

# Health Sector Data Collection for Cities: experience of Ahmedabad


Presentation for NDMA work shop  
13-14/2/24




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# History of mortality data in the world – 1664-5, London



**LONDON'S Dreadful Visitation**  
 Or, A COLLECTION of All the  
**Bills of Mortality.**  
 For this Present Year:  
 Beginning the 20<sup>th</sup>. of *December* 1664. and  
 ending the 19<sup>th</sup>. of *December* following:  
 As also, The *GENERAL* or whole years *BILL*:  
 According to the Report made to the  
 KING'S Most Excellent Majesty,  
 By the Company of Parish-Clerks of London, &c



LONDON:  
 Printed and are to be sold by *E. Cotes* living in *Aldersgate-street*,  
 Printer to the said Company 1665.

*The Diseases and Casualties this Week.*

<b>A</b> Bortive	6	Kingsevil	10
Aged	54	Lethargy	1
Apoplexie	1	Murthered at Stepney	1
Bedridden	1	Palie	2
Cancer	2	Plague	3880
Childbed	23	Plurisie	1
Chrisomes	15	Quinsie	6
Collick	1	Rickets	23
Consumption	174	Rising of the Lights	19
Convulsion	88	Rupture	2
Dropsie	40	Sciatica	1
Drowned 2, one at St. Kath- Tower, and one at Lambeth	2	Scowring	13
Feaver	353	Scurvy	1
Fistula	1	Sore legge	1
Flox and Small-pox	10	Spotted Feaver and Purples	190
Flux	2	Starved at Nurfc	1
Found dead in the Street at St. Bartholomew the Less	1	Stilborn	8
Frighted	1	Stone	2
Gangrene	1	Stopping of the stomach	16
Gowt	1	Strangury	1
Grief	1	Suddenly	1
Gripping in the Guts	74	Surfeit	87
Jaundies	3	Teeth	113
Imposthume	18	Thrush	3
Infants	21	Tiffick	6
Kild by a fall down stairs at St. Thomas Apostle	1	Ulcer	2
		Vomiting	7
		Winde	8
		Wormes	18
Christned	{ Males — 83 Females — 83 In all — 166 }	Buried	{ Males — 2656 Females — 2663 In all — 5319 }
		Plague	3880
		Increased in the Burials this Week	1289
		Parishes clear of the Plague	34
		Parishes Infected	96

*The Assize of Bread set forth by Order of the Lord Mayor and Court of Aldermen*

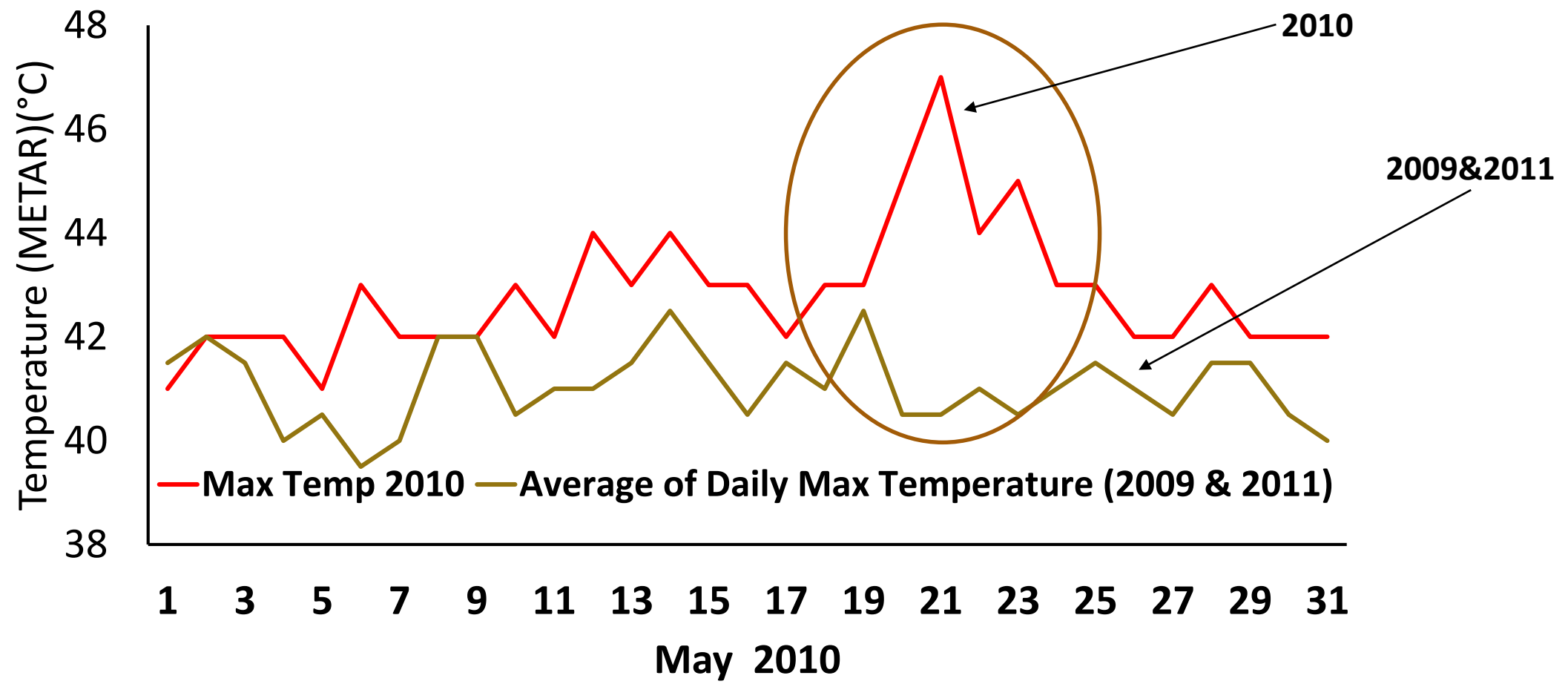
# What data formed the basis of Ahmedabad HAP - 2013

- Daily all-cause mortality in Summer over last 15 years
- Heat stroke cases and death from 5 major public hospitals
- Daily max and min temperatures for last 15 years.
- Very simple data and very simple analysis
- Major revelation on heat mortality correlation

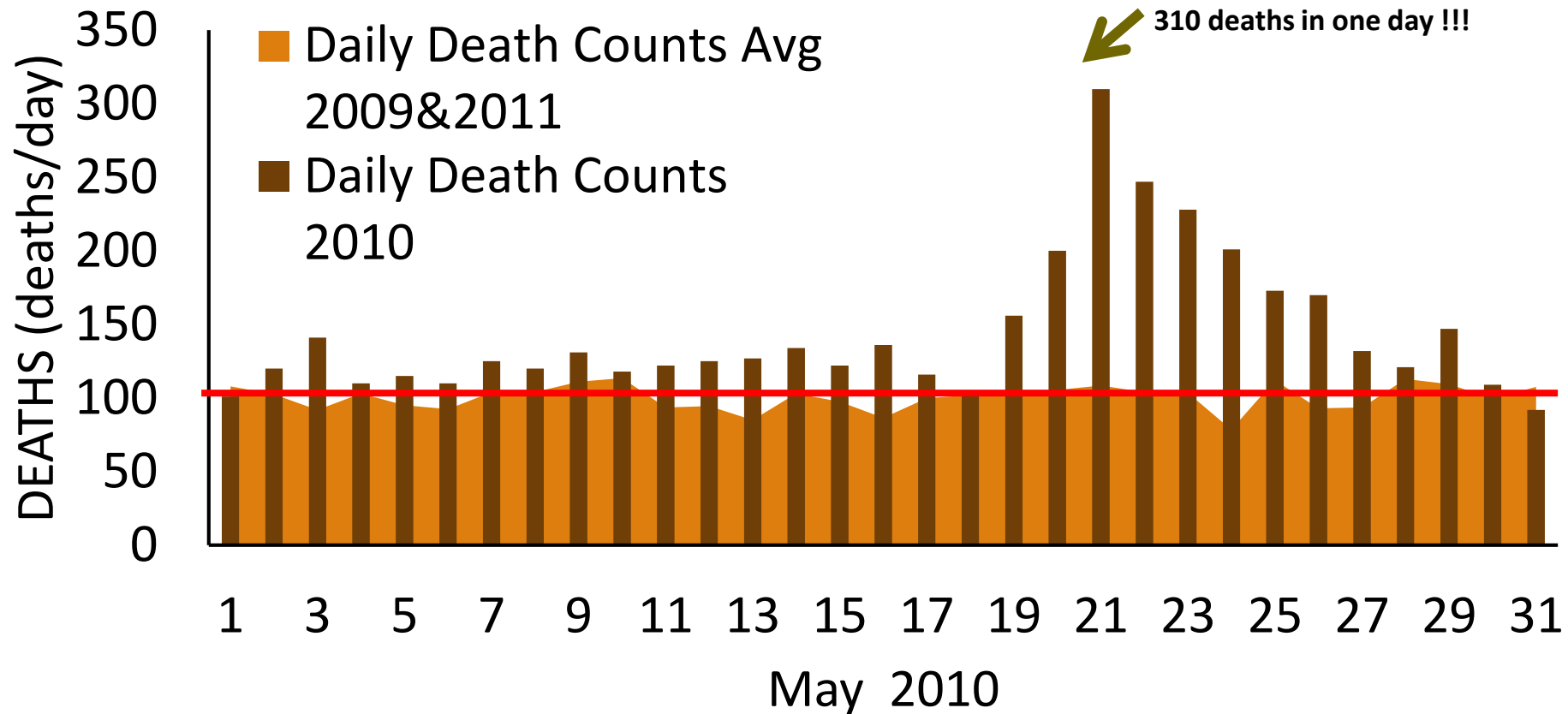
# Maximum Temperature 2010 ( Red ) , average of 2009 & 2011 ( Brown) - Ahmedabad



2010 Heat wave in Ahmedabad – Temp. reached 47deg C on 21<sup>st</sup> May

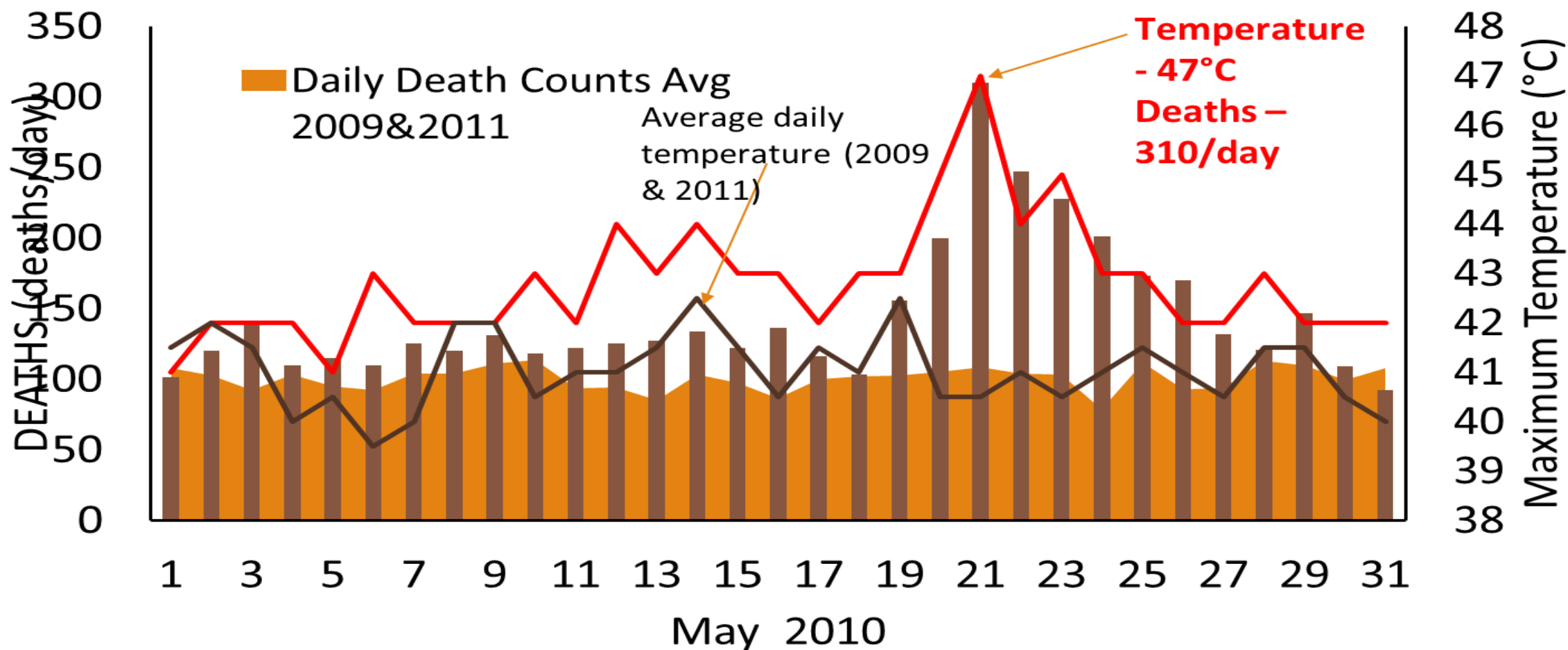


# Daily All cause mortality compared to 2009 and 2011 – Daily mortality numbers increased from 100 per day to 310 per day on 21<sup>st</sup> May 2010



# 2010 Ahmedabad heat wave :

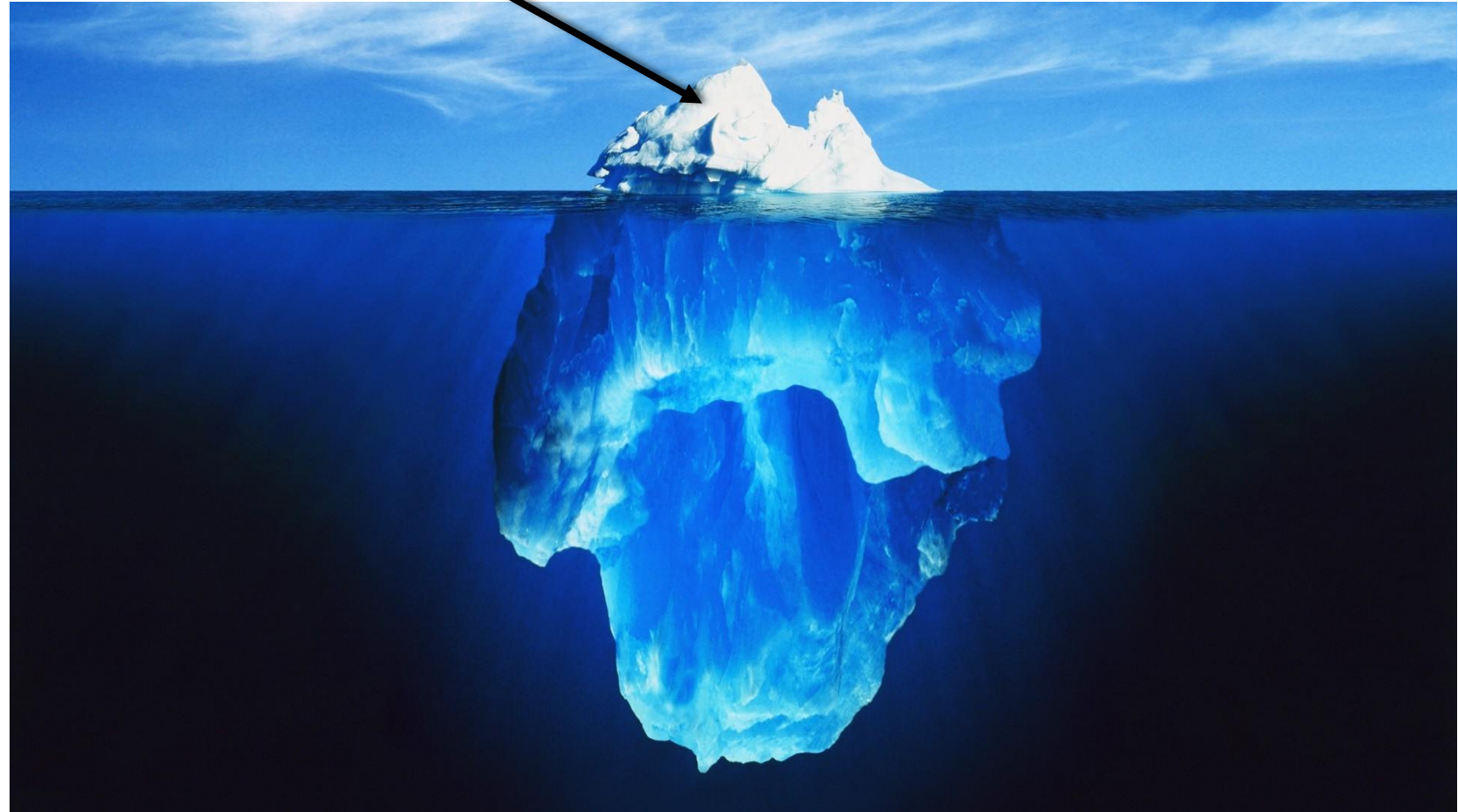
May 20-27<sup>th</sup> – excess deaths 800 in one week and 1344 excess deaths in May 2010.



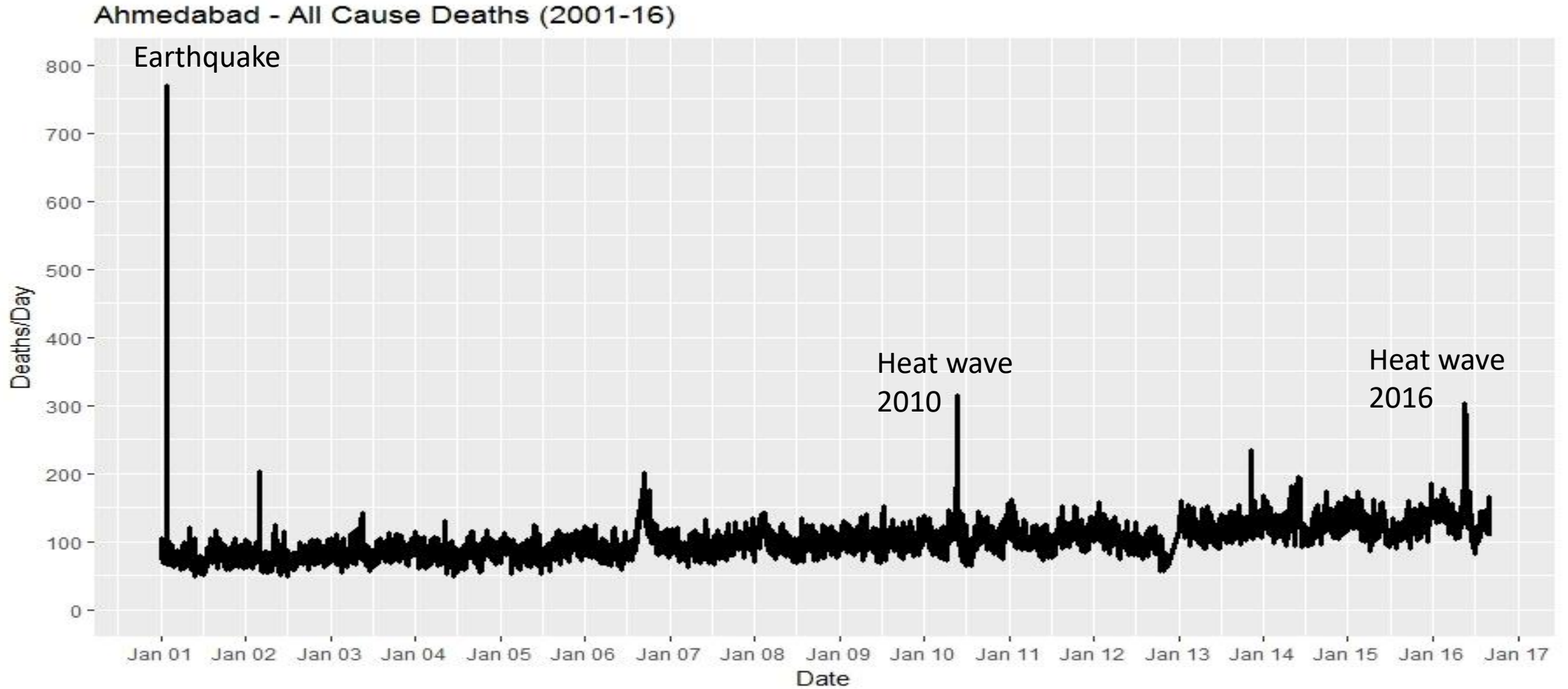
# Reported Heat wave deaths are like tip of an iceberg -10% visible – 90% not visible

**Ahmedabad  
2010  
Heat wave  
associated  
Excess  
mortality 800**

**Reported heat  
stroke  
Deaths 76**

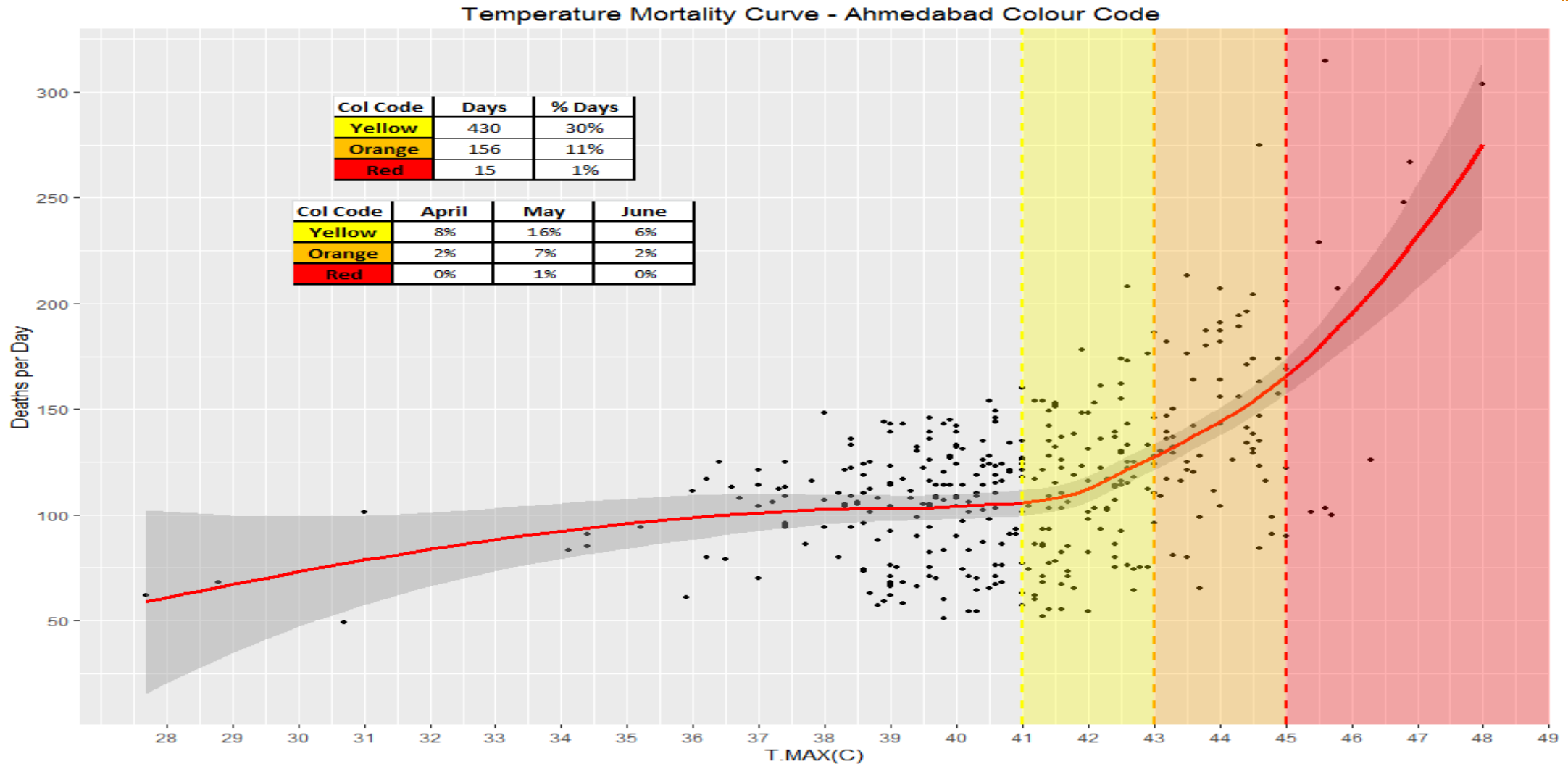


# Plot of Daily All cause Mortality over time – Ahmedabad Jan 2001- Jan 2017

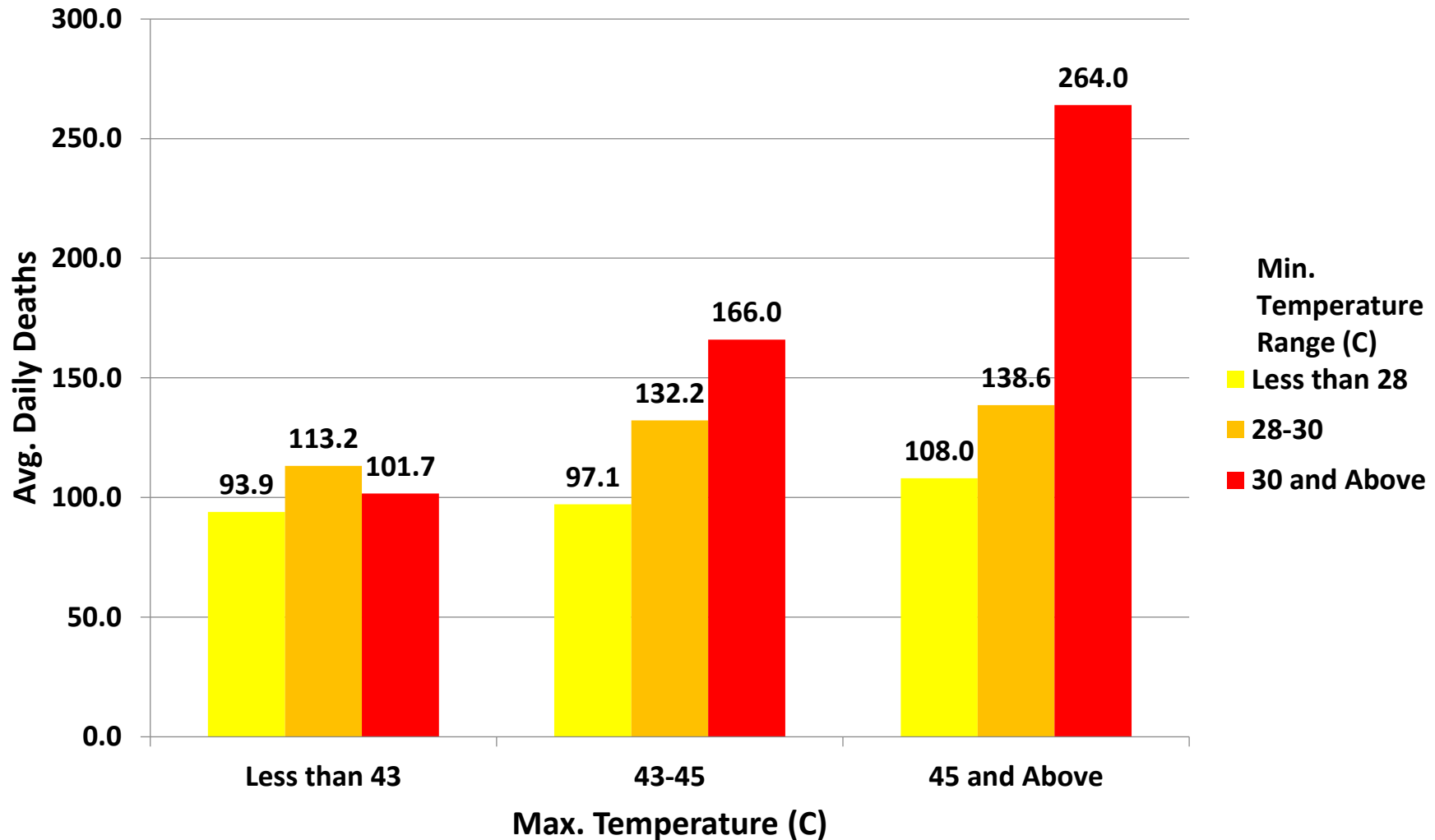




# Temperature Mortality scatter plot and fitted Curve – Setting the Thresholds for warning - Ahmedabad 2001-16

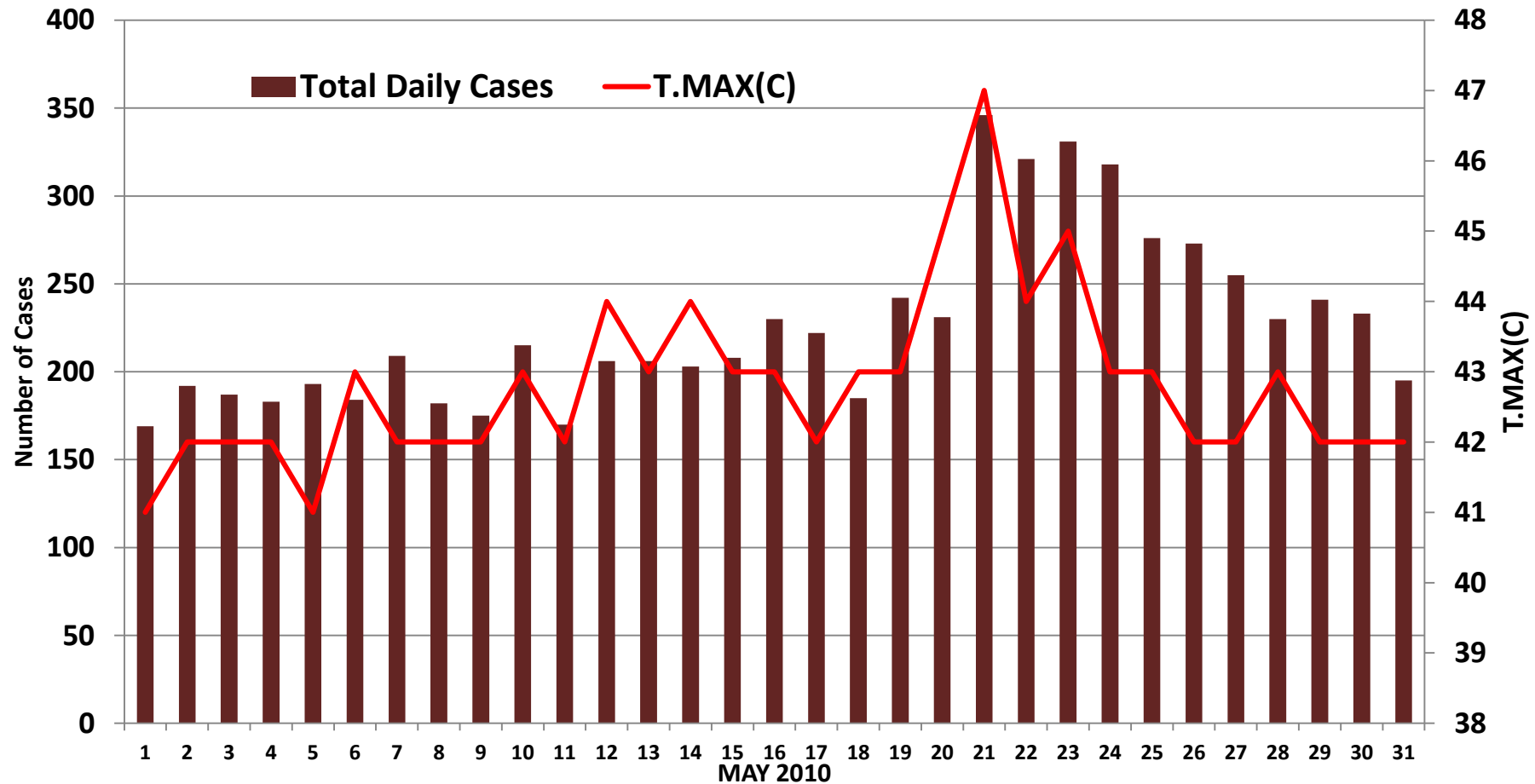


# Impact of high night time min. temp: Combined effect of Min – Max Temperature on Ave. Daily Deaths in Ahmedabad 2001-2015

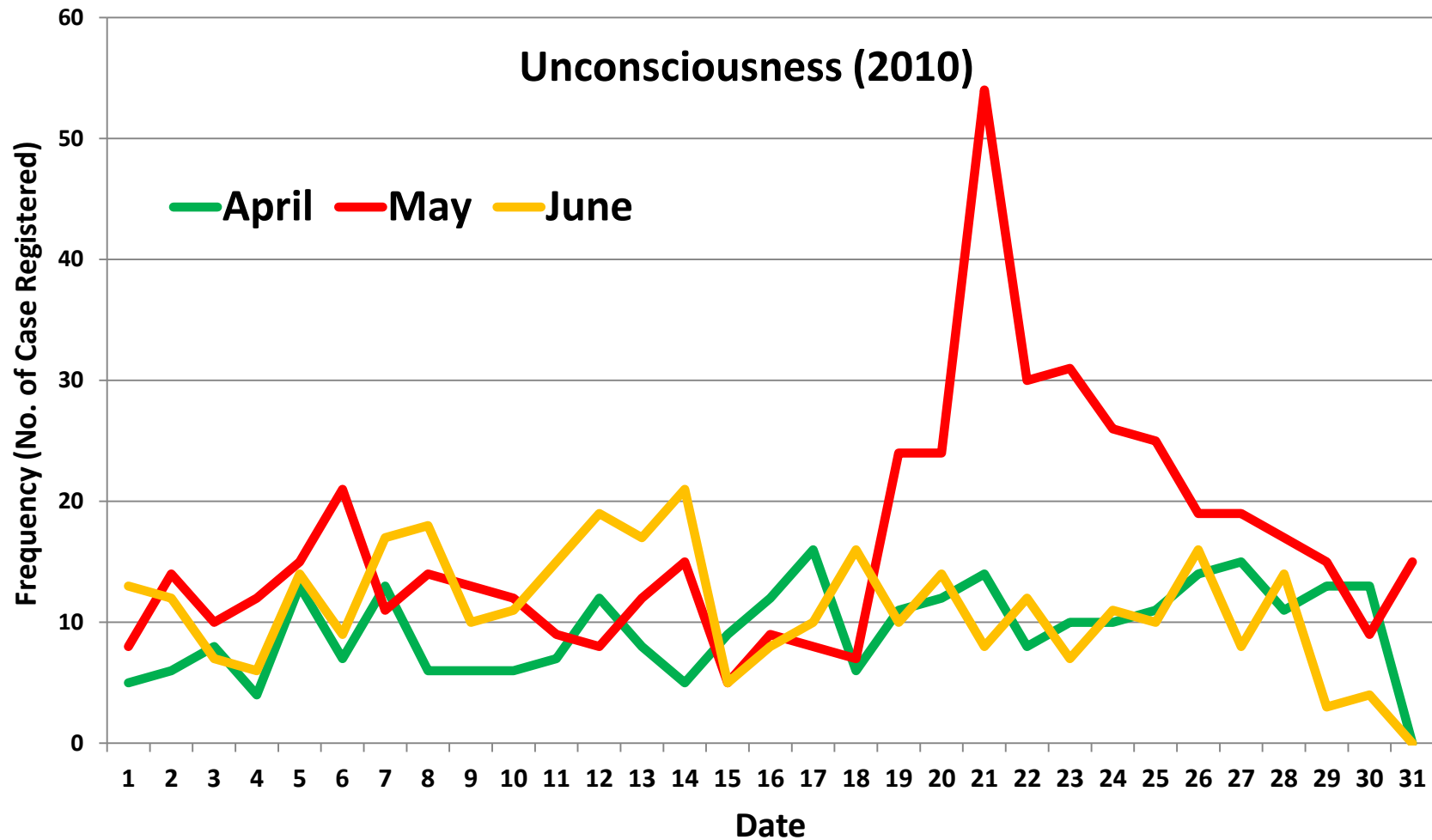


# EMRI – All cause call frequencies during summer (May - 2010)

## Ahmedabad Daily Emergency Calls (2010)

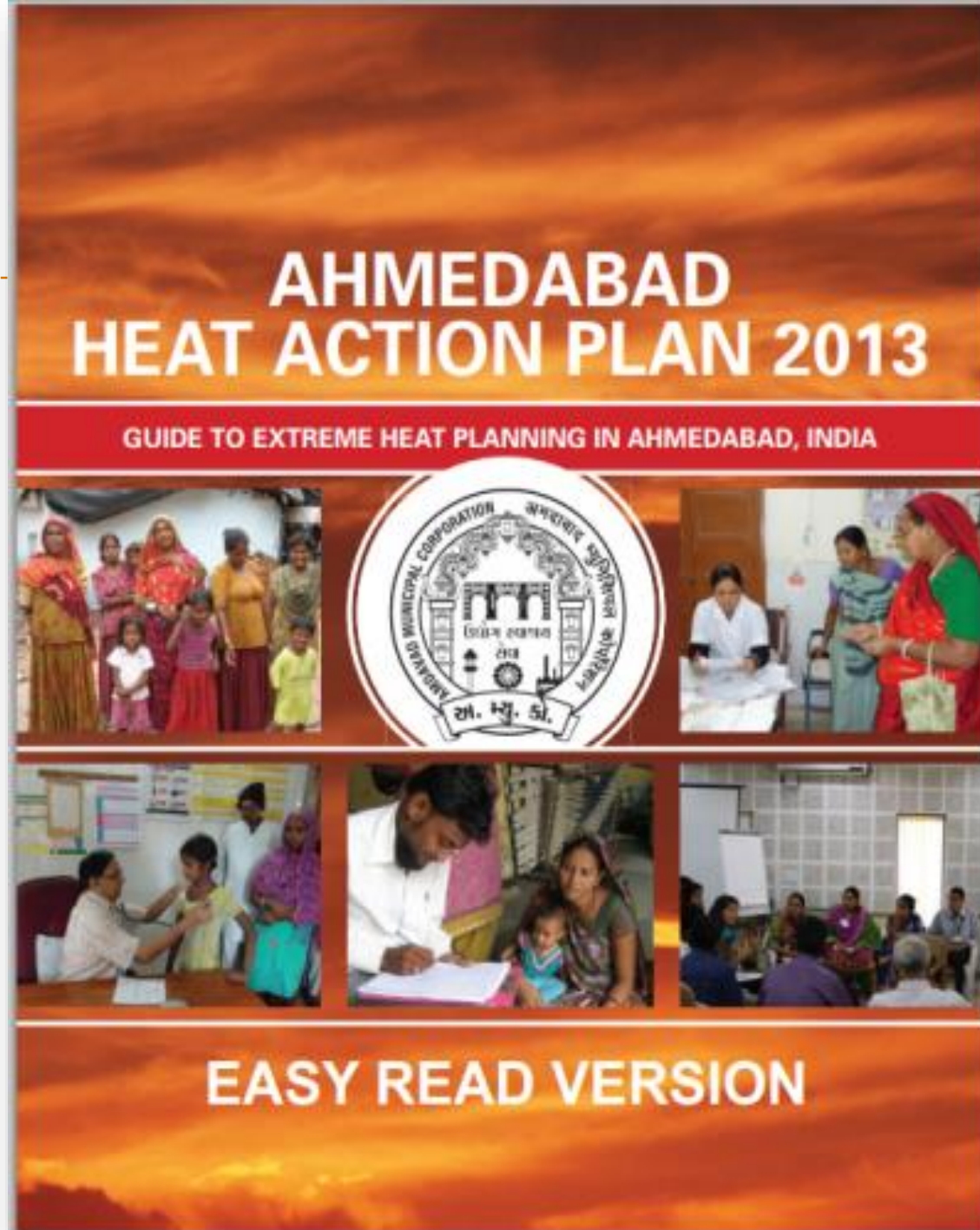


# EMRI 108 – Unconsciousness case calls registered



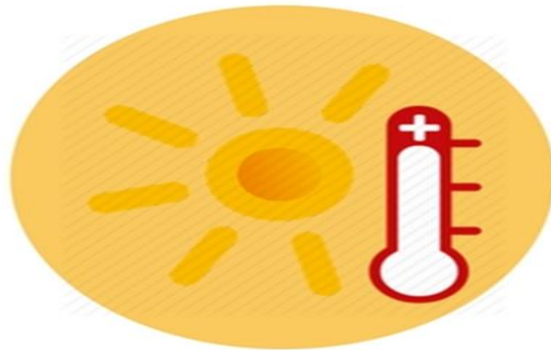
## Ahmedabad Heat Action Plan (HAP)

- Ahmedabad implemented South Asia's first heat action plan (HAP) after a 2010 heatwave learning from various global HAPs & guidance.
- Started in 2013 by AMC with help from IIPHG and NRDC,



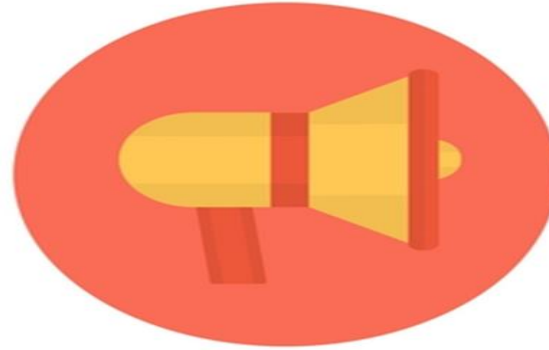
# Key components of Heat Action Plan:

## HAP COMPONENTS



### EARLY WARNING SYSTEM & INTER AGENCY EMERGENCY RESPONSE PLAN

Alert residents of predicted high and extreme temperatures & formally communication channels to alert governmental agencies



### PUBLIC AWARENESS & COMMUNITY OUTREACH

Communicate the risks of heat waves and implement practices to prevent heat-related deaths and illnesses



### CAPACITY BUILDING OF MEDICAL PROFESSIONALS

Training focus on primary medical officers and other paramedical staff, and community health staff



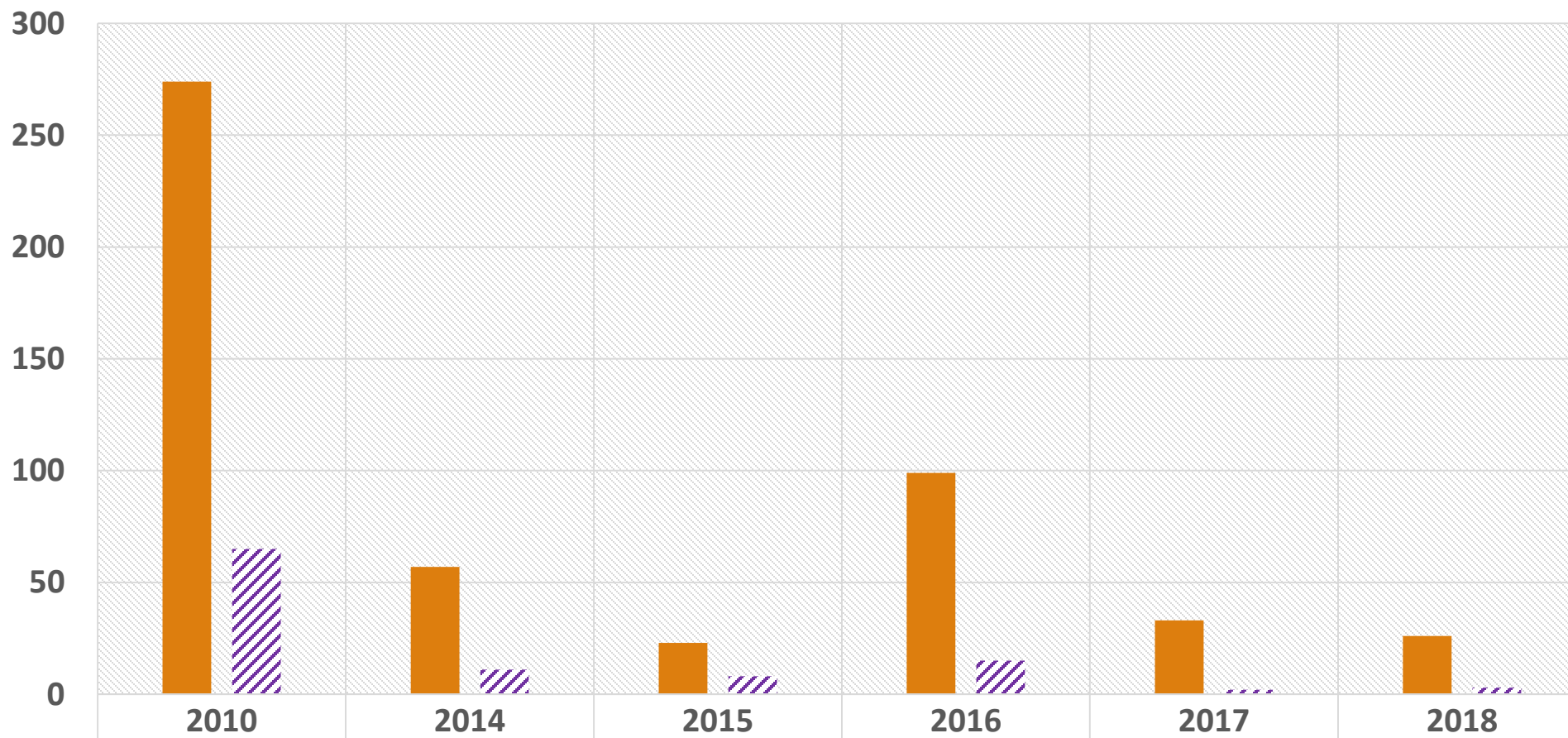
### REDUCING HEAT EXPOSURE AND PROMOTING ADAPTIVE MEASURES

Access to potable drinking water and cooling spaces during extreme heat days & promote adaptive measures.

# Year wise Diagnosed Heat Stroke cases & Deaths In 5 major hospitals



BY GOVT. OF GUJARAT AND PHFI

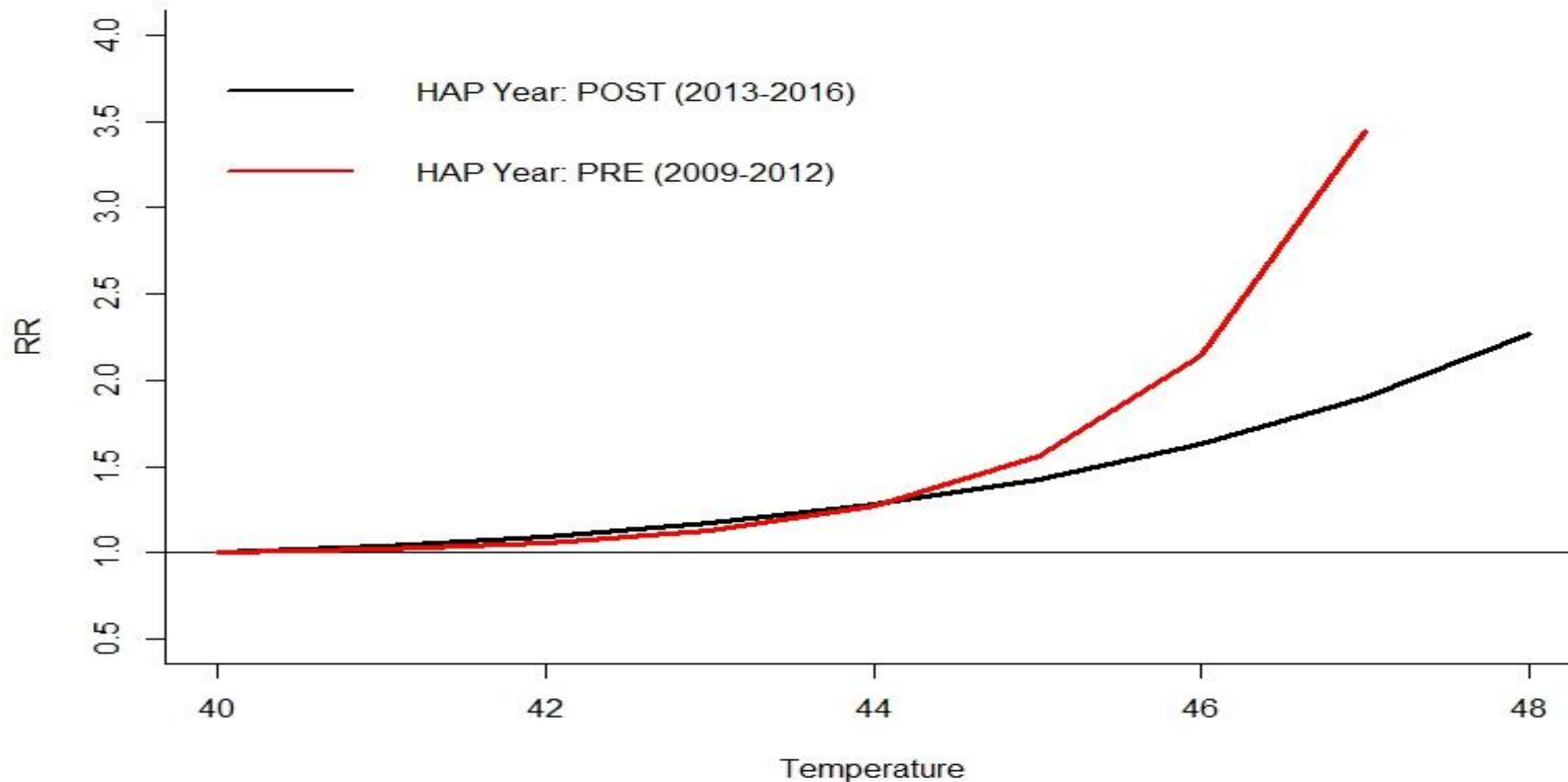


■ Heat Stroke Cases	274	57	23	99	33	26
▨ Heat Stroke Deaths	65	11	8	15	2	3

# Relative Risk of Death with max temperature – Ahmedabad Pre & Post HAP



Ahmedabad - PRE & POST HAP Comparison





# Where will the health / mortality data come from ?

- Registrar of Birth and death – by law has to keep data on all deaths and publish reports. National Level RGI
- Original death data comes from Crematoriums and burial grounds registers.
- Some death data can also come from Hospital MIS – but death also happen at home, on the way to hospitals etc.
- Brought in Dead to the hospital will have to be counted. Unclaimed bodies data from police / forensic dept.
- Simplest is to get total bodies burnt or buried in the city at the end of each day and total them.
- See if this number is with in 95% confidence limited for the city.

# Where will morbidity data come from ?

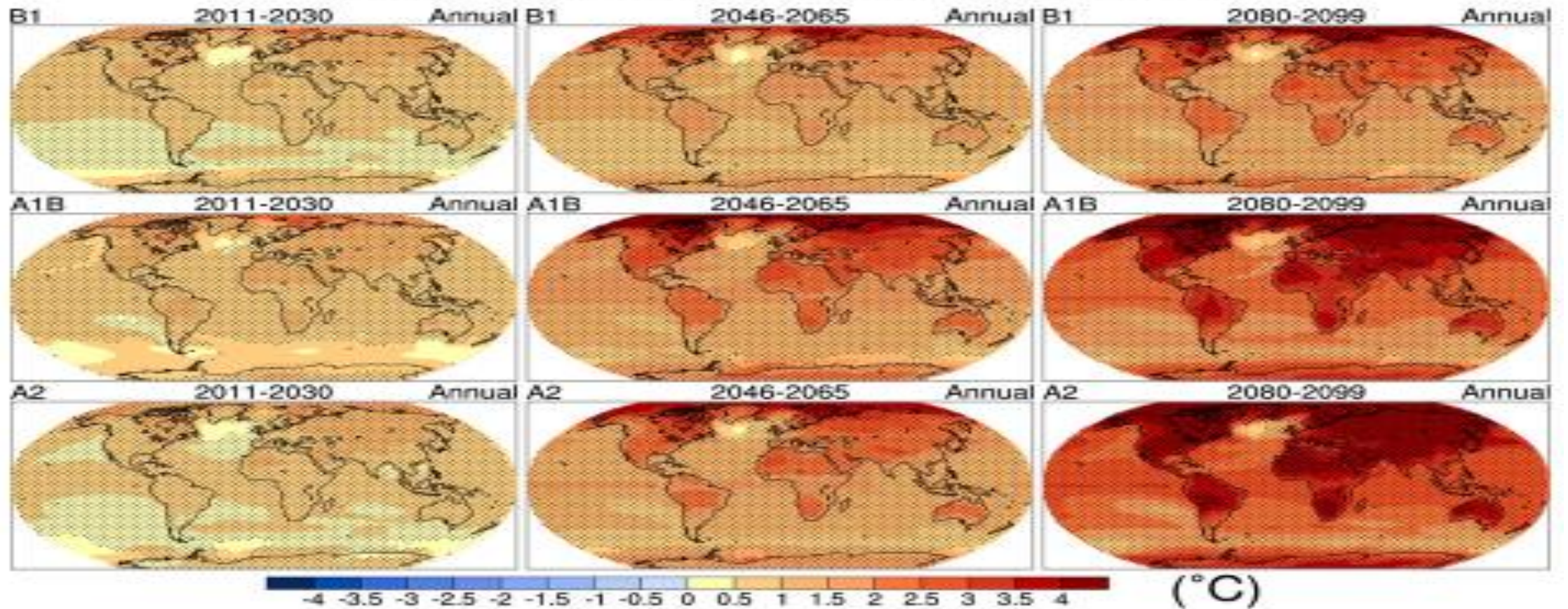
- Govt. Hospital indoor admissions – all cause and heat stroke cases
- Ambulance pick ups – 108 and other centralized ambulance pick ups
- Out-door cases from health centres and hospitals
- Data from private hospitals -

# Why India cities are not able to collect and compile such simple data ?

- You tell me –
- No importance, priority or no understanding of this simple data need
- No mechanism to collect and compile data on daily basis from crematoriums and burial grounds.
- Fear that such data will lead to media attack or bad publicity
- Too busy in other things – as staff is very limited in in public health

# This is the beginning of climate change – worse still to come – so lets prepare now for next 80 years

### IPCC multi-model mean surface air temperature



Thanks.