CHAPTER THREE:

NUTRITIONAL AND HEALTH STATUS

INTRODUCTION

How much a person eats and how well does he/she convert the food to energy are very important aspects to an effective biological utilization of food, nutritional status and a good general health. The adequate food utilization or absorption constitute of the interaction of a diet providing sufficient energy and essential nutrients, clean drinking water, good sanitation, proper food consumption practices and health care. Such factors have direct impact on status of nutrition, health and level of food security[77].

HEALTH STATUS

Primary Health Care

To attain better, efficient and productive Palestinian human capital resources, the Ministry of Health (MoH) is working along with other sectors in the oPt to provide the health care facility for its people. Around 656 primary health care centers are available in the oPt, where 130 and 526 centers in the Gaza Strip and West Bank, respectively provide health care services. These services are mainly provided by hospitals and clinics of MOH, UNRWA, NGOs and other private sectors. In 2008, the number of Palestinian population per center was recorded to be 4,401 in West Bank and 11,079 in Gaza Strip[78]. It was also recorded that for every 10,000 persons there are only 12.5 beds in the West Bank and 14.1 in Gaza Strip.

Immunization

Immunization of children in the oPt is considered a very important protective measure against specific communicable diseases. This service is available, easy to get to in almost all health centers in the oPt. In 2005, nearly all children in the oPt received the six vaccine-preventable diseases. The coverage percentage of immunization has increased through 2000 to 2005 due to, the immunization program provided by MoH to cover all oPt and the increased awareness among mothers. It is worth mentioning, that in the years 2000 and 2002, the immunization program had been affected to cover all localities in West Bank as a result of the second *Intifada* and the subsequent political situation, the downturn of the economy and the lack of mobility and accessibility of Palestinians to health centers. In 2006, full immunization coverage of children aged 12-23 months was rather high in both the West Bank (94%) and the Gaza Strip (99%), except in the Jerusalem governorate (75%). The situation in Jerusalem is explained by an irregular access to Israeli health services, which also applies a slightly different immunization schedule than the Palestinian health services[79].

Child feeding and care practice

The 2006 Palestinian Family Health Survey[80] found that the vast majority of children (97%) were breastfed, with a mean duration of breastfeeding of 13 months. However only about 1/4th of the children below 6 months of age were exclusively breastfed and only slightly more than half of the children 6-9 months received appropriate complementary feeding to breast-milk and mushy solid foods. The proportion of children 6-9 months receiving appropriate complementary food to breast-milk was higher in urban areas than rural areas (61% versus 49%). The proportion was lowest among households in the poorest wealth quintile (45%) and highest among households in the wealthiest quintile (70%), illustrating the association between adequate young child feeding practices and socio-economic factors.

Infant and Maternal mortality rate (IMR & MMR)

Infant and Maternal mortality rate (IMR & MMR) is considered a significant indicator reflecting health's status in a country[81]. In the oPt, IMR fluctuates always depending on the general circumstances in the region and some factors including the education and health of the mother, access to health services, food security and poverty. From 2000 till 2007 there was a notable change in IMR in the West Bank and the Gaza Strip[82], and IMR has been always higher in the Gaza Strip compared to the West Bank[83]. The 2006 Palestinian Family Health Survey[84] reported an Infant Mortality Rate of 25.3 per 1,000 live births, higher in the Gaza Strip (28.8) than in the West Bank (22.9) but well below the Middle Eastern regional average of 56 per 1,000 live births[85]. Under-5 Child Mortality Rate was 28.2 per 1,000 live births, also higher in the Gaza Strip (31.8) than in the West Bank (25.8). These values are low but they have not improved since the period 2002-2006. Lack of 24-hour access to health services, specialized staff and advanced neonatal technology contribute to the absence of improvement in infant mortality. In the Gaza Strip, contamination of water with nitrates is also believed to contribute to severe anemia and infant mortality[86].

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[77] *UNICEF, 2009 – Overview Health and Nutrition, Occupied Palestinian Territory.*
[78] *Ministry of Health: Health Indicators 2008*
[79] *WFP/FAO. Food Security and Vulnerability Analysis Report in the oPt. December 2009*
[80] *Palestinian National Authority, Palestinian Central Bureau of Statistics, December 2007 – Palestinian Family Health Survey, 2006. Final Report.*
[81] *IMR reflects the adaptability of the infant to a rapidly changing environment, and death may occur if this adaptation is not successful*
[82] *Ministry of Health, 2009. Health Indicators, 2008. Ramallah – Palestine*
[83] *The highest peak of IMR in the West Bank was in 2002, when it reached 18.4 per 1,000 live births due to the political and economical deterioration in the period of 2001 and 2002 which affected the access to health services. In Gaza Strip, the IMR increased significantly in the year 2007 to reach 33.7 as a result of violence and drastic humanitarian situation there.*
[84] *Palestinian National Authority, Palestinian Central Bureau of Statistics, December 2007 – Palestinian Family Health Survey, 2006. Final Report.*
[85] *UNICEF, 2009 – Overview Health and Nutrition, Occupied Palestinian Territory.*
[86] *WFP/FAO. Food Security and Vulnerability Analysis Report in the oPt. December 2009.*

According to the 2006 MoH-PHIC report, Maternal Mortality Ratio[87] per 100,000 live births was about 15.4 in 2005[88]. This ratio had declined progressively over the past years due to the awareness campaign among pregnant women and the provided prenatal care. Shortcoming of the report, there is an issue of under diagnosis and reporting of MMR in the Gaza Strip and the West Bank[89]. Maternal mortality rates among refugees have increased from 2.5 per 10,000 live births in 1996 to 6.7 per 10,000 in the West Bank and a high 21.3 per 10,000 in the Gaza Strip in 2006[90]. This is despite the fact that practically all women seem to receive antenatal care and give birth at a health institution.

NUTRITION STATUS

Children under-five malnutrition

Children are the most adversely affected when facing malnutrition, (unbalanced diet with certain foods being deficient or in the wrong proportions). Malnutrition is multi-factorial especially in view of the rapid changing socio economic environment in the oPt. Poor environmental conditions may increase infections and also contribute to environmental deficiencies in micronutrients. Unemployment, poor economic situation and food insecurity changes in households' food consumption patterns as a coping mechanism, with reduced amounts of animal products, vegetables and fruits. It contributes to decrease the amount of minerals and vitamins ingested. Conversely, the effects of malnutrition on individuals can maintain poverty Micronutrient deficiencies in young children are known to delay growth, thus hampering oPt's economy and social development. The negative effects of malnutrition include physical and developmental manifestations, in addition to poor weight gain and slowing of linear growth. Major malnutrition indicators are stunting, wasting and underweight.

Stunting (chronic malnutrition) is of concern related to the nutritional status of children in the oPt. It is usually attributed to lack of protein and micronutrients, including iron and essential vitamins. In the year 2006, 10.2% of Palestinian children were stunted in the whole oPt. The percentage of stunted children in the Gaza Strip is higher than in the West Bank (13.2% versus 7.9% in 2006). Stunted rate increased in the Gaza Strip since 2004 due to fragile food security in the area[91]. It has reached a medium severity level according to WHO standards.

About 1.4% and 2.9% suffered wasting[92] and underweight, respectively in 2006 in the oPt. WHO considers wasting a public health problem if the affected population exceeds 5%. Though the percentage has not yet reached the red line there is a serious need to closely follow indicators of wasting and underweight in the Gaza Strip. This is especially relevant since all nutritional status parameters are worse in the Gaza Strip than in the West Bank and due to the increasing food insecurity and current crisis resulting from the continuous blockade since June 2007, the various Israeli incursions and the recent Israeli Cast Lead Operation. Further nutritional monitoring in the oPt could clarify the nutritional status of children.

Low birth weight (less than 2.5 kg)

The proportion of newborns weighing less than 2.5 kg is considered a major determinant of infant survivability and mortality. In the year 2006, the percentage of low birth weight in the oPt reached 7.3%, and the highest percentage was noted in Hebron governorate with 9% in the West Bank, and 8.4% in Khan Yunis in the Gaza Strip. Low birth weight infants are more likely to have disabilities, brain damage, poorer language development, and future chronic health risks. The main factors that contribute to the risk of very low birth weight include, the age of the mother, her general health and nutritional status, the socio-economic situation, the education level, and the prenatal care provided[93].

Anemia

Anemia may be considered the most prevalent nutrient deficiency in the oPt. The causes of anemia are multiple. Generally, common causes of anemia include inadequate intake of iron, foliate or vitamin B12[94]. Also, anemia can result from hookworm infection which is endemic in the Middle East, mainly in areas of poor sanitation and low socio-economic status[95]. Anemia can be mild, moderate, or severe, which can be enough to lead to life-threatening complications. In the oPt, anemia is widespread among children and pregnant women. In 2007, iron deficiency anemia infected about 61.6% of children[96] and 29.1% of pregnant women[97]. In all types of anemia, the percentage of anemia among children or pregnant

[87] *MMR is the most suitable indicator to determine the women's risk to death, during or shortly after pregnancy*
[88] *Ministry of Health and Palestinian Health Information Center)MOH-PHIC). Population and Demography. Health Status in Palestine 2005, October 2006*
[89] *Palestinian National Authority, Palestinian Central Bureau of Statistics, December 2007 – Palestinian Family Health Survey, 2006. Final Report.*
[90] *WHO, 2009 – Health Conditions in the Occupied Palestine Territory, including East Jerusalem and in the Occupied Syrian Golan. 62nd World Health Assembly, A62/INF.DOC./2, 14 May 2009.*
[91] *Palestinian Central Bureau of Statistics (PCBS), 2007. Palestinian Family Health Survey, 2006: Final Report. Ramallah – Palestine.*
[92] *Acute malnutrition*
[93] *Palestinian Central Bureau of Statistics(PCBS), 2007. Palestinian Family Health Survey, 2006: Final Report. Ramallah – Palestine*
[94] *http://www.moh.ps*
[95] *Food and Agriculture Organization of the United Nations (FAO): Nutrition Country Profile Palestine. 2005*
[96] *Anemia in Children in the year 2007: reaching up to 51% and 71% in the West Bank and the Gaza Strip respectively*
[97] *Anemia in Pregnant Women in the year 2007: reaching up to 24% and 33% in the West Bank and the Gaza Strip respectively*

women in the Gaza Strip has been always higher than that of the West Bank by 20% and 9% respectively, due to the complicated political, socioeconomic and accordingly food security status[98].

FOOD UTILIZATION

For the human body requires energy to carry out sufficiently its biological processes. To a large extent, carbohydrate, proteins and lipids are the main sources of energy to the body, and their adequate intake, through well balanced food supply, is necessary to avoid health complications.

In the oPt, food supply is constituted mainly of vegetable and fruit products, cereals (mainly wheat and rice). The daily supply of animal products is constituted of milk, eggs and meat (mainly poultry meat). The share of macronutrients in the total dietary energy supply was registered in 2000/2002 by the FAOSTAT database as 65% of carbohydrates, 11% of protein and 24% of lipids. Around 87% of the energy, 64% of protein and 69% of lipids are of vegetable origin[99].

The current political and economical situation has led to reduced availability and accessibility to food. This has resulted in altering the food consumption and utilization patterns of the Palestinian population through adapting different contra-health coping strategies, and thus affecting their dietary energy supply. Data from PCBS shows a drop in the amount of per capita intake of protein, carbohydrates and lipids per day through 2005 till 2007. Also, the FAO-WFP SEFSec indicates that among those who have reduced their expenditures in the second semester of 2008, around 42% of the West Bank population has decreased their expenses on food, more than a third of the population has reduced the quantity and quality of food obtained. Fouteen percent has reduced the number of meals, and 49% has reduced meat consumption[100]. In the Gaza Strip, the situation is considered a lot worse where among those who have decreased their overall expenditures, 96% have decreased their spending on food, 94% have reduced the quality of food, 60% have dropped off the quantity of food and 95% have decreased the quantity of meat consumed[101]. These coping strategies of low animal product consumption lead to low intake of essential macronutrients which may result in iron, vitamin A and other macronutrient deficiencies.

MACRONUTRIENT SUPPLEMENTATION AND FORTIFIED COMPOUNDS

In 1997, it was revealed that iodine deficiency was a public health problem in the oPt and measures should be taken to minimize its effect and goiter prevalence. The measures taken by the MoH to combat the problem were through focusing on iodized salt supplement and intensive nutritional education[102]. As a result, 85.7% of Palestinian households were recorded to be consuming adequate iodized salt in 2006. The highest percentage was 95.8% in Salfit in the West Bank, and 92.7% in Rafah in the Gaza Strip[103].

In the year 2004 the MoH with the support of UNICEF conducted a program of vitamin A supplementation to children aged between 9 and 59 months. In addition, MoH has put forward wheat fortification with vitamin A to combat its deficiency.

Another challenge facing the health sector in oPt is combating Iron deficiency anemia. MoH has developed many programs to fight against anemia through iron supplements to children aged 4 to 12 months. In addition, pregnant women receive iron supplements during antenatal care. However, Anemia among pregnant women is still high and needs further appropriate measures. While food distributed in the oPt as assistance is fortified, the national food fortification policy faces difficulties related to the institutional weaknesses, particularly in the area of monitoring and enforcement[104].

FOOD SAFETY

There are no proper mechanisms to enforce food quality and safety standards for the food commodities imported and locally produced and processed in the oPt. The lack of food quality and safety policy forces exporters to go through Israeli traders. It further limits market exports, as a number of importing countries request food safety certifications. Consumption of food potentially contaminated with pathogenic micro-organisms or chemical pollutants creates risks to health, especially for vulnerable individuals such as

[98] *Ministry of Health (MoH): Nutrition Department. 2007*
[99] *UNICEF, 2009 – Overview Health and Nutrition, Occupied Palestinian Territory*
[100] *WFP, FAO, and PCBS: Socio-Economic and Food Security Survey Report- West Bank. August 2009*
[101] *WFP/FAO. Food Security and Vulnerability Analysis Report in the oPt. December 2009*
[102] *UNICEF, 2009 – Overview Health and Nutrition, Occupied Palestinian Territory.*
[103] *Palestinian Central Bureau of Statistics (PCBS), 2007. Palestinian Family Health Survey, 2006: Final Report. Ramallah – Palestine*
[104] *WFP/FAO. Food Security and Vulnerability Analysis Report in the oPt. December 2009.*

young children, pregnant and lactating women, the elderly and already sick individuals69. Moreover, in the Gaza Strip, the informal trade via the tunnels increase the likelihood of entry of food items that do not meet the minimum safety and health standards[105].

ACCESS TO WATER AND SANITATION

Access to water and sanitation is a very important factors that affect the health and nutritional status of the population. Sufficient water supply is necessary to carry out daily basic human activities, in addition to the biological process within the body. Generally speaking, there is a shortage in water resources in the oPt. The WHO defines the water standard level to be 150 Liter per capita per day. The domestic daily amount supplied to Palestinians is 128 Liter per capita. It is worth noting that Palestinians consume only 73 liters a day whereas the Israeli settlers consume an average of 300 liters of water per day[106]. The governorates facing the most severe deficits in proportion to supply are Hebron, Jenin, Tubas, Nablus, and Salfit, where the gross per capita water consumption amounts to only 56, 44, 37, 62, 67 [9] Liter per capita per day respectively[107].

Sanitation facility and practices are very important determinants of health. Well hygienic practices and accessible sanitation help to avoid main waterborne diseases that mainly affect children and their nutritional status, such as diarrhea. The infrastructure of sanitation facility in oPt is very weak and its accessibility is low especially in the north of West Bank. Major governorates affected from such diseases are Nablus and Tulkarm where over than 25% of the population are infected[108]. The Israeli Cast Lead Operation in the Gaza Strip in December 2008 damaged or destroyed several sewage networks and pumping stations, and damaged the Gaza Waste Water Treatment Plant[109]. This worsened the already poor sanitation systems in the territory and increased ground water and sea pollution. Moreover, the limited amounts of sanitation materials allowed in the Gaza Strip since June 2009 are insufficient to ensure proper repairs and improvements.

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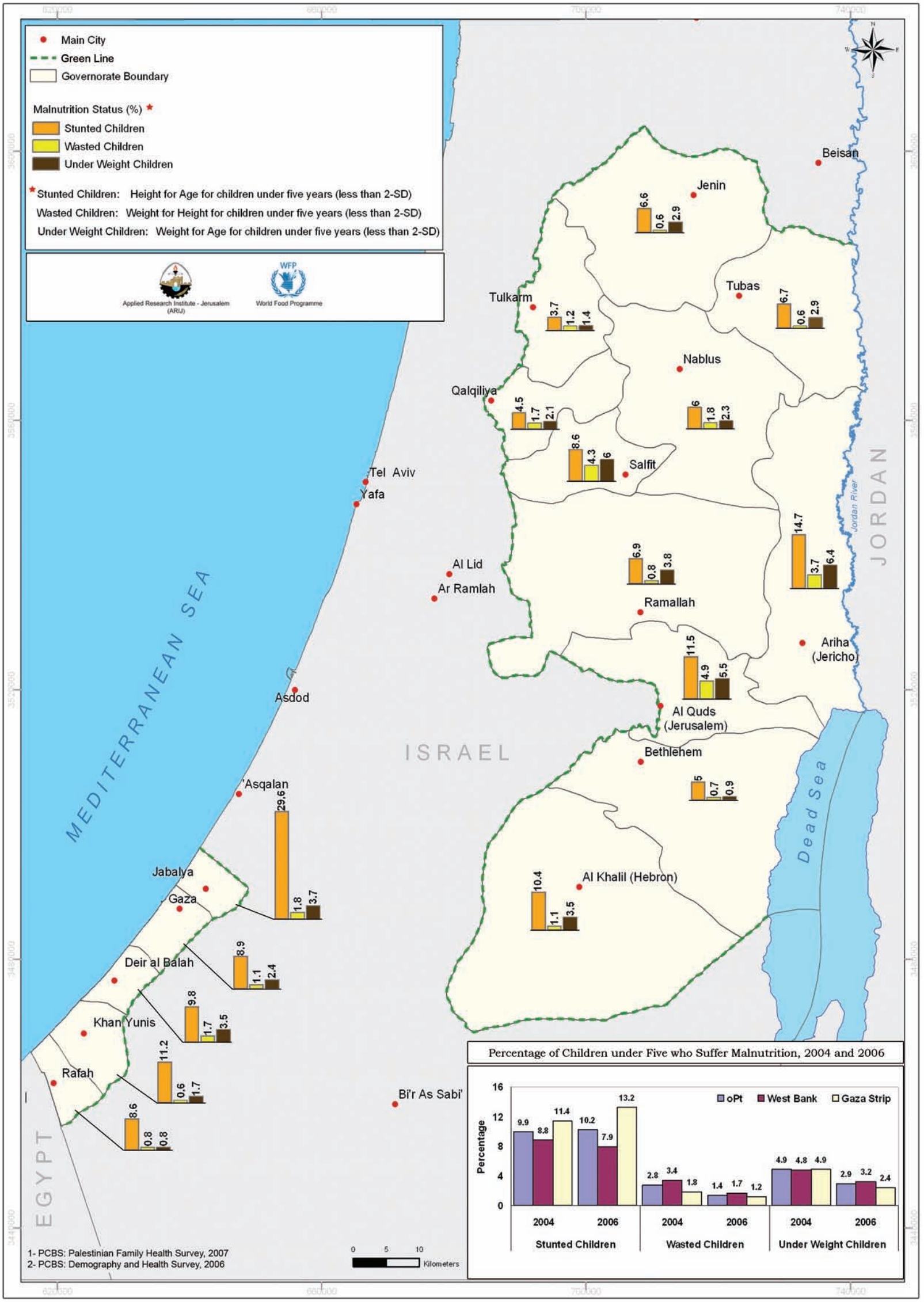
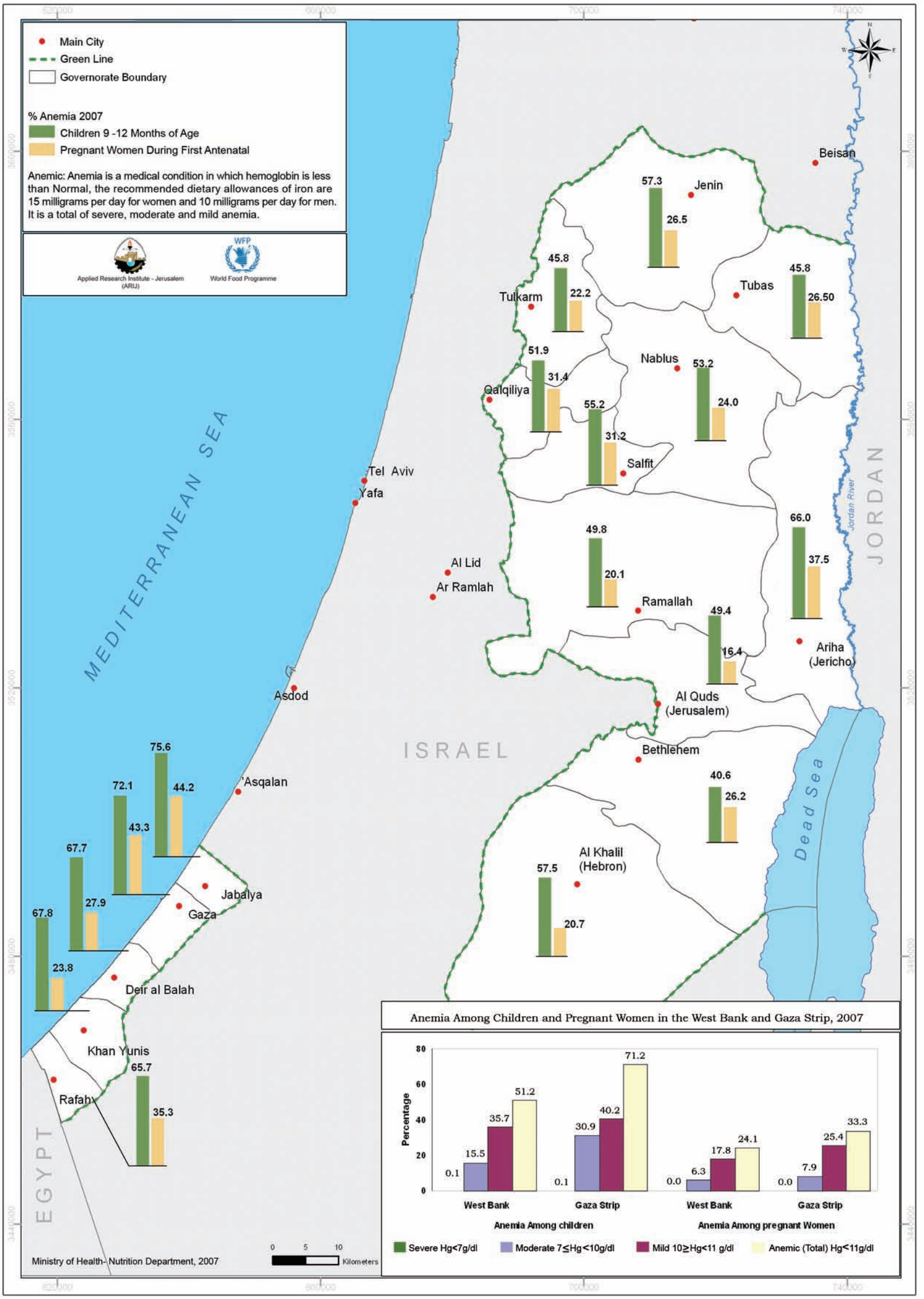
[105] Madi A.S., Abu Hassan H., Al-Ghool N., Abu Ghosh O. The Impact of Closure and High Food Prices on Performance of Imported Staple Foods and Vegetable and Fruits Market in the oPt. Al-Sahel Co. for Institutional Development and Communications.Al Sahel. December 2009.
[106] The World Bank, 2009, Assessment of Restrictions on Palestinian Water Sector Development
[107] Palestinian Water Authority, 2008
[108] Water, Sanitation and Hygiene Monitoring Program (WASH Database), 2008.
[109] Palestinian National Authority, March 2009 – The Palestinian National Early Recovery and Reconstruction Plan for Gaza, 2009-2010. International Conference in Support of the Palestinian Economy for the Reconstruction of Gaza, Egypt, 2 March 2009.

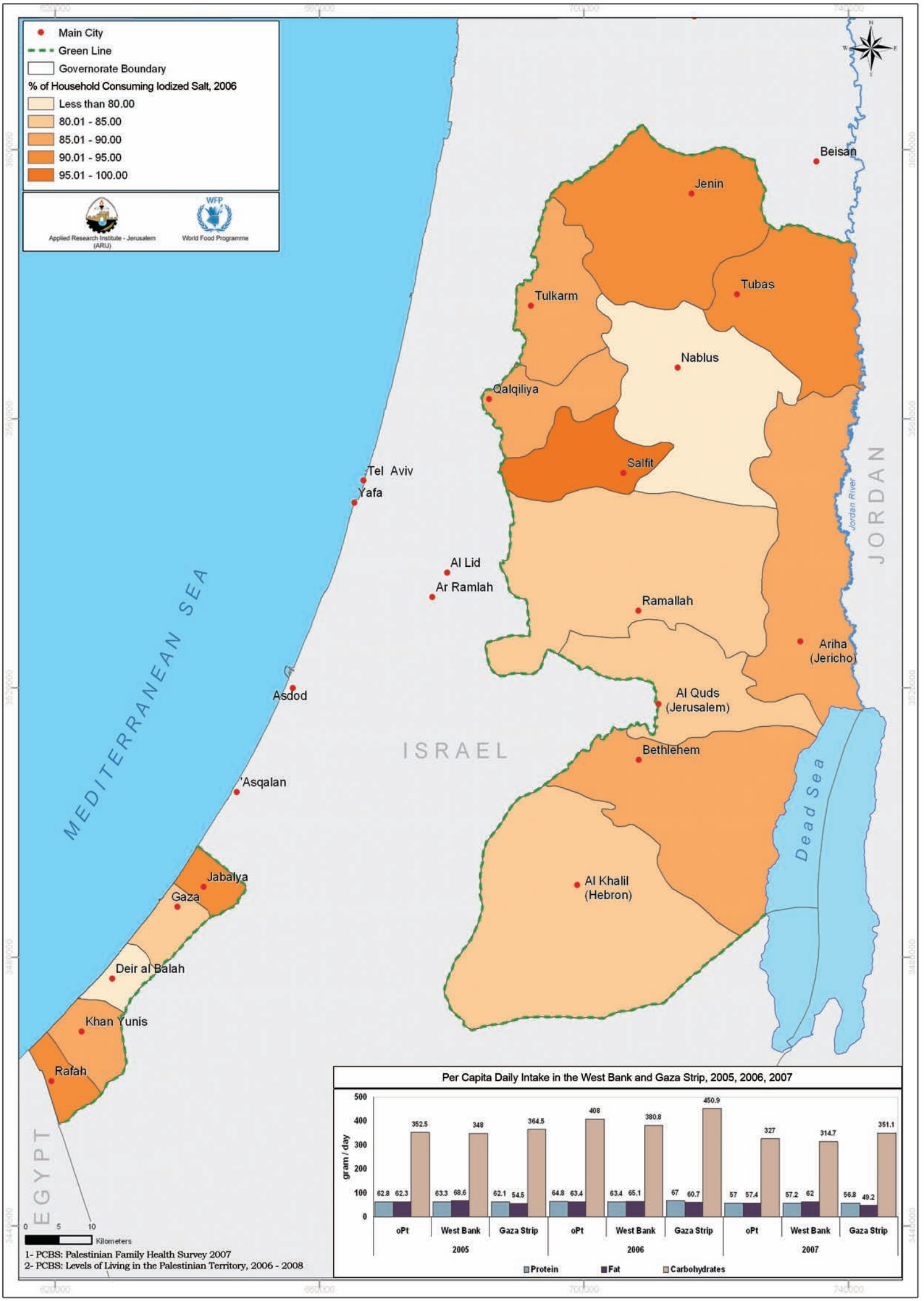
Percentage of Children Under Five who Suffer Malnutrition in the occupied Palestinian territory, 2004&2006



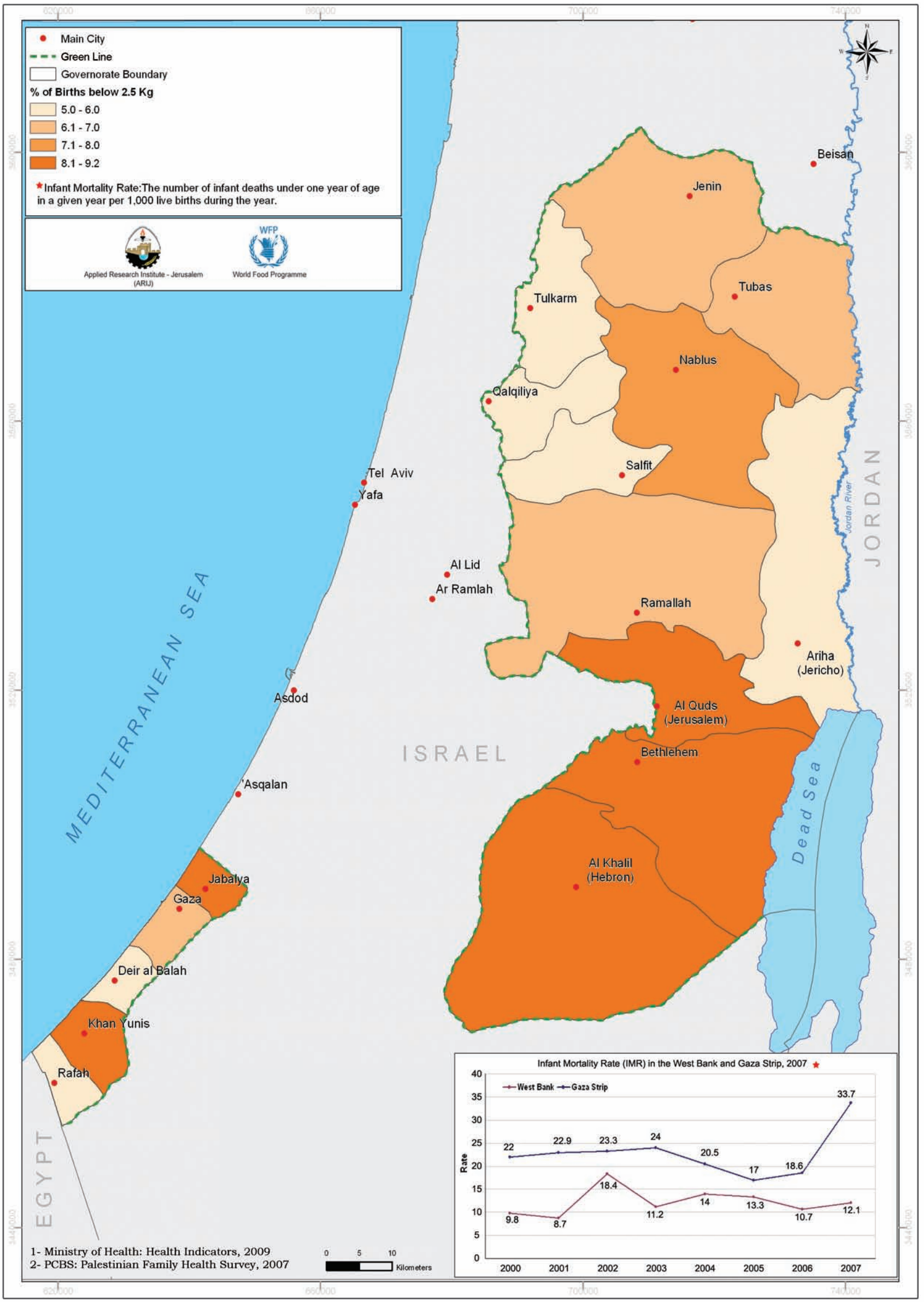
Anemia Among Children and Pregnant Women in the occupied Palestinian territory, 2007



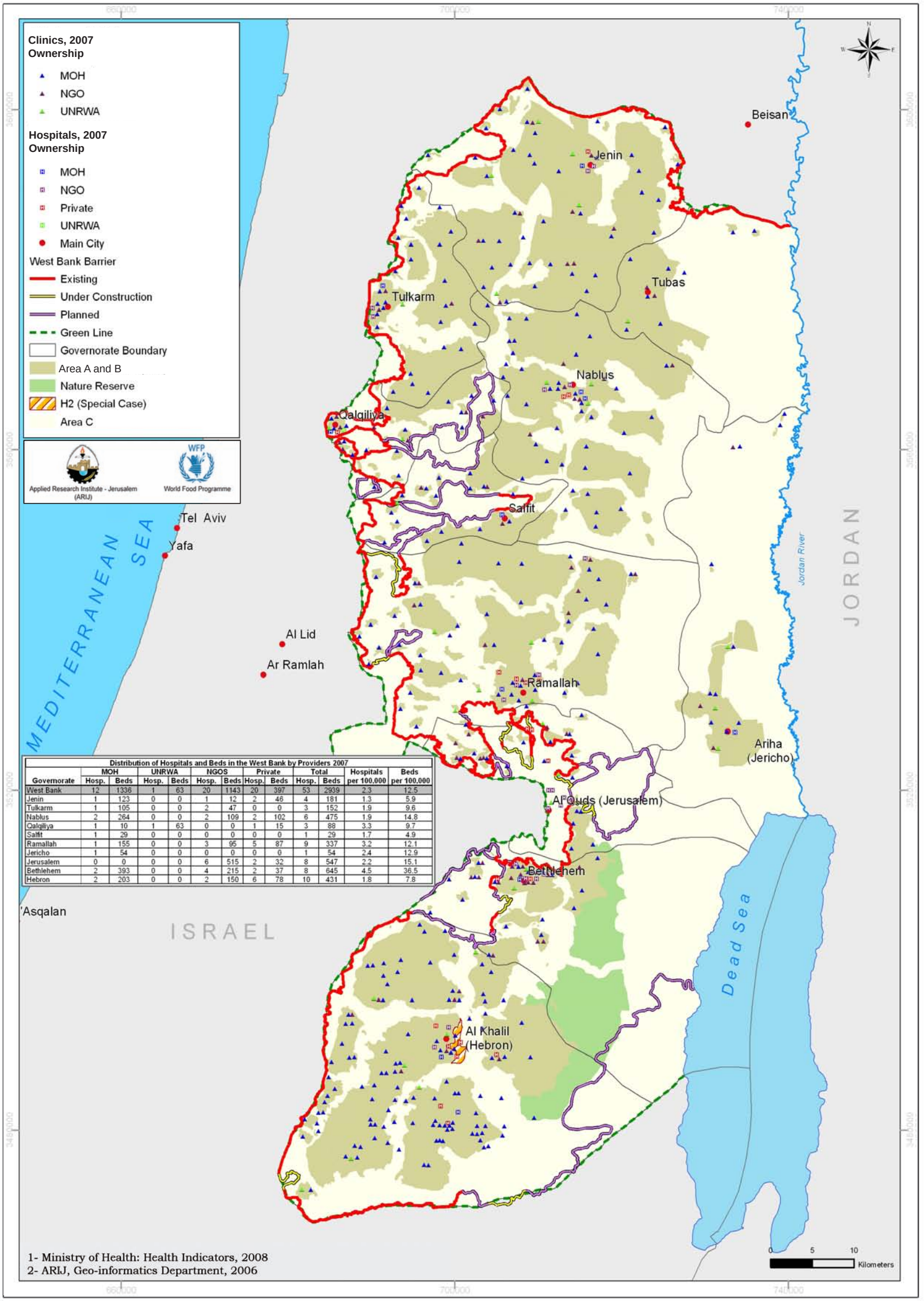
Households Consuming Iodized Salt and Daily Intake in the occupied Palestinian territory, 2005 - 2007



Percentage of Births (Below 2.5 kg) and Infant Mortality Rate in the occupied Palestinian territory, 2006/2007

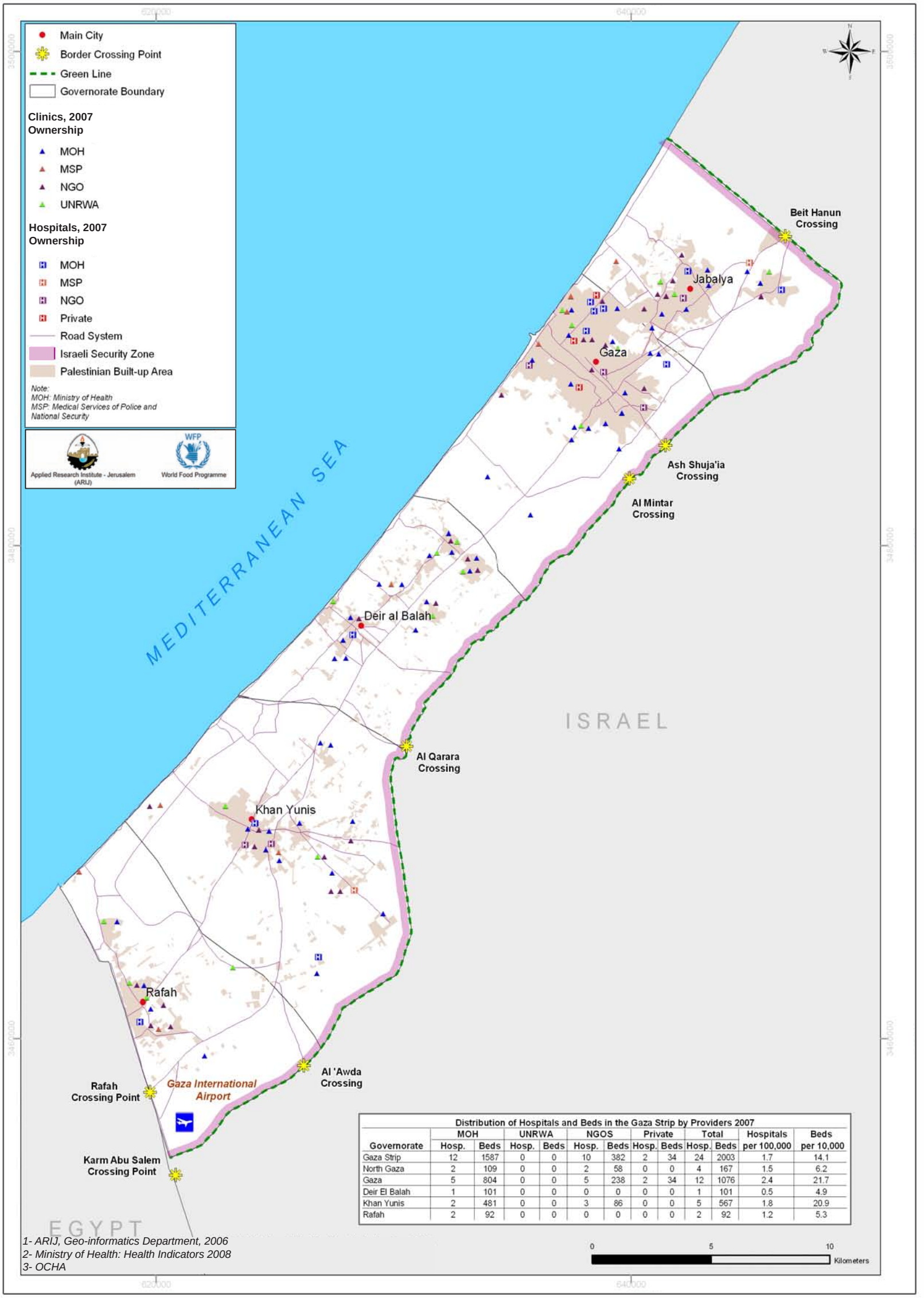


Distribution and Ratio of Hospitals and Beds in the West Bank, 2006 / 2007



Distribution of Hospitals and Beds in the West Bank by Providers 2007												
Governorate	MOH		UNRWA		NGOS		Private		Total		Hospitals per 100,000	Beds per 100,000
	Hosp.	Beds	Hosp.	Beds	Hosp.	Beds	Hosp.	Beds	Hosp.	Beds		
West Bank	12	1336	1	63	20	1143	20	397	53	2939	2.3	12.5
Jenin	1	123	0	0	1	12	2	46	4	181	1.3	5.9
Tulkarm	1	105	0	0	2	47	0	0	3	152	1.9	9.6
Nablus	2	264	0	0	2	109	2	102	6	475	1.9	14.8
Qalqiliya	1	10	1	63	0	0	1	15	3	88	3.3	9.7
Salfit	1	29	0	0	0	0	0	0	1	29	1.7	4.9
Ramallah	1	155	0	0	3	95	5	87	9	337	3.2	12.1
Jericho	1	54	0	0	0	0	0	0	1	54	2.4	12.9
Jerusalem	0	0	0	0	6	515	2	32	8	547	2.2	15.1
Bethlehem	2	393	0	0	4	215	2	37	8	645	4.5	36.5
Hebron	2	203	0	0	2	150	6	78	10	431	1.8	7.8

Distribution and Ration of Hospitals and Beds in the Gaza Strip, 2006 / 2007

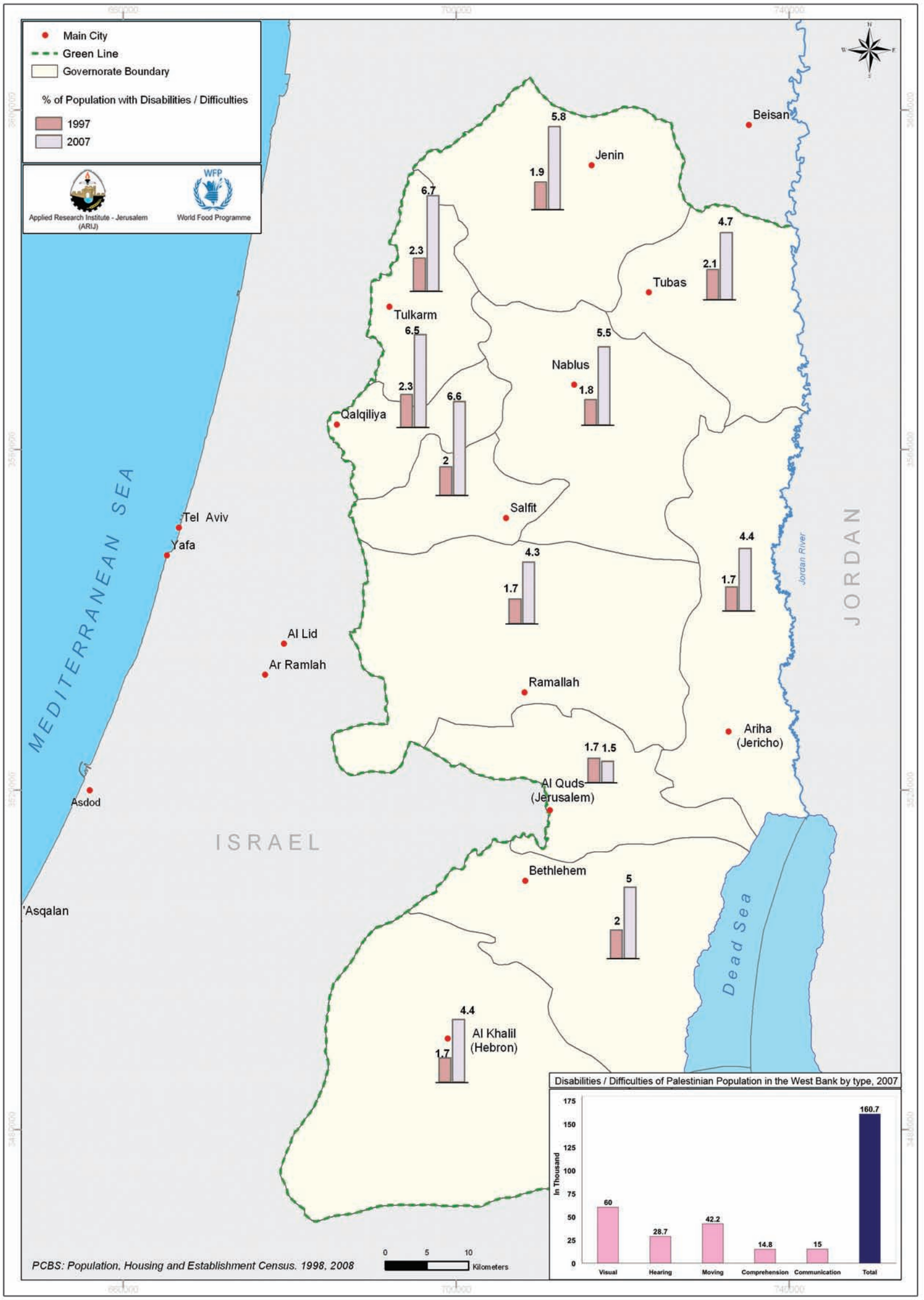


Distribution of Hospitals and Beds in the Gaza Strip by Providers 2007

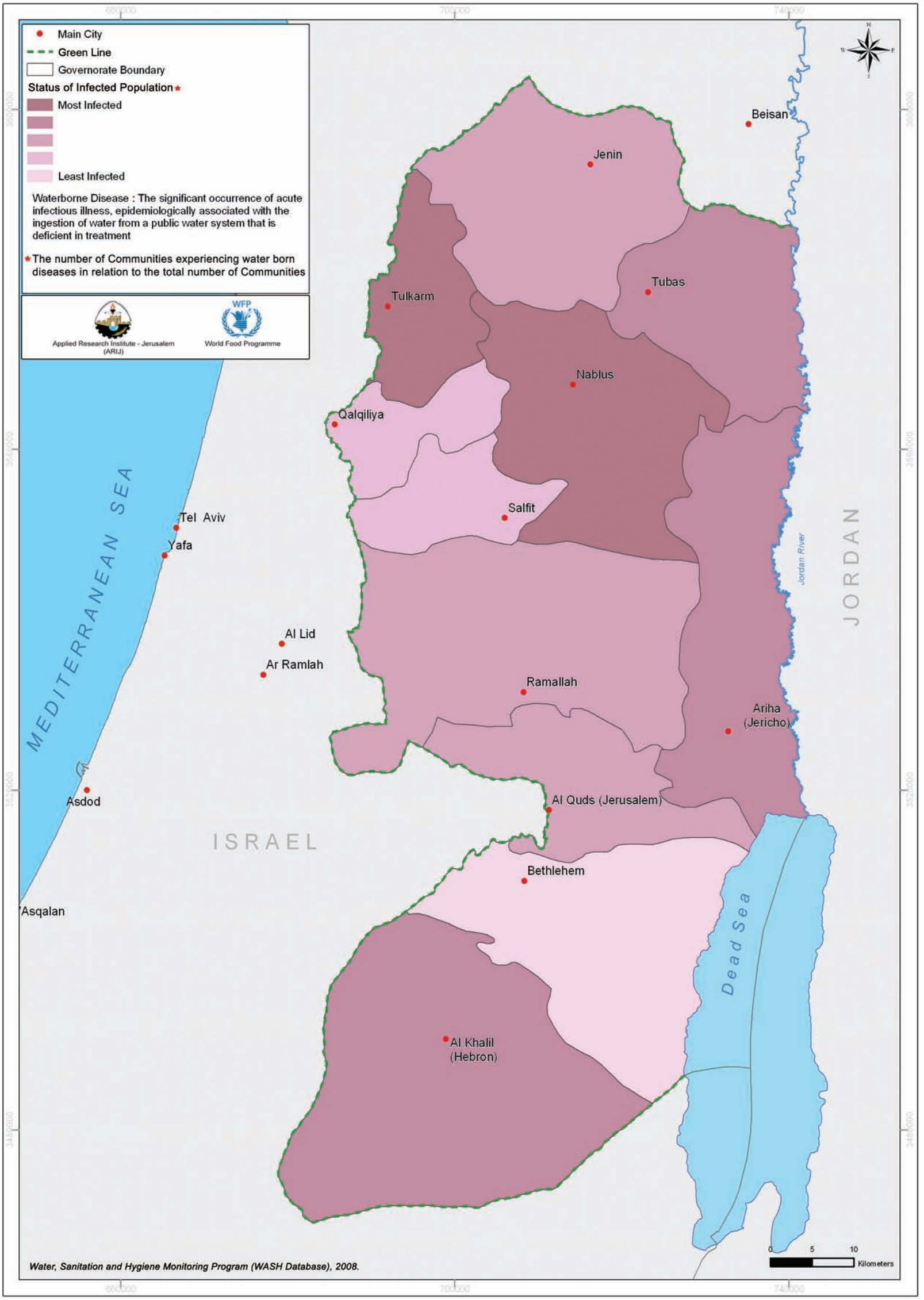
Governorate	MOH		UNRWA		NGOS		Private		Total		Hospitals per 100,000	Beds per 10,000
	Hosp.	Beds	Hosp.	Beds	Hosp.	Beds	Hosp.	Beds	Hosp.	Beds		
Gaza Strip	12	1587	0	0	10	382	2	34	24	2003	1.7	14.1
North Gaza	2	109	0	0	2	58	0	0	4	167	1.5	6.2
Gaza	5	804	0	0	5	238	2	34	12	1076	2.4	21.7
Deir El Balah	1	101	0	0	0	0	0	0	1	101	0.5	4.9
Khan Yunis	2	481	0	0	3	86	0	0	5	567	1.8	20.9
Rafah	2	92	0	0	0	0	0	0	2	92	1.2	5.3

1- ARIJ, Geo-informatics Department, 2006
2- Ministry of Health: Health Indicators 2008
3- OCHA

Percentage of Disability / Difficulties of Palestinian Population in the West Bank, 2007



Water Born Diseases by Governorate in the West Bank, 2007



Quality of Domestic Water Resources in the West Bank, 2007