



# Qatar and its EMS System

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# Overview

- ▶ Brief history of medical services in Qatar
- ▶ History of EMS development in Qatar
- ▶ Current EMS service
- ▶ Future EMS service

# History of Health System in Qatar

- ▶ Past
- ▶ Present
- ▶ Future



# History of Health System in Qatar



## Rumaila Hospital

1957 and renovated in 1977

362-bed



# History of Health System in Qatar



**Dr. Prendiville and on his left Dr. Guini 1957**

# History of Health System in Qatar



**TB Survey 1957**

# History of Health System in Qatar



## Hamad General Hospital (HGH)

1982( 616 beds)



# History of Health System in Qatar



## ▶ Hamad Medical Corporation (HMC)

- Established in 1982
- Supervises the following hospitals:
  - Hamad General Hospital
  - Rumaila Hospital



# History of Health System in Qatar



- ▶ **Hamad Medical Corporation (HMC)**
  - HMC Vision & Mission

To be an internationally  
recognized  
world-class center for  
healthcare excellence

# History of Health System in Qatar



## ▶ Hamad Medical Corporation (HMC)

### ◦ Values

- Our values reflect RESPECT
  - Reliable service delivery
  - Excellence is our standard
  - Safe and clean environment
  - Patient-centered care
  - Empowerment, enabling each to be his/her best
  - Concerned with community well-being
  - Teamwork, which is interdisciplinary and collaborative

# History of Health System in Qatar



## North District Hospital Al-Khor

2005( 119 beds)



# History of Health System in Qatar



## Western District Hospital In Dukhan

2011 ( 75 beds)



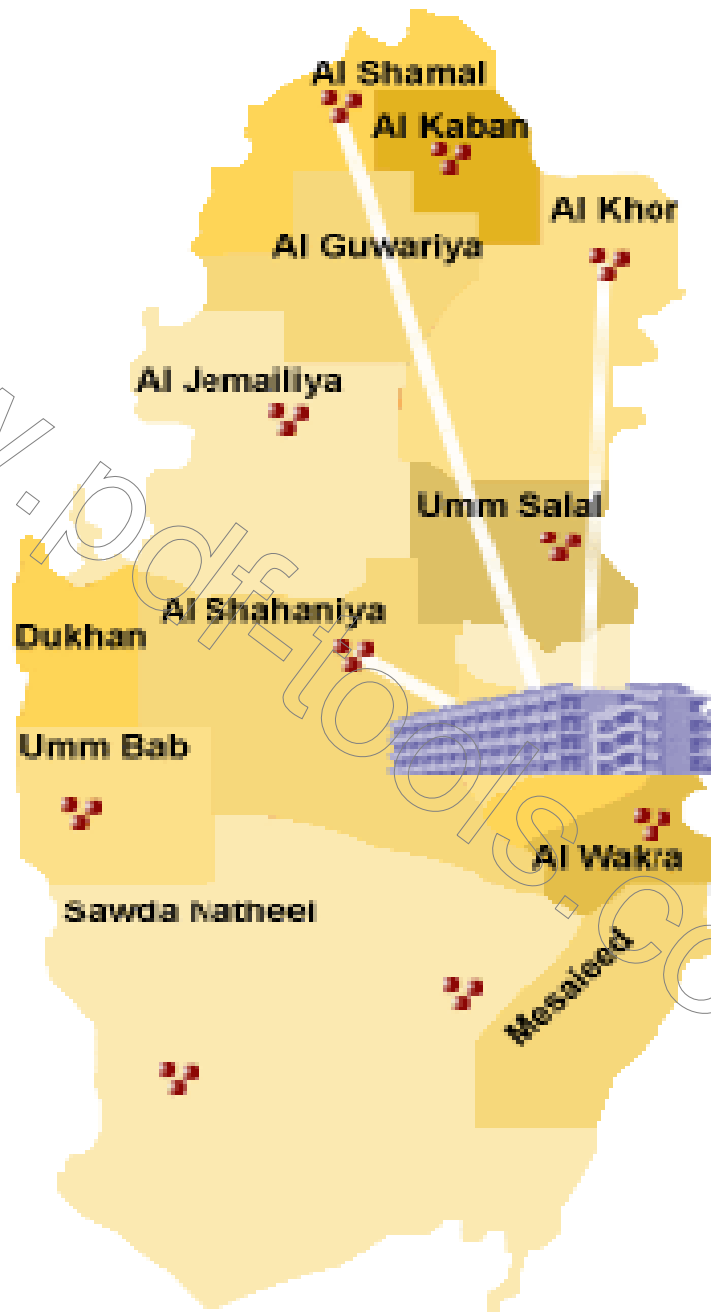
# History of Health System in Qatar



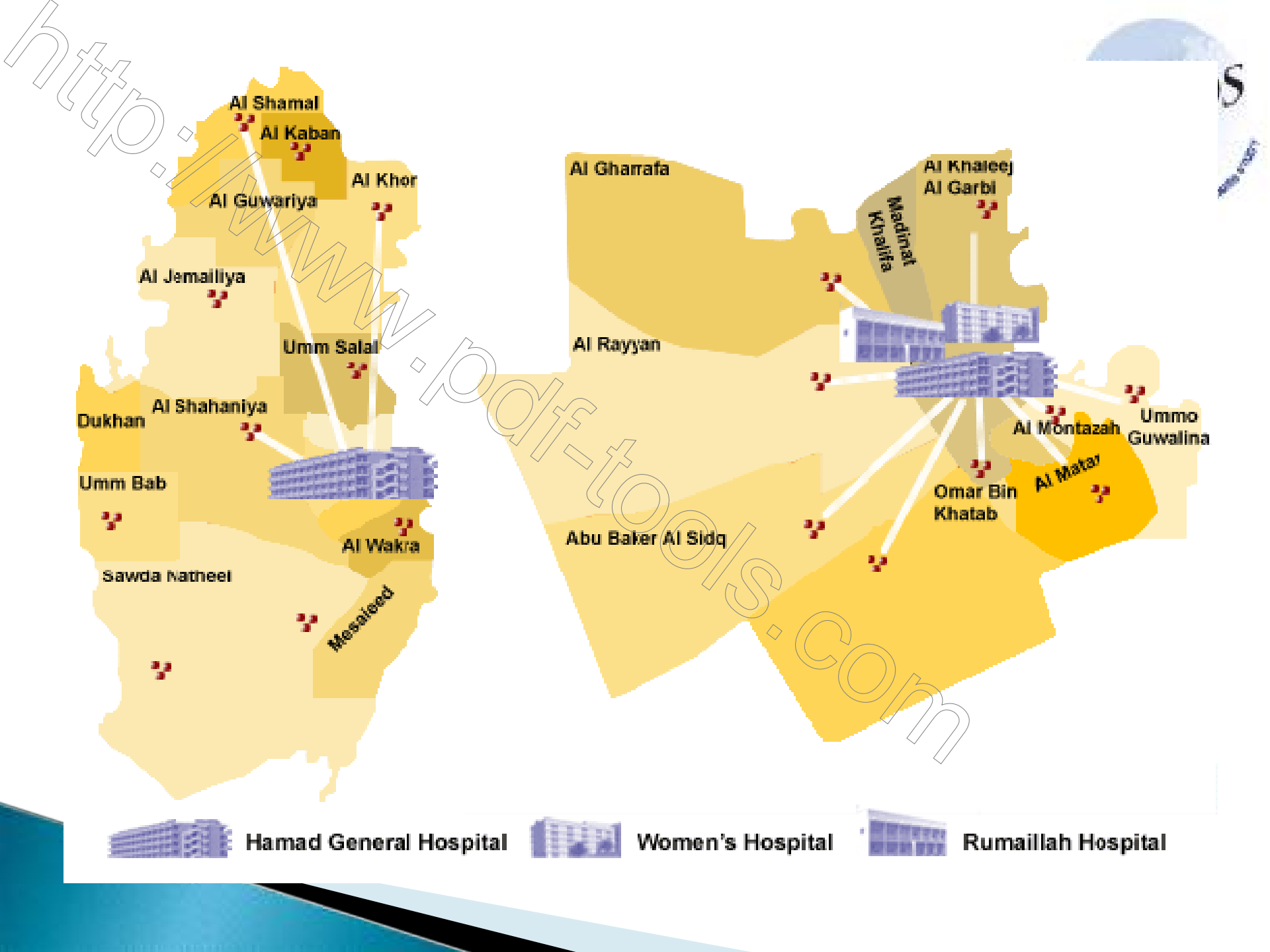
## Southern District Hospital Al-Wakra

2011 (200 beds)





<http://www.pof-ta.com>



Al Shamal

Al Kaban

Al Khor

Al Guwariya

Al Jemaliya

Umm Salal

Al Gharafa

Al Khaleej

Al Garbi

Madinat  
Khalifa

Al Rayyan

Al Shahaniya

Dukhan

Umm Bab

Al Wakra

Abu Baker Al Sidq

Omar Bin  
Khatab

Al Montazah

Ummo  
Guwallina

Al Matar

Sawda Natheel

Mesaieed



Hamad General Hospital

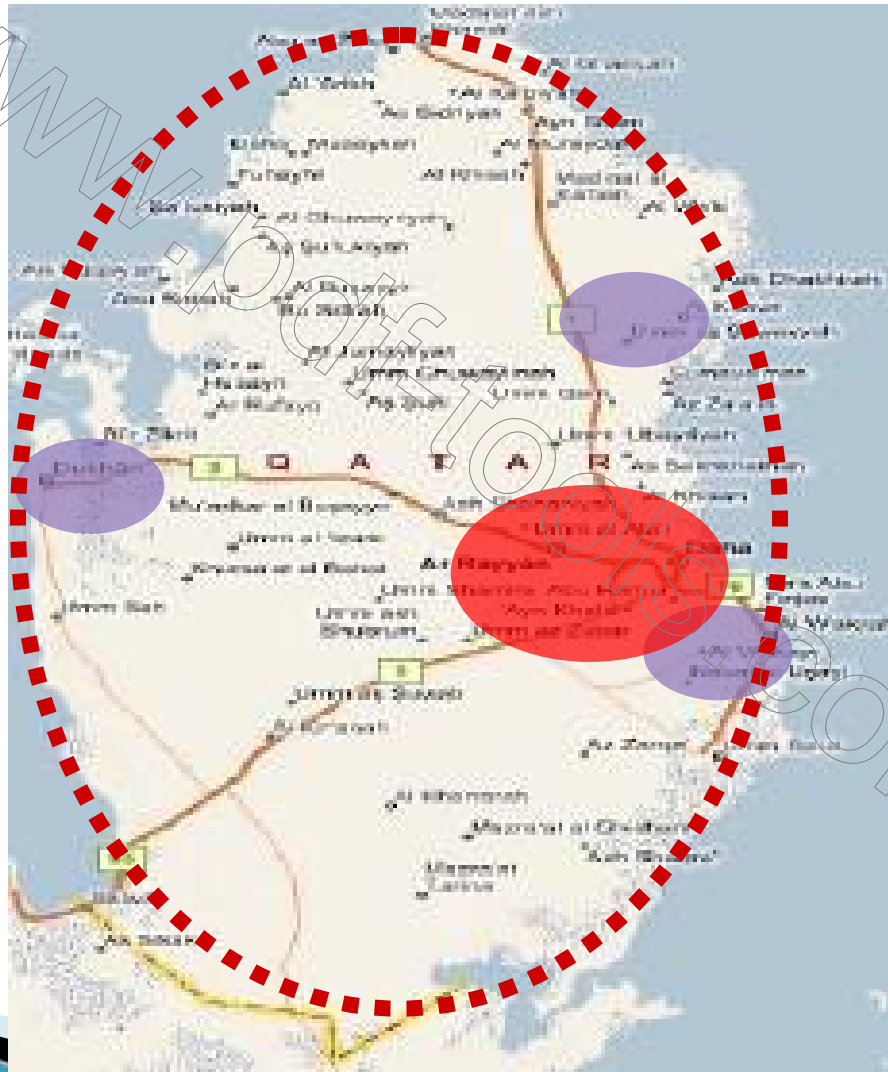


Women's Hospital



Rumailah Hospital

# History of Health System in Qatar





# History of EMS Development in Qatar



# History of EMS Development in Qatar



- ▶ The EMS department is the front line of health care in the State of Qatar

## **Vision**

To provide a national service that places Qatar among leaders of pre-hospital professionals around the world

# History of EMS Development in Qatar



## Massive Expansion

	1999	2004	2006	2007
Ambulances – 24 hour	6	20	33	45
Ambulances - transfer	2	8	22	25
Staff	66	360	682	650
Vehicles	45	70	175	160
Call volume	13,000	25,916	66,000	74,000

# History of EMS Development in Qatar



# History of EMS Development in Qatar



## ▶ EMS Standard of Care

- The Department complies with the United States Department of Transportation EMS curriculum guidelines
- All staff who complete HMC EMS training are eligible to take the US registration exam for Emergency Medical Technician – Basic

# History of EMS Development in Qatar



## ▶ Staffing Configuration

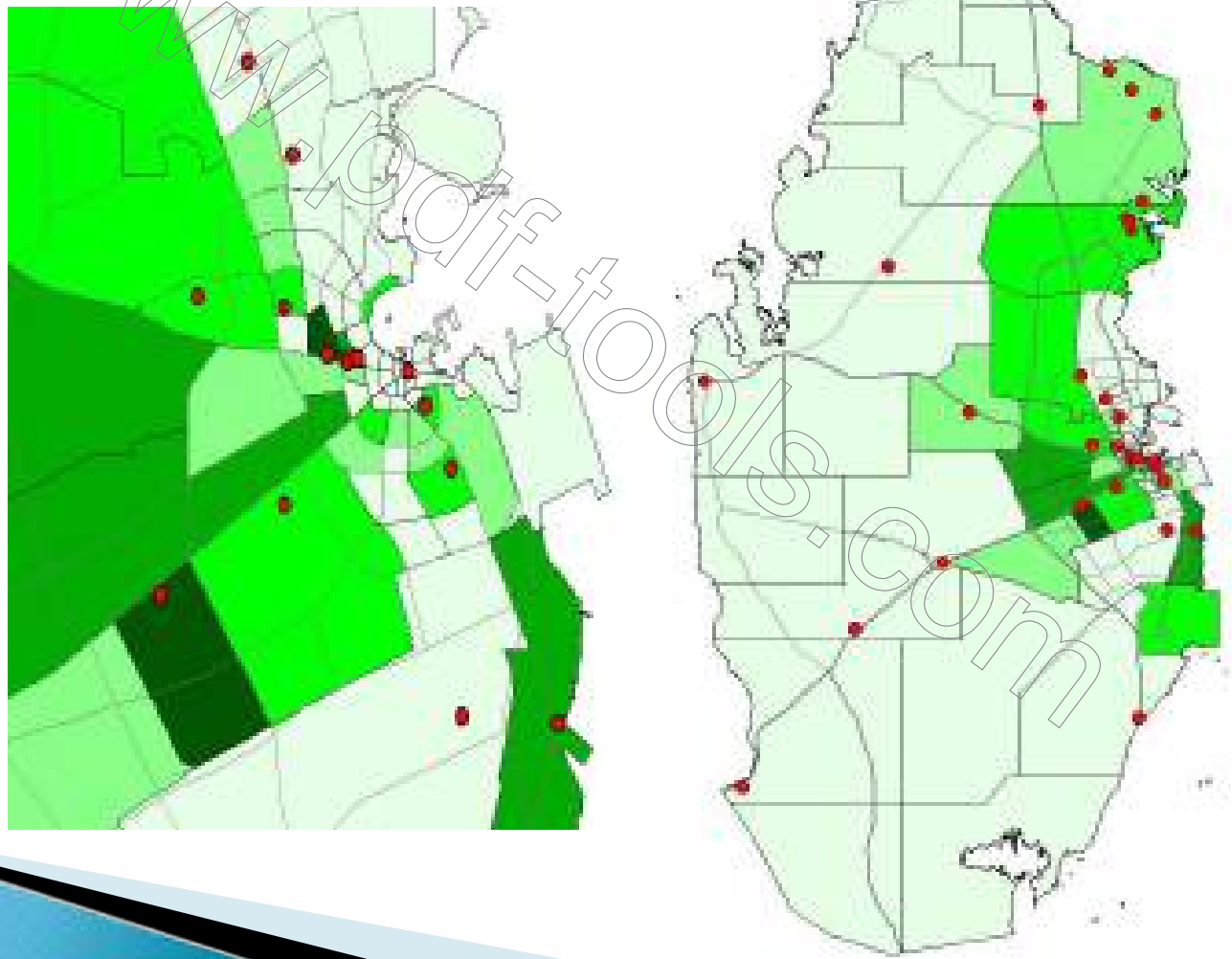
- Every ambulance carries 1 EMT, and 1 intermediate paramedic
- There is 1 paramedic backup unit available
- Every emergency ambulance has an Arabic speaker
- Communications Center always has three different languages represented
  - Arabic
  - English
  - Tagalog



# History of EMS Development in Qatar



## EMS Stations



# History of EMS Development in Qatar



## ▶ Case Distribution

- Medical - 40%
- Transfers - 40%
- Trauma - 20 %





# History of EMS Development in Qatar



## ▶ Response times

### ◦ Urban response time

- Department standard is 8 minutes 80% of the time
  - 30–40% within standard
  - 90% within 15 minutes

### ◦ Rural

- Department standard is 15 minutes 80% of the time
  - 70% within 15 minutes standard

# History of EMS Development in Qatar



- ▶ **In 2007**
  - HMC and University of Pittsburgh Medical Center (UPMC) collaboration resulted in:
  - A review of the EMS

**Education**

**Training**

**Services**

# History of EMS Development in Qatar



- ▶ **In 2008**
  - **EMS Restructure Project was presented to HMC board**
    - Review of vision
    - Review of strategic plan
    - Review of organization structure
    - Review of manpower allocation
    - Review of recruitment and retention factors

# Current EMS



- **HMC Ambulance Service (HMCAS)**
  - Service provides prehospital emergency care (both ground ambulance and air ambulance) and interfacility transfer services within the borders of the State of Qatar, and occasionally beyond

# Current EMS



- **HMC Ambulance Service (HMCAS)**
  - In keeping with HMC's mandate, these services are provided free of charge to all the people of Qatar, whether resident or visiting
  - The Ambulance Service integrates with primary, secondary, tertiary and ongoing care services as described National Health Strategy 2011–2016

# HMCAS

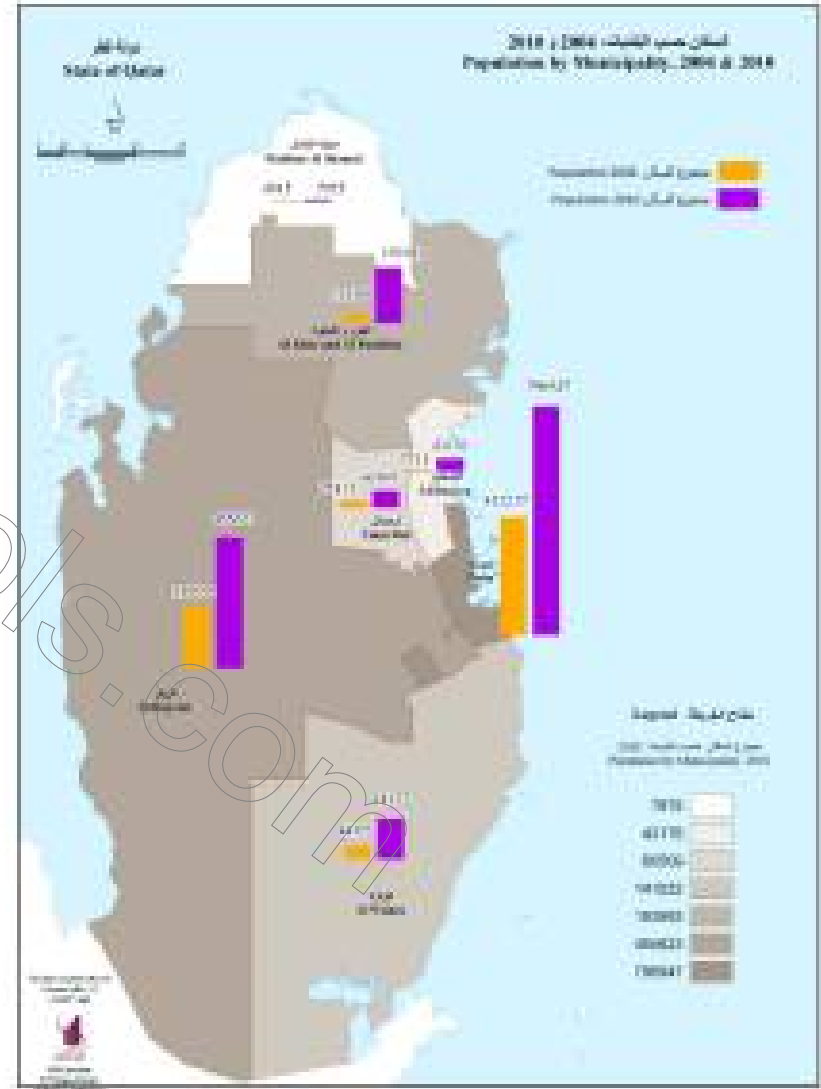


- HMC's Ambulance Service aspires to be:
  - A clinically led, high-performance ambulance service providing high-quality prehospital emergency care and interhospital/facility transport for the people of Qatar

# HMCAS



- ▶ The national ambulance service of the State of Qatar ( $\pm 1.7M$  people; 85% in Doha)
- ▶ Current workforce establishment comprises 1021 staff from 25 countries





# Infrastructure

- LifeFlight Base atop of Hamad General Hospital car park
- Workshops in the Industrial Area and Al Khor.
- Communications Centre within the Ministry of Interior (MOI) National Command Centre (NCC)
- Headquarters building incorporating a training centre, administration and stores



# Infrastructure

- 6 Hub Stations (Central, West Bay, Al Rayaan, Al Wakra, Industrial Area and Al Khor) and 29 Dispatch Points in a 'Hub and Spoke' arrangement.



# HMCAS Clinical Model



## OLD

First Responder (106  
and below)

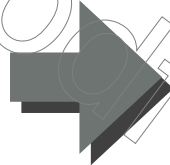
EMT - Basic (107)

EMT - Intermediate  
(107/8)

Paramedic 1 (108)

Paramedic 2 (109)

Critical Care Paramedic  
(112)



## NEW

Patient Transport  
Response Officer (106)

Ambulance Paramedic  
(108)

Critical Care Paramedic  
(112)

- Developed on the basis of evidenced based practice.
- Supported by revised Scopes of Practice and Clinical Guidelines.
- Audited by comprehensive quality measurement and improvement system.

# HMCAS Resources

## Transporting Resources



### Alpha

(Ambulance Paramedics in Emergency Ambulance)



### LifeFlight

(Critical Care Paramedic in Emergency Helicopter)



### Tango

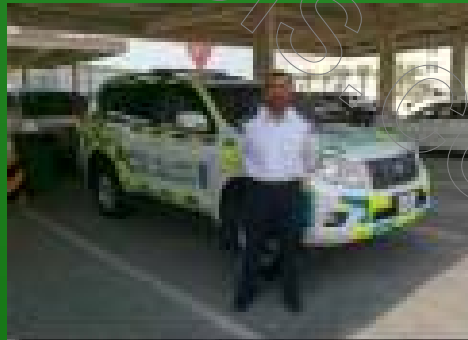
(Patient Transport Response Officers in Non-Emergency Ambulance)

## Supporting Resources



### Charlie

(Critical Care Paramedic in Rapid Response Vehicle)



### Delta

(Supervisor in Rapid Response Vehicle)

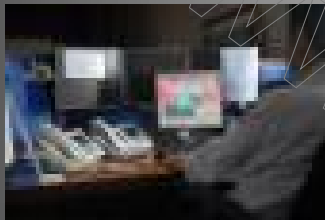


### Special

(Mass Casualty, LifePatrol, Quad Bike etc)

# Dispatch Response Process

999 call transferred from MOI



HMCAS identifies incident **Location**

HMCAS triages and allocates **MPDS Code**

## The THREE CRITICAL CAD questions:

- 1. Location** - where is the incident?
- 2. MPDS Code** - how serious is the incident, what resources need to be dispatched and how quickly do we need to get there?
- 3. Nearest** - which are the nearest (by road speed) Alpha, Delta, Charlie units (and is LifeFlight required)?

**X-Ray**  
Normal Drive



Nearest Alpha



Nearest Delta

**Yankee**  
Lights & Sirens



Nearest Alpha

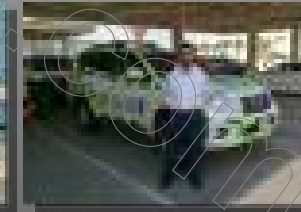


Nearest Delta

**Zulu**  
Lights & Sirens



Nearest Alpha



Nearest Delta

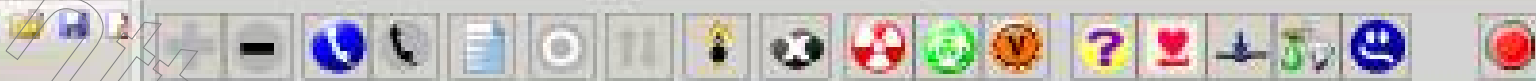


Nearest Charlie  
(Urban)

and/or



LifeFlight (Rural)



1:03 :46

31: Unconscious / Fainting (Near)

31-D-4

Entry	KQ	PDVCEI	DLS	Summary
			Shift: 31-D-4	

1. His breathing is completely normal.
2. He is completely alert (responding appropriately).
3. He is changing color.
4. His color change is blue.

Determinants	Responses (user-defined)
A 1 Fainting episode(s) and alert ≥ 35 (without cardiac history)	A2D2=X
2 Fainting episode(s) and alert < 35 (with cardiac history)	A2D2=X
3 Fainting episode(s) and alert < 35 (without cardiac history)	A2D2=X
C 0 Override	A1D1=Y
1 Alert with abnormal breathing	A1D1=Y
2 Fainting episode(s) and alert ≥ 35 (with cardiac history)	A1D1=Y
3 Females 12-50 with abdominal pain	A1D1=Y
D 0 Override	A1C1D1=Z
1 Unconscious – AGONAL/INEFFECTIVE BREATHING	A1C1D1=Z
2 Unconscious – Effective breathing	A1C1D1=Z
3 Not alert	A1C1D1=Z
4 CHANGING COLOR	A1C1D1=Z
E 0 Override	A1C1D1=Z
1 INEFFECTIVE BREATHING	A1C1D1=Z

sbounouh  
 MFDS 12.1.880 27/10/2011  
 13091

O: NAE  
 C: NAE  
 55-year-old, male, conscious, breathing. Code: 31-D-4: CHANGING COLOR

# Dispatch Response Process

999 call transferred from MOI

HMCAS identifies incident **Location**

HMCAS triages and allocates **MPDS Code**

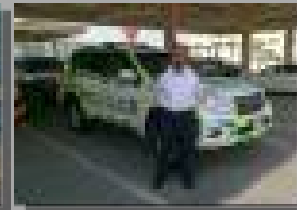
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**X-Ray**  
Normal Drive



Nearest Alpha



Nearest Delta

**Yankee**  
Lights & Sirens



Nearest Alpha

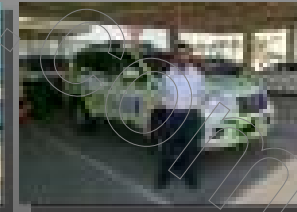


Nearest Delta

**Zulu**  
Lights & Sirens



Nearest Alpha



Nearest Delta



Nearest Charlie  
(Urban)

and/or



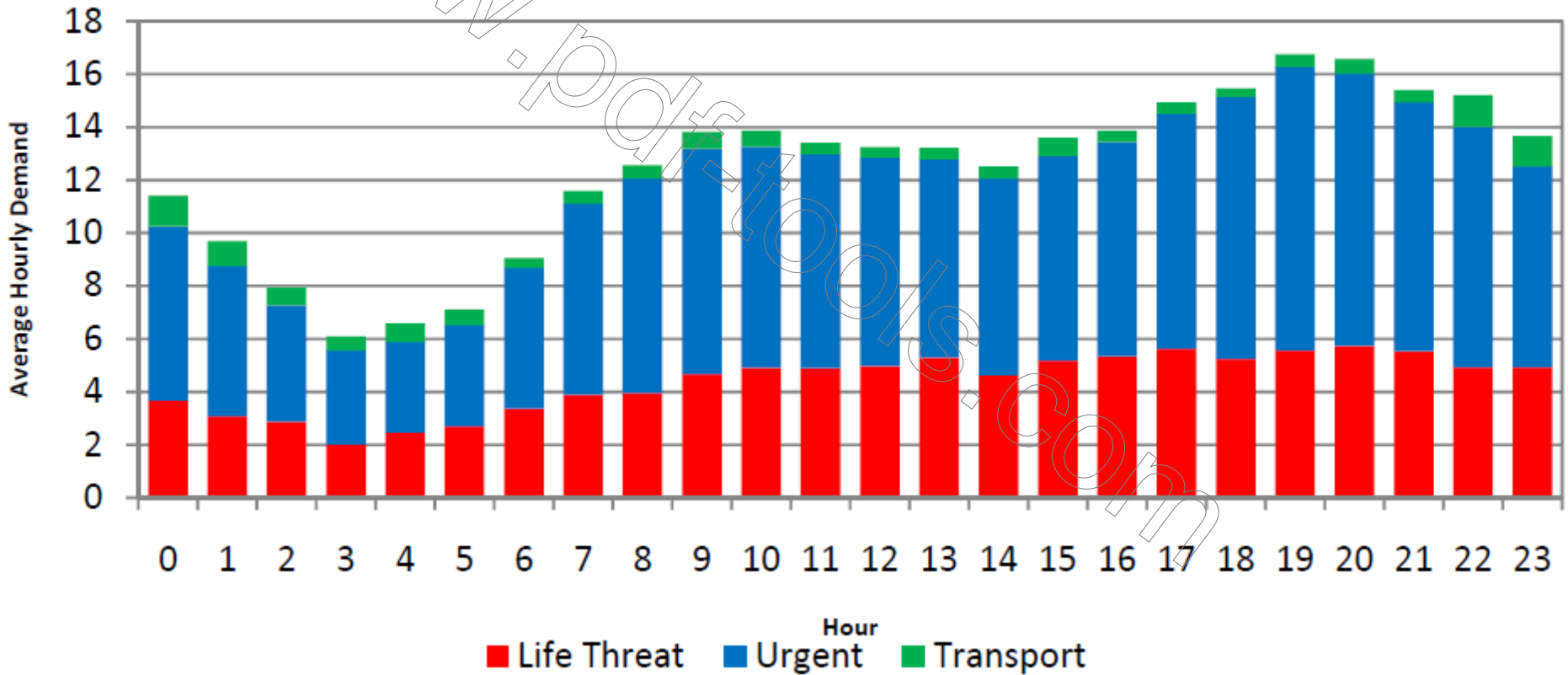
LifeFlight (Rural)

# When do we need them?



- ▶ Late morning & mid evening peaks

Average Demand by Hour of the Day and Response Priority



# Challenge

- ▶ Staffing / peak demand mismatch



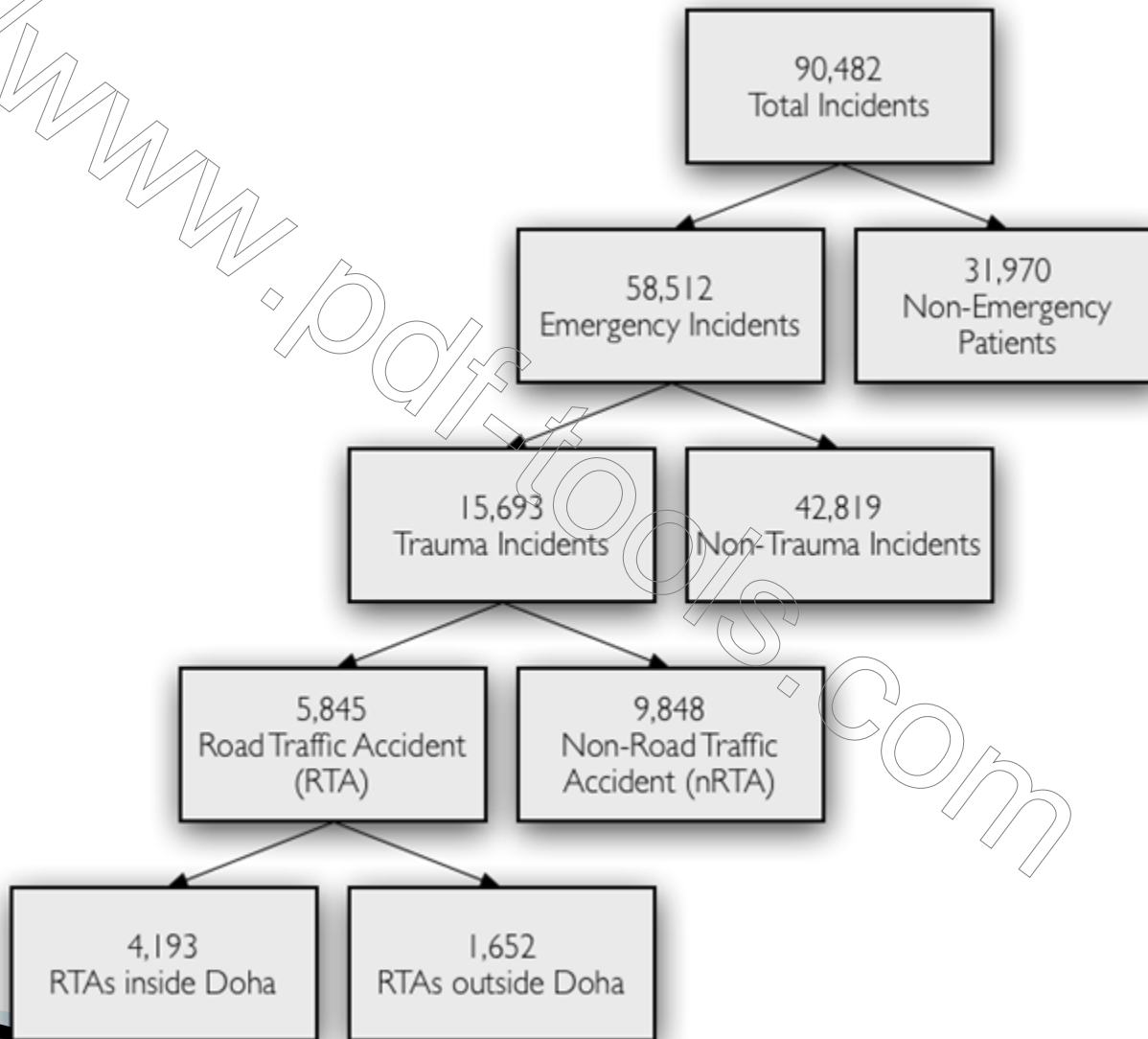
Average hourly demand (red and blue lines) and average deployments (bars) by hour of day on weekdays in Doha



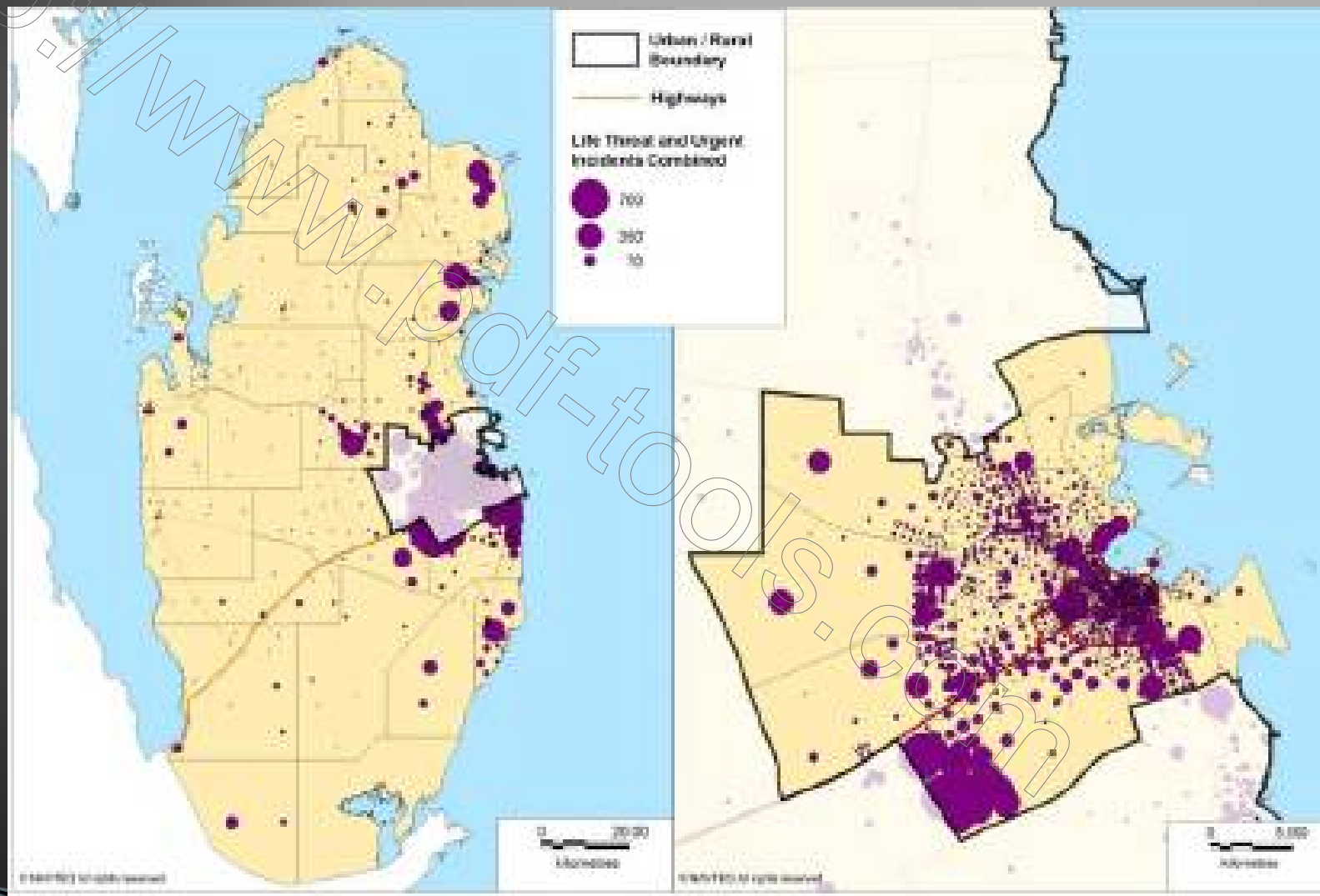
Deployments as of December 2009



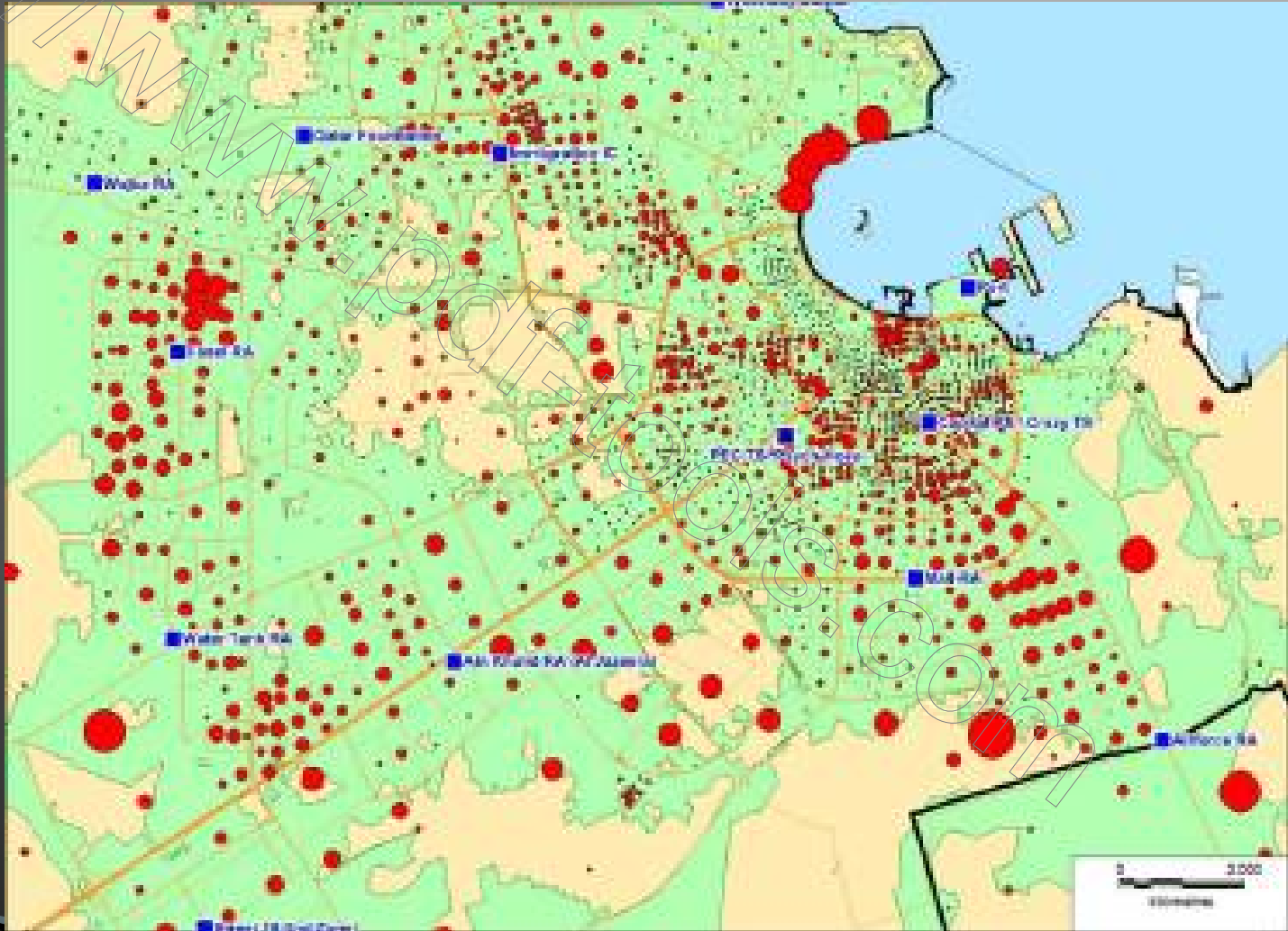
# HMCAS Operational Demand 2011



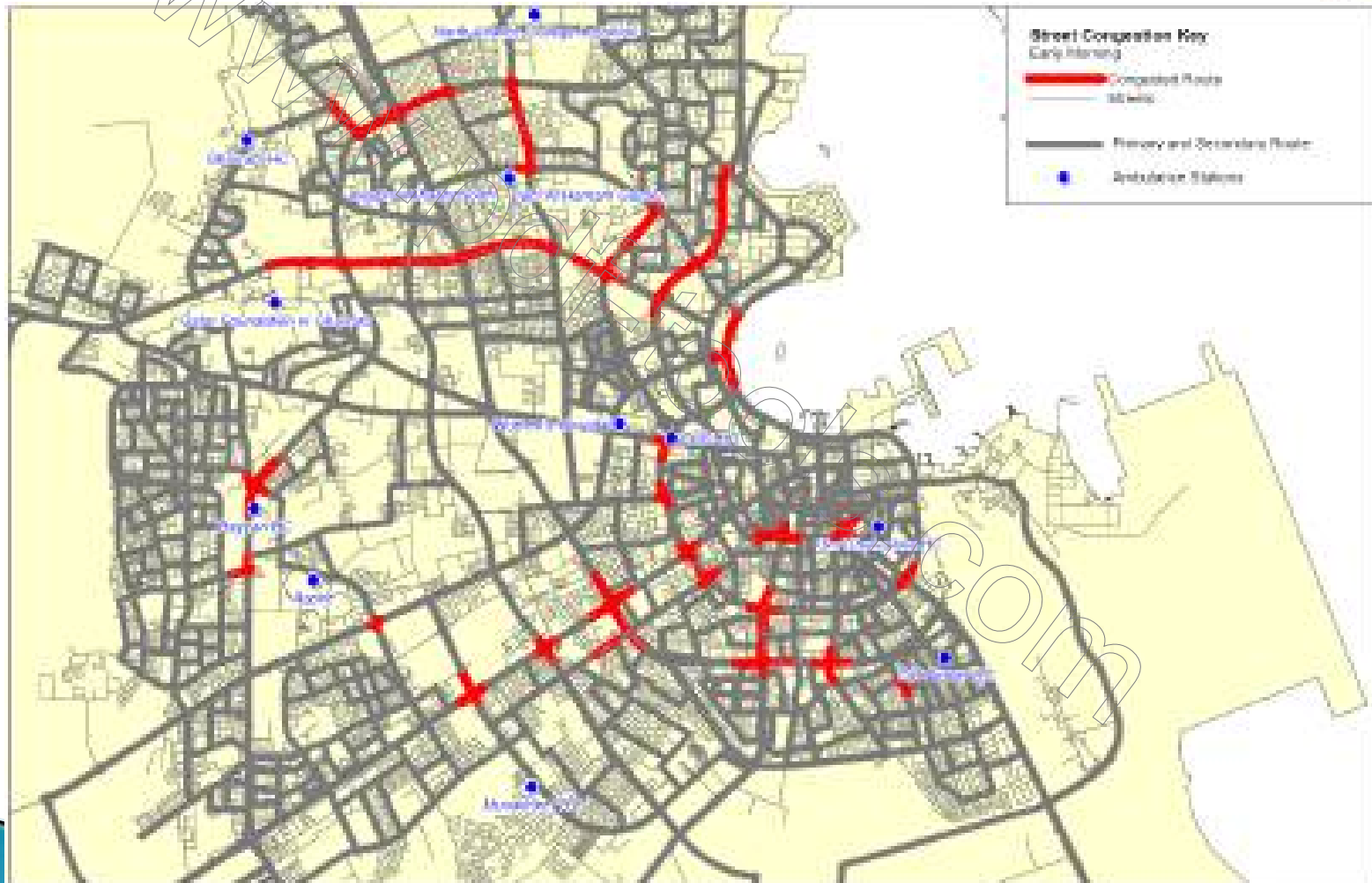
# Where calls come from



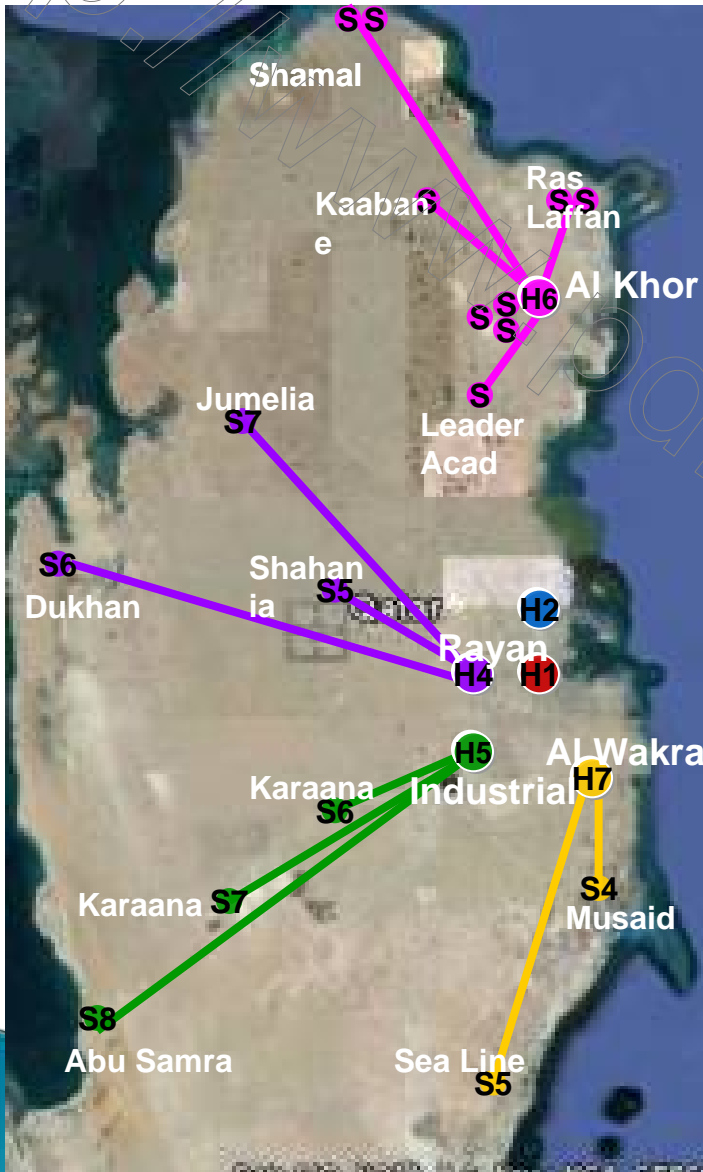
# Where can we get to?



# Variables affecting travel to calls



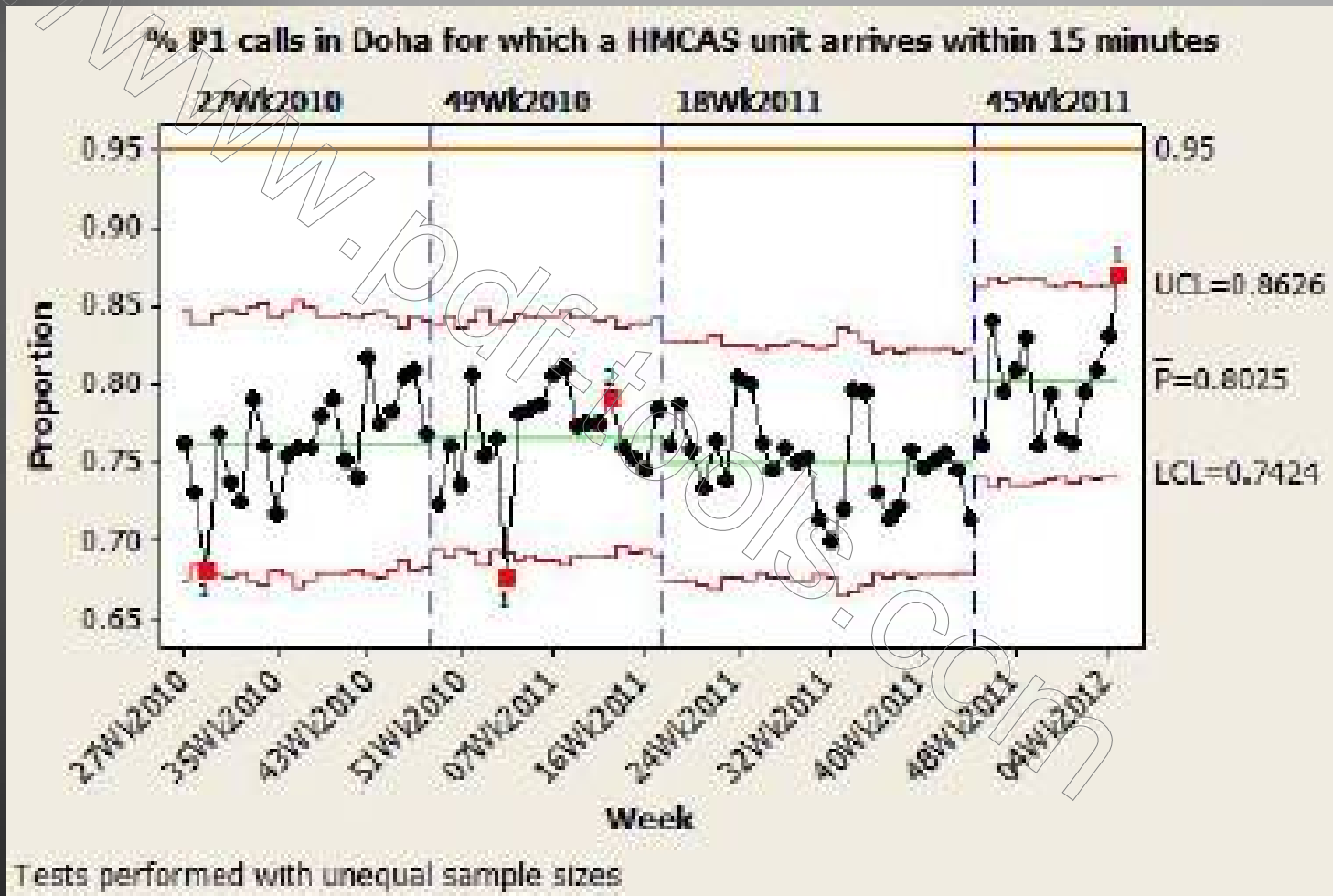
# Hub and spoke clustering



# Optimum locations



# Response times



# National Health Strategy response targets

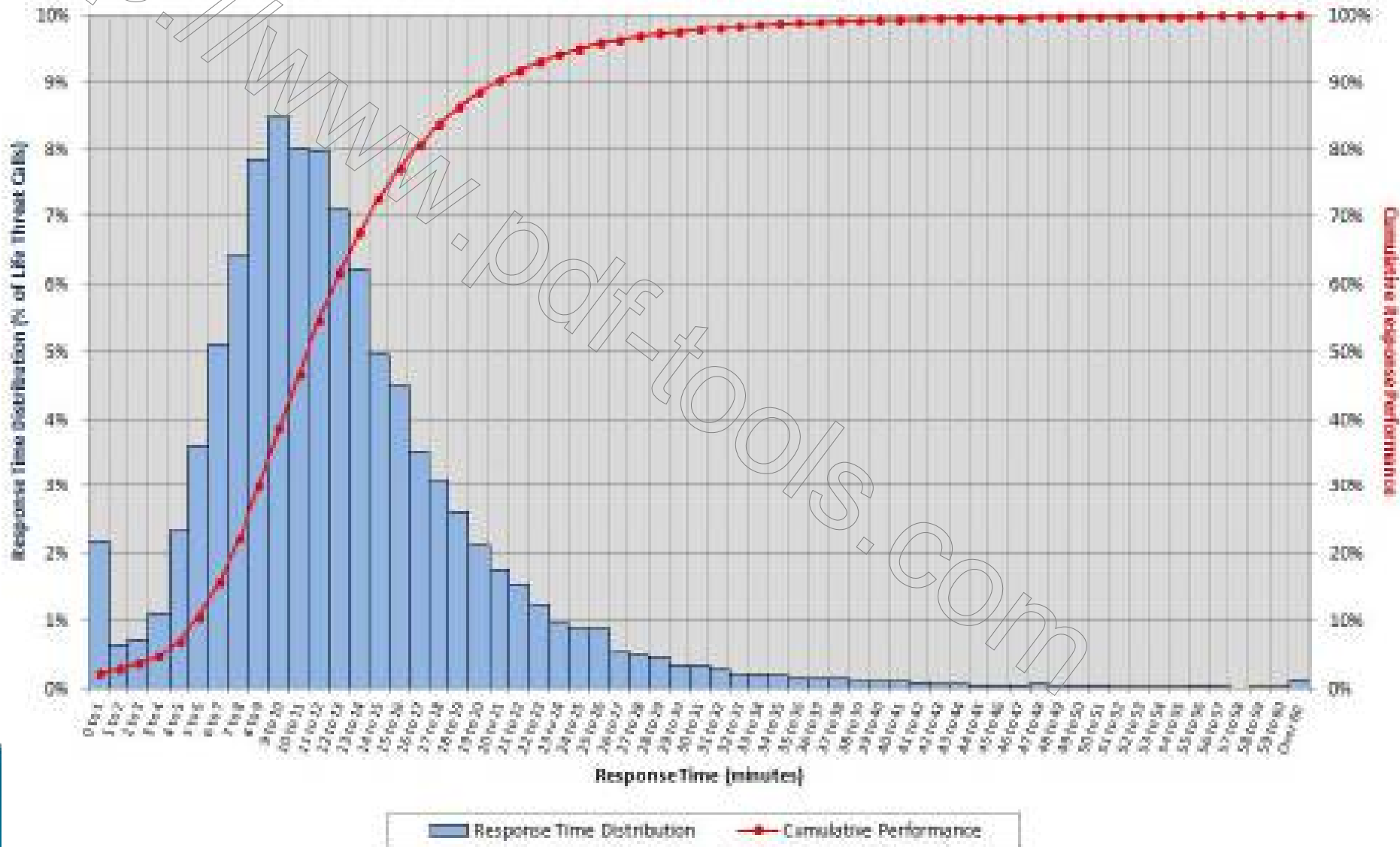


- ▶ 75% of life-threatening patients in urban areas should receive an ambulance within 10 min.
- ▶ 75% of life-threatening patients in rural areas should receive an ambulance within 15 min.

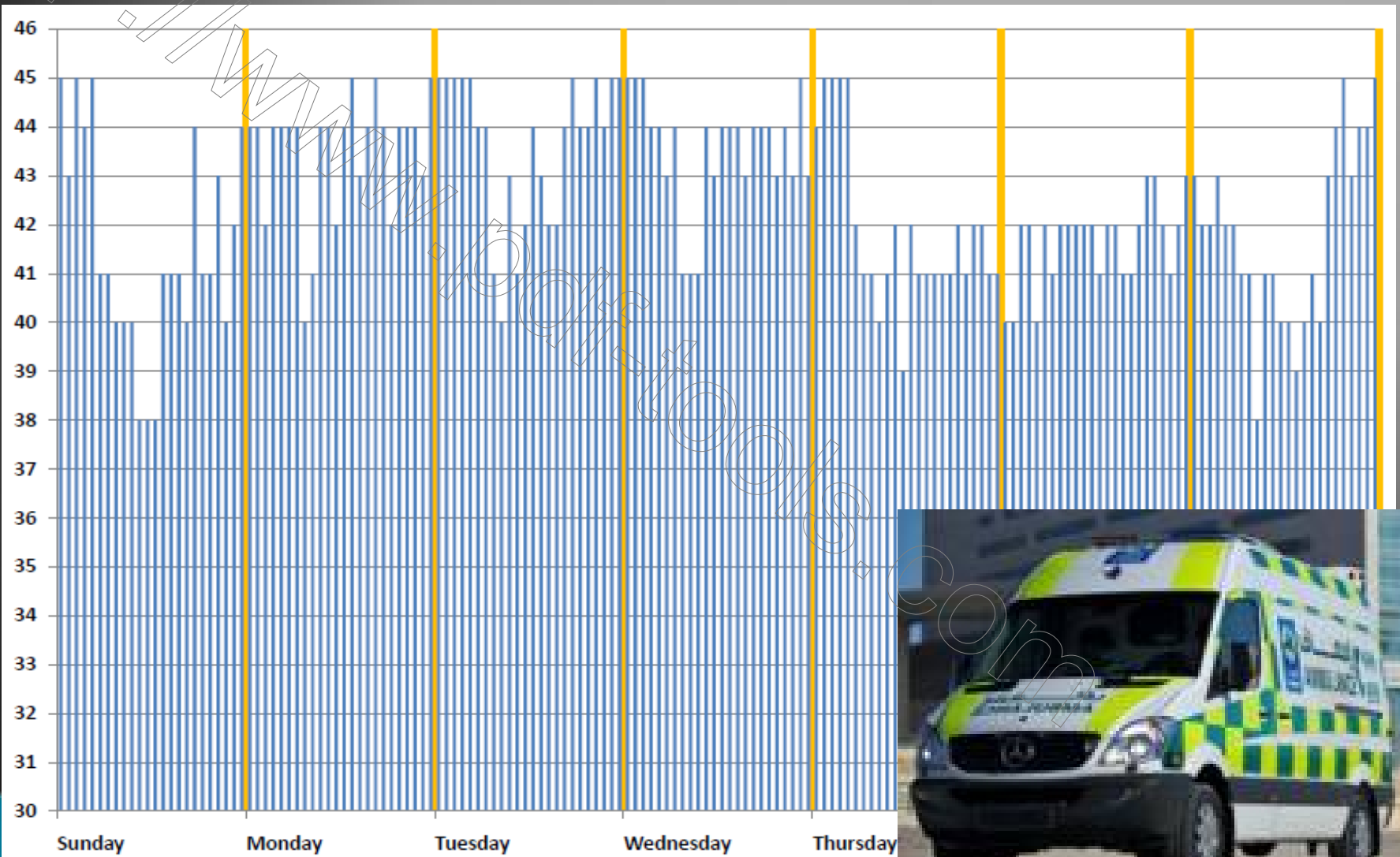
95% percentiles also reported



Hamad Medical Corporation  
 Response Time Distribution to Life Threat Calls - Qatar-wide - All Vehicle Types  
 1st December 2010 to 30th September 2011



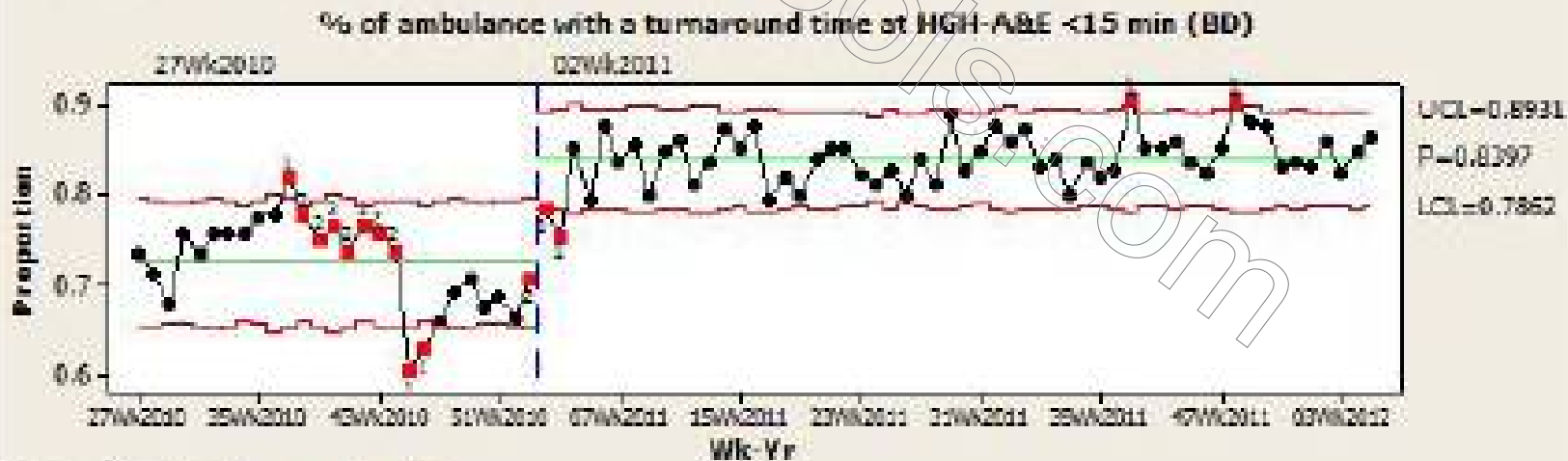
# Unit hour availability



# Ambulance turnaround

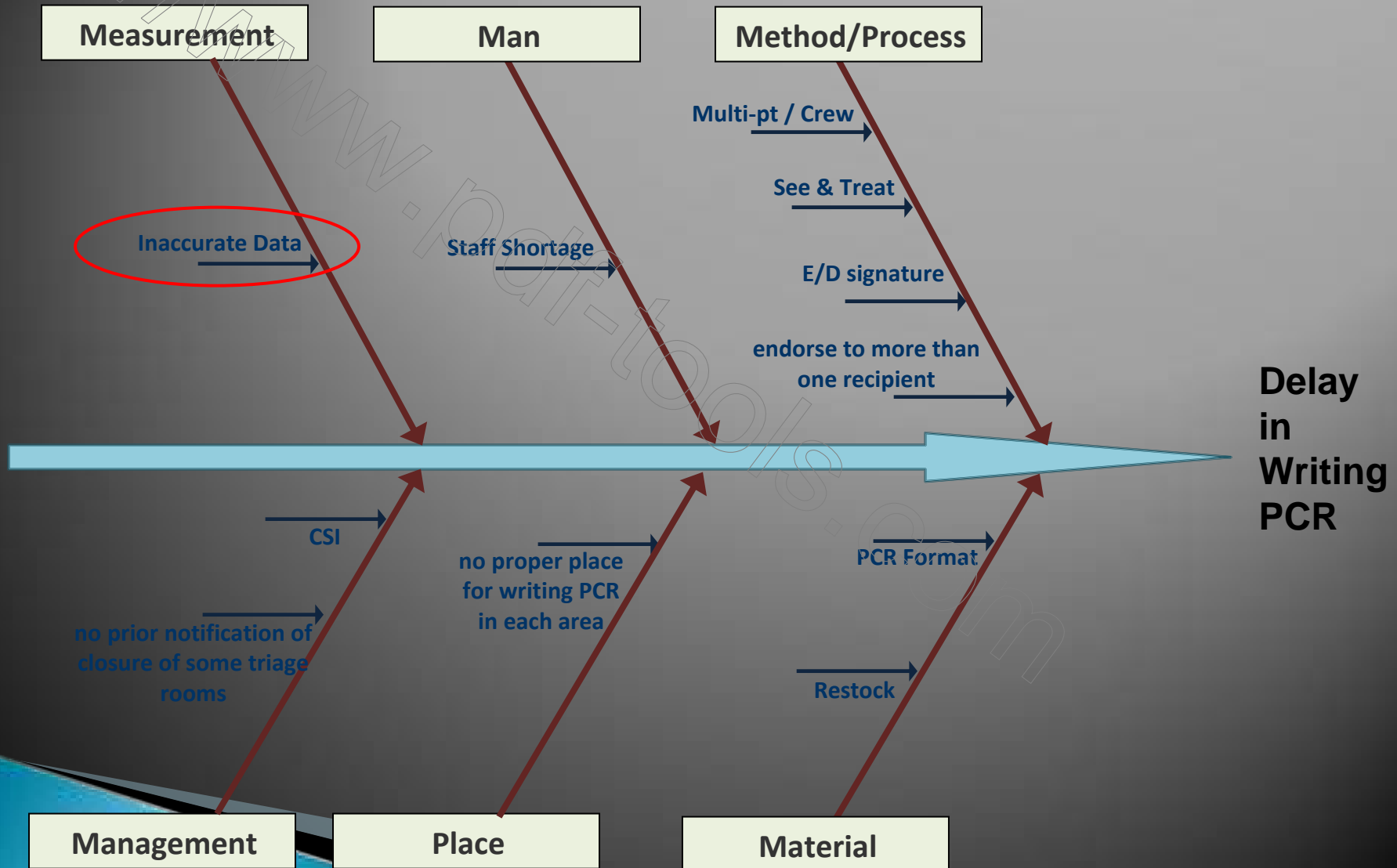


Tests performed with unequal sample sizes



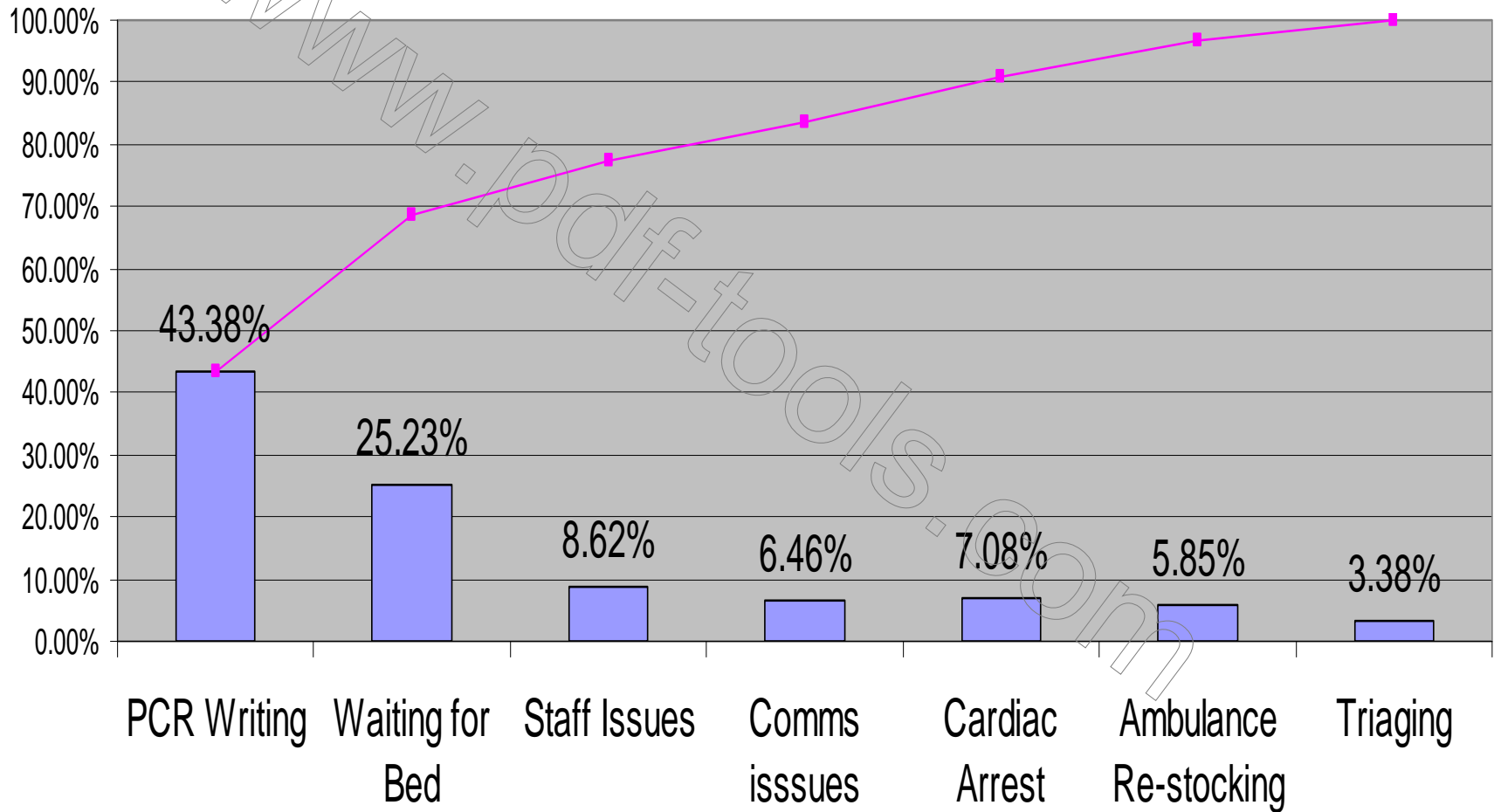
Tests performed with unequal sample sizes

# Example of Ishikawa Diagram

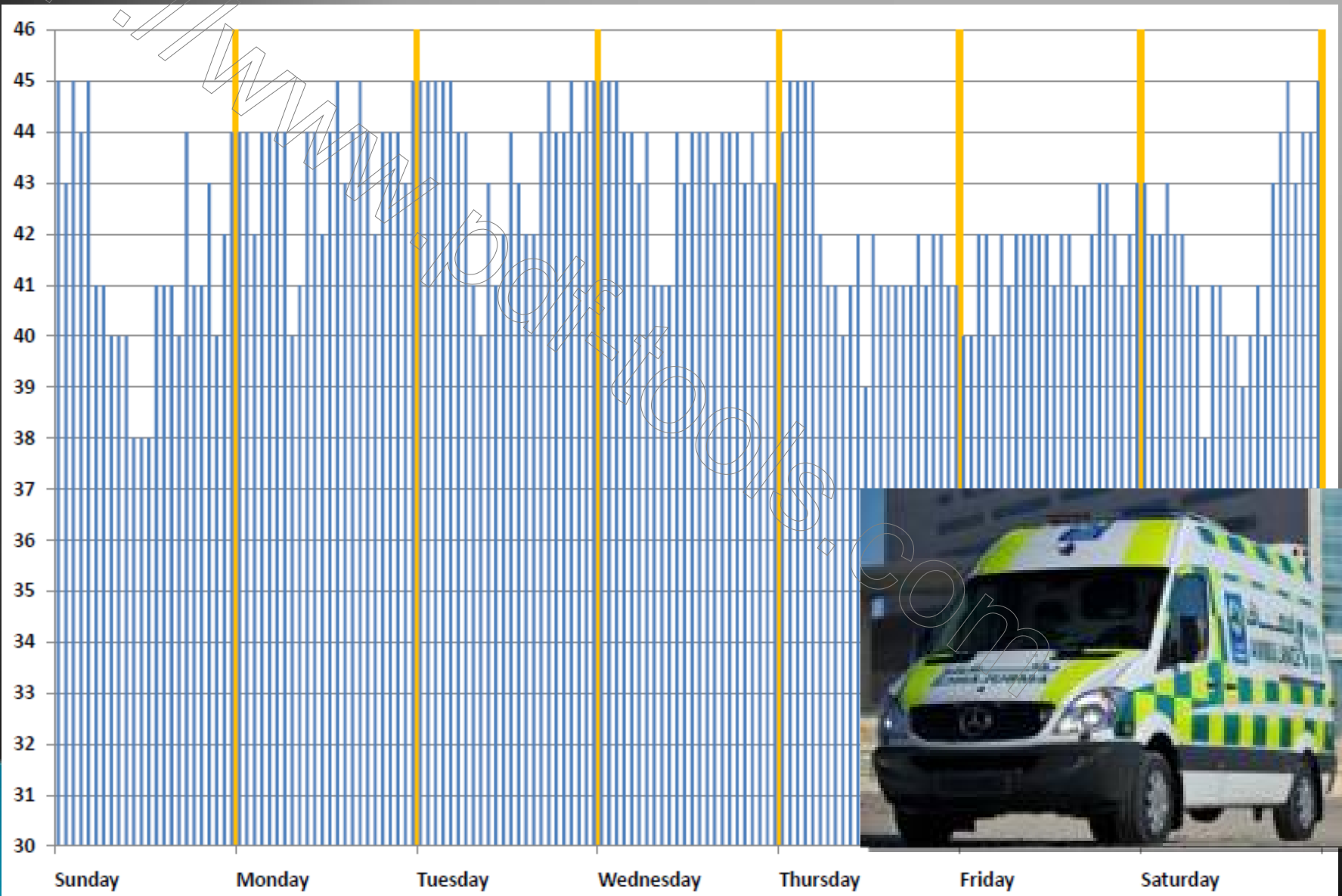




# Example of Pareto Chart use in Reasons for Ambulance Turn-Around Delay



# Ambulance Deployment







# HMCAS future developments

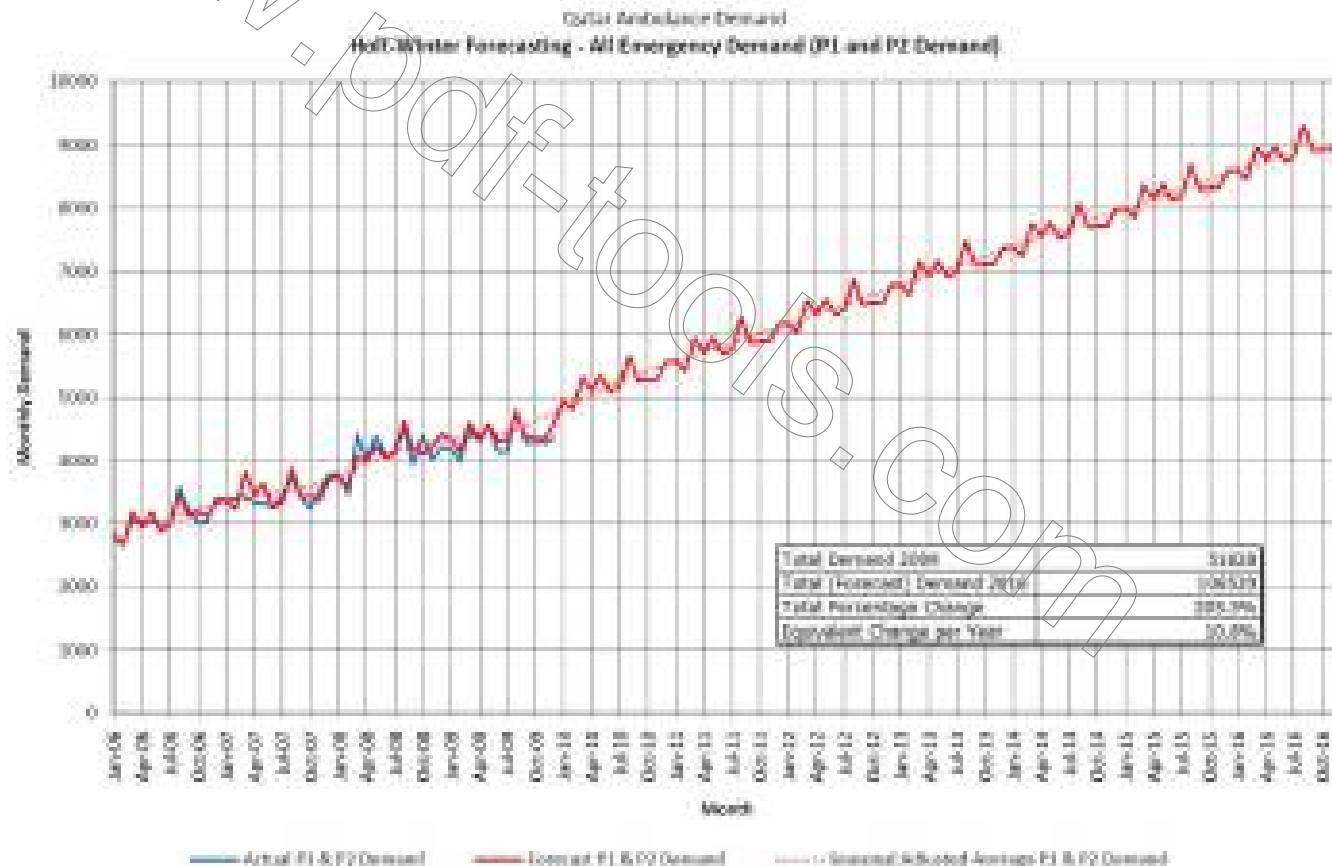
<http://www.pdf-tools.com>



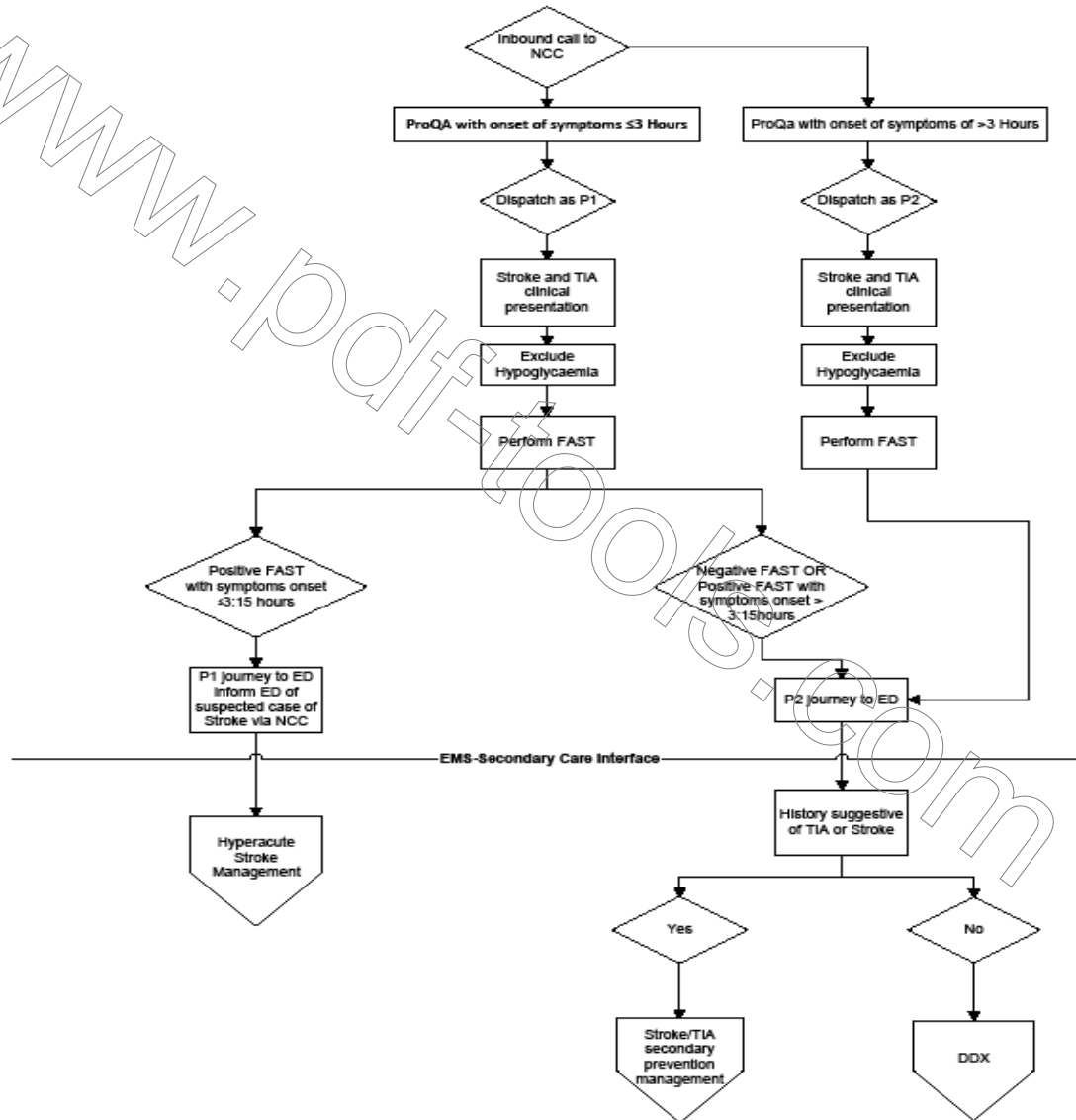
# Increasing Demand



- ▶ Significant demand increase has occurred and is expected to continue



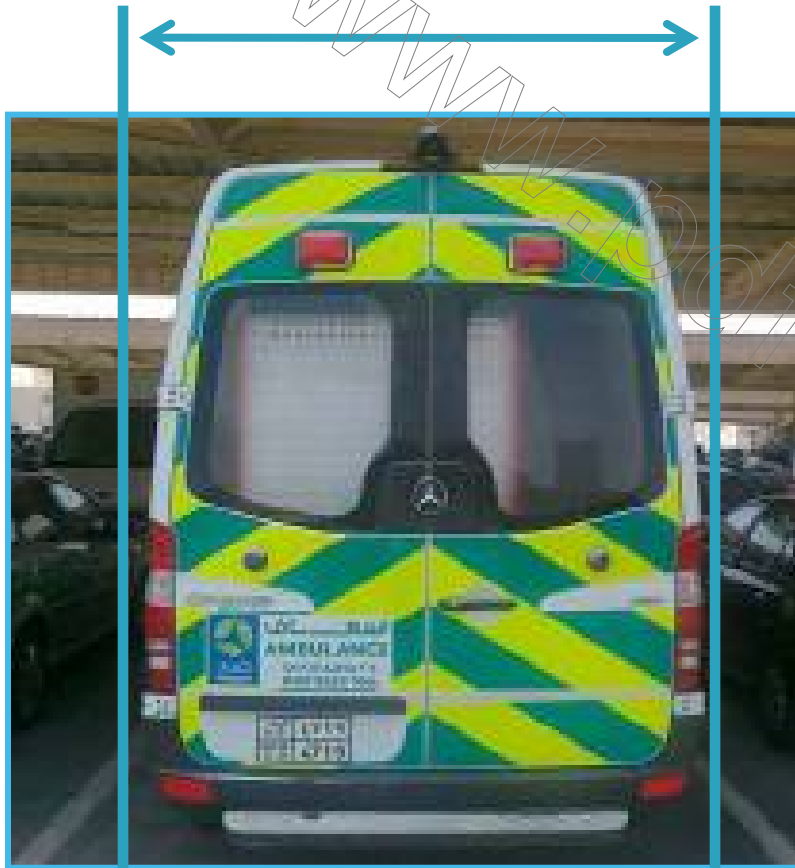
# Patient Pathway



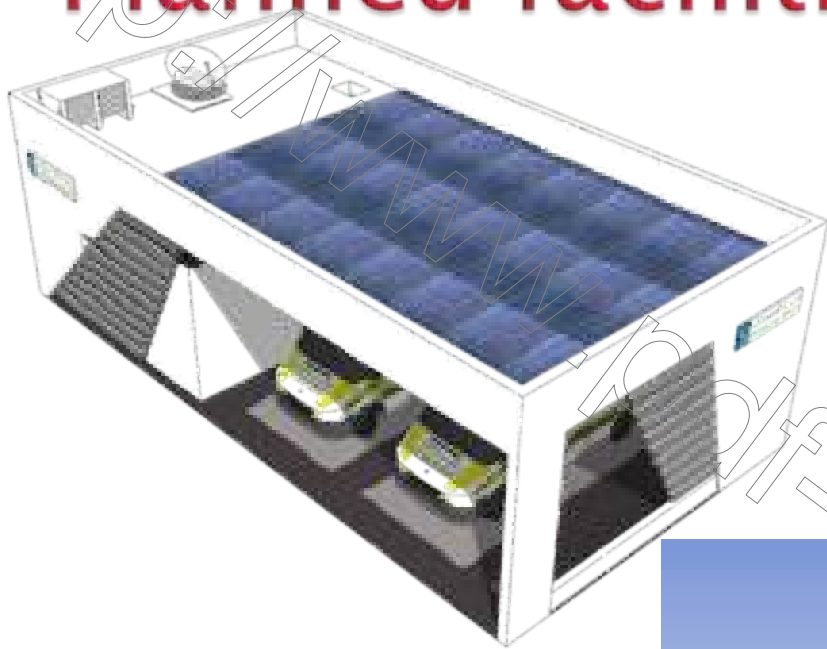
# ECG Telemetry System



# New Narrow Ambulance Fleet

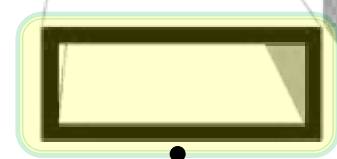
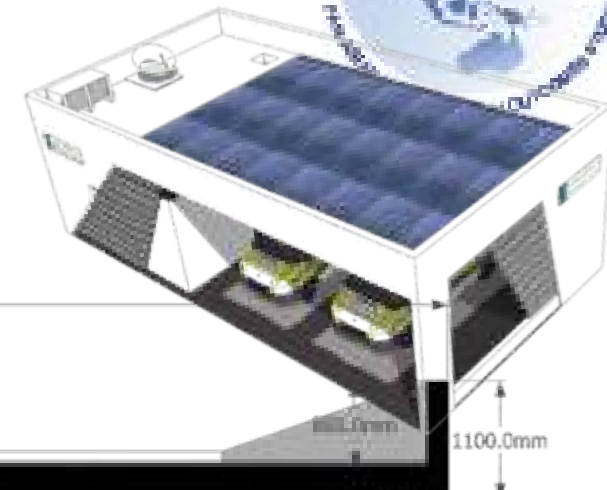


# Planned facilities

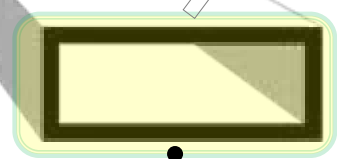


# Design features

- ▶ May be self-contained



SEWAGE TREATMENT



UNDERGROUND OIL STORAGE TANK

# Design features

- ▶ Visibly bringing emergency care to the public



# Invest in Human Resources





# HMCAS



- We will work towards this by:
  - Implementing an effective clinical model based on research evidence and expert consensus

*“Doing the Right Thing Right”*

# HMCAS



- We will work towards this by:
- Working with our healthcare partner to develop seamless patient pathways

*“From the Roadside to Recovery”*

# HMCAS



- We will know we have achieved this when:
  - We have an established process for engaging with or patients and clients and use this inform our planning
  - We have a robust system for identifying the resources required for a particular patient and are able to get those resources to the patient within an acceptable time
  - We have a robust quality improvement system in place and are able to evidence improvement in the quality of care delivered to patients

# In October – 2011



- Hamad Medical Corporation's (HMC) Ambulance Service has received accreditation from the Joint Commission International (JCI)
- With this achievement, the Ambulance Service, formerly known as Emergency Medical Services, becomes the first in the region – and the first national ambulance service – to be accredited by the JCI
- HMC's Ambulance Service would also be the fifth such service in the world to achieve JCI accreditation, as well as the biggest ambulance service in the world that has been assessed by the JCI