations Consolidated Appeal Process.

Conclusions

The Iraqi population in Jordan is well educated and almost entirely urban, whether living in Amman or in the major urban centers of the regional governorates. The Iraqi population exhibits a strong demand for health services and has high utilization rates of healthcare at all levels in Jordan. This is likely due to a combination of factors including a substantial chronic disease burden and older age structure among population, high levels of health education and awareness, and the legacy of free health services they received in Iraq and hence a tendency to seek healthcare more often. The complex procedures and high costs associated with the management of chronic illnesses are key public health challenges for the Iraqi population and the Jordanian health system. Further improvements in the provision of essential drugs and specialized care for patients with chronic illnesses as well as educational campaigns on prevention of lifestyle illnesses would be beneficial to the Iraqi population and could reduce the burden on the Jordanian health system.

Access to health care is generally good for the Iraqi population in Jordan due to a national health system which offers a range of options and services for people to choose from including public, private and non-governmental facilities. Though more expensive, the majority of Iraqi households opted for the private sector when seeking health services indicating that perceived quality of care is a main factor in health seeking behavior. Utilization of NGO clinics was mainly due to free or low service provision rather than high perceptions of service quality; this is supported by the finding that the majority of households felt the cost of medical care is not affordable, and the large gap in health spending between the bottom and top economic quartiles. Together, these findings indicate that more attention could be given to assist poor Iraqi households to afford a standardized package of health services that ensures adequate access to health services at all levels of care.

Geographically, several areas demonstrated greater vulnerability in terms of economic status and access to health services. In Amman, Directorates 3 and 4 were considerably less well off than Directorates 1 and 2 based on several measures of vulnerability. All three non-Amman regions demonstrated greater risk of vulnerability and lower health status. These areas could be targeted for special assistance or more focused attention. Targeting of humanitarian assistance to the most vulnerable households appears to be effective as reflected by the results that the majority of recipients reside in the poorest directorates of Amman and are from the lowest two economic quartiles both inside and outside Amman. Ideally, a rigorous vulnerability index could be determined which would allow even more efficient targeting of material support, financial assistance, and social services to the most marginalized Iraqi sub-groups in Jordan.

With the global economy in turmoil and rising inflation in the region, displaced Iraqis in Jordan face a double edged crisis whereby support they receive from the international community as well as remittances could drop sharply as incomes and development resources decline worldwide. Real purchasing power among Iraqi families living in Jordan will be affected and already stretched budgets will need to cover increasing needs for basic living and social services along with emergencies and unforeseen or catastrophic events that can easily place a family in extreme financial jeopardy or even poverty. There is an urgent need to effectively target all available resources from the Government of Jordan and the international community to provide a safety net for marginalized and extremely vulnerable Iraqi families. This will prevent households from slipping into poverty and avoid greater costs to the economy of Jordan through preventive measures that reduce the demand on the health system overall. Politically, there are benefits to improving the health of the displaced Iraqi population which will reduce their risk of poverty and facilitate greater security and a more stable society in the Kingdom of Jordan.

Appendix

Figure A1. Map of the Governorates and Regions of Jordan

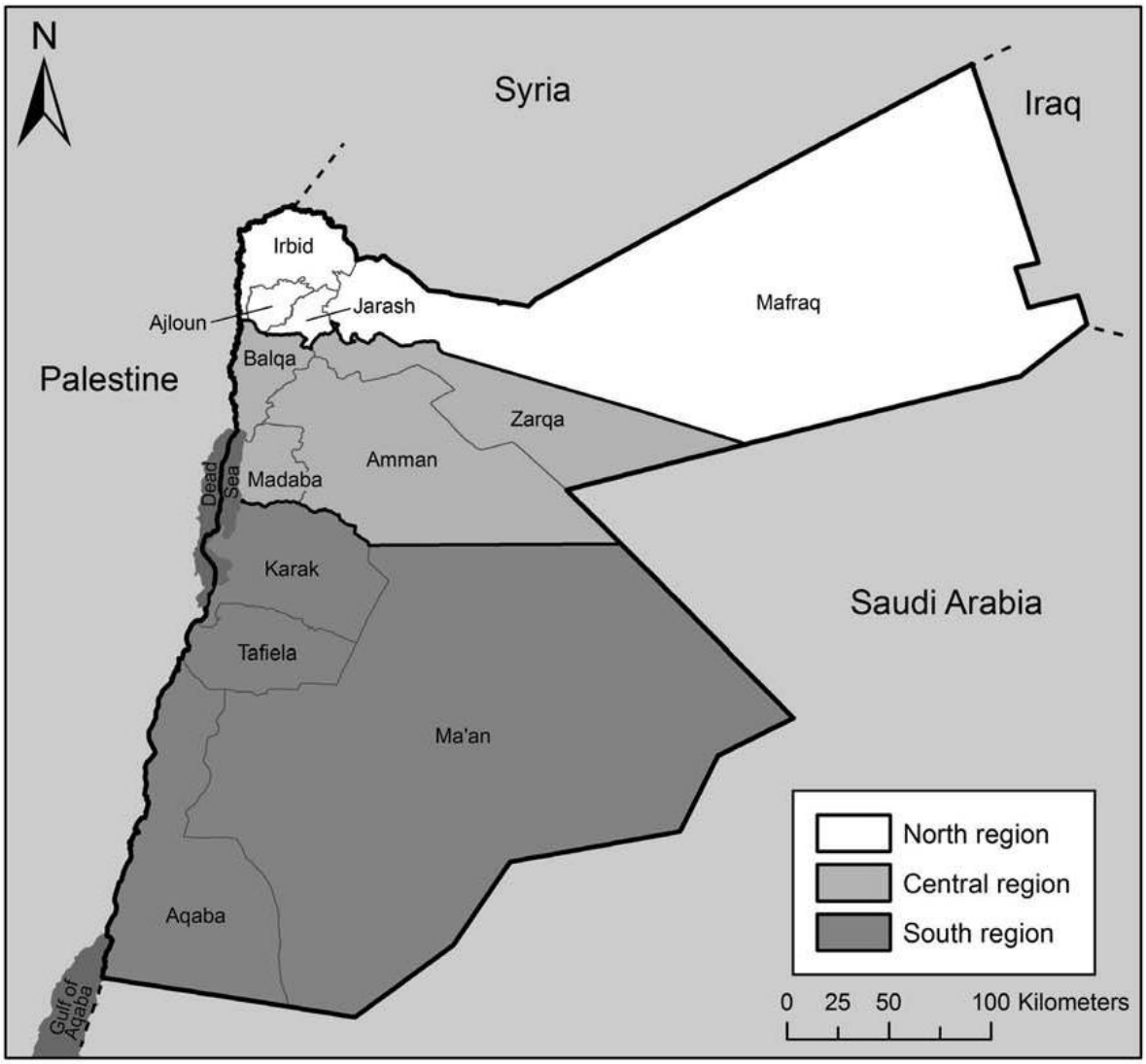


Figure A2. Sampled Neighborhoods in Amman (corresponding Directorate in parenthesis)