Did seasonality of births and deaths decrease or shift during the demographic transition? Evidence from Matlab, Bangladesh

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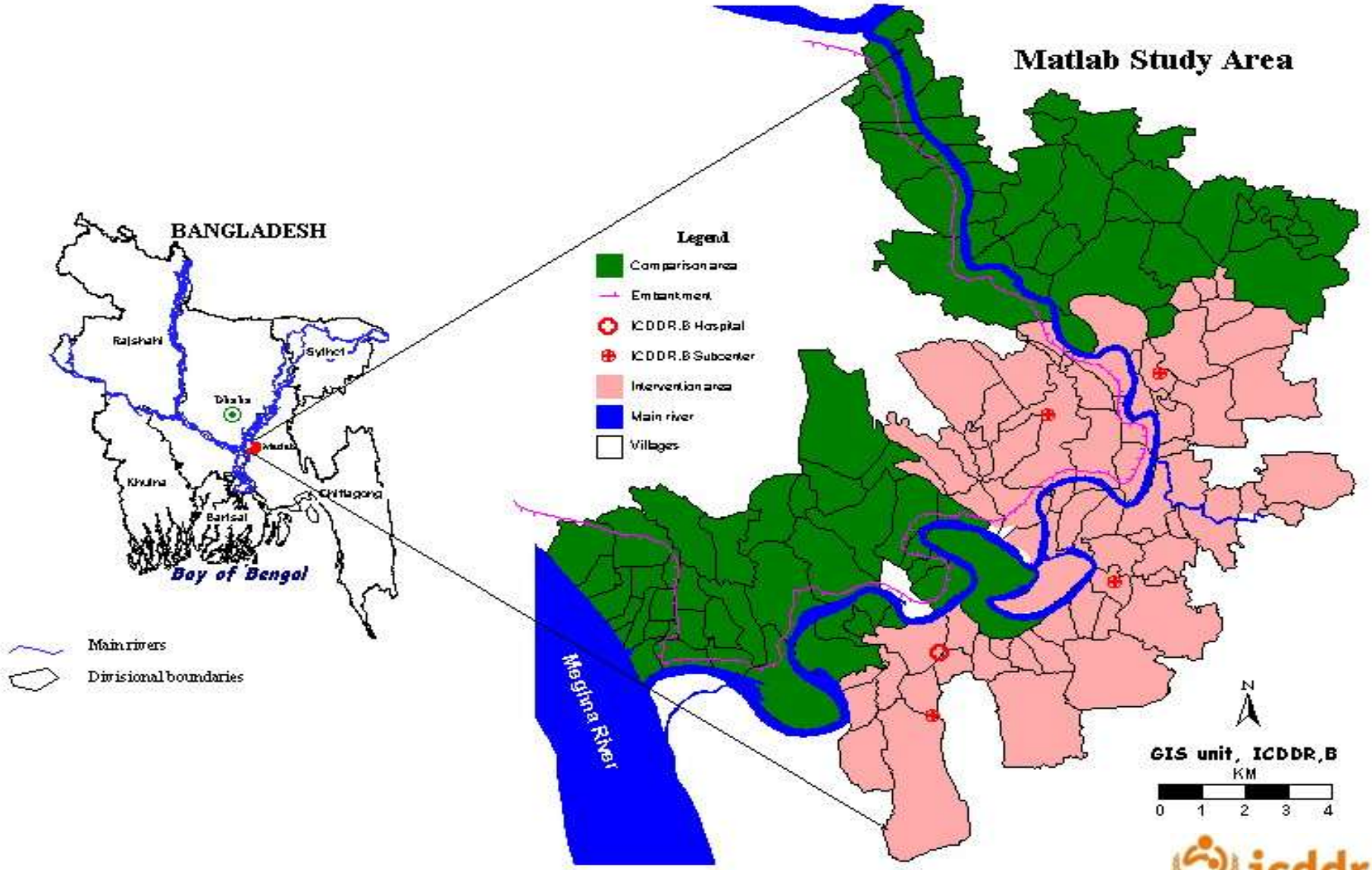
Matlab Study Area



Outline

- Background
- Objectives
- Data & methods
- Results

  Mortality

  Fertility
- Summary

Background

Seasonality of births and deaths exist in most parts of the world and it is also true for Bangladesh. As fertility and mortality rates have declined in many developed countries, the seasonality has also been decreased or shifted. Over the last few decades, both fertility and mortality rates had declined substantially in Bangladesh.

Objectives

The study will examine whether the seasonality of births and deaths have decreased or shifted as fertility and mortality rates declined remarkably.

Data & methods

Study area: Matlab

Season: Monsoon (Jun-Sept), Cool-dry (Oct-Feb), Hot-dry (Mar-May)

HDSS data (1970-74 & 2003-06)- Birth & Death, Women aged (15-44 yrs)

TFR= 6.5, e^0= (M=48, F=45); TFR= 3.0, e^0= (M=67, F=71)

Total (1970-74)= Birth (43,502), Death (16,516)

Total (2003-06)= Birth (21,638), Death (6,115))

Birth: Rates by age & month

Death: No. of death (except neonatal) by age/cause & month

Analyses: Trigonometric regression

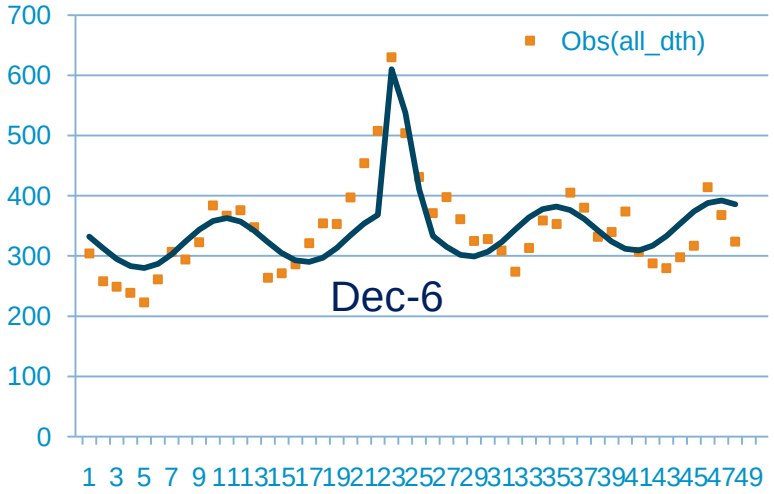
Model I : $Y_i = u + \beta_0 t$

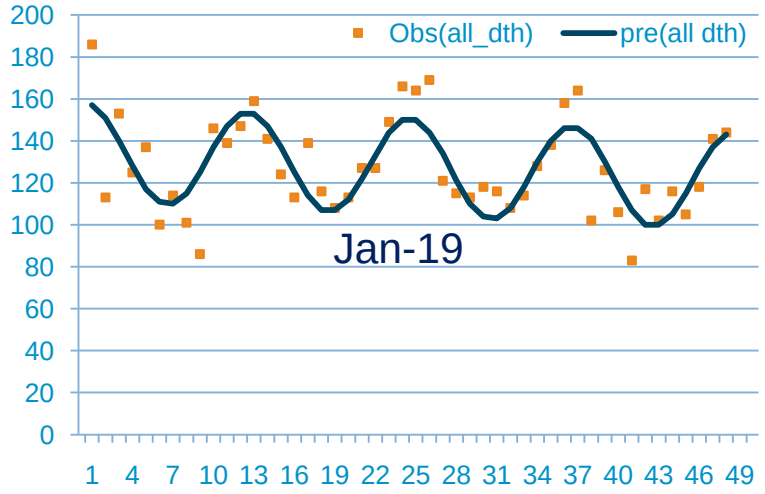
Model II : $Y_i = u + \beta_0 t + Y\cos(wt + \theta)$

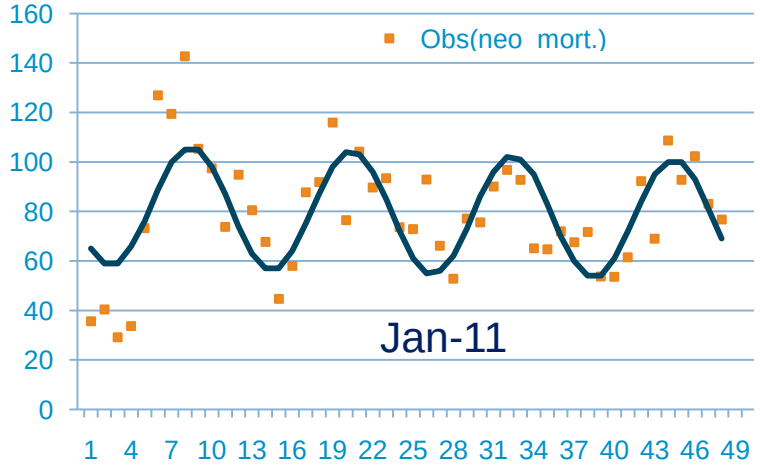
Model III: $Y_i = u + \beta_0 t + \beta 1 x_{11} + \beta 2 x_{21} + \beta 3 x_{31} + \beta 4 x_{41}$

Results

Fig 1: Number of deaths and trigonometric regression estimates by months and age groups, 1970-74 and 2003-06







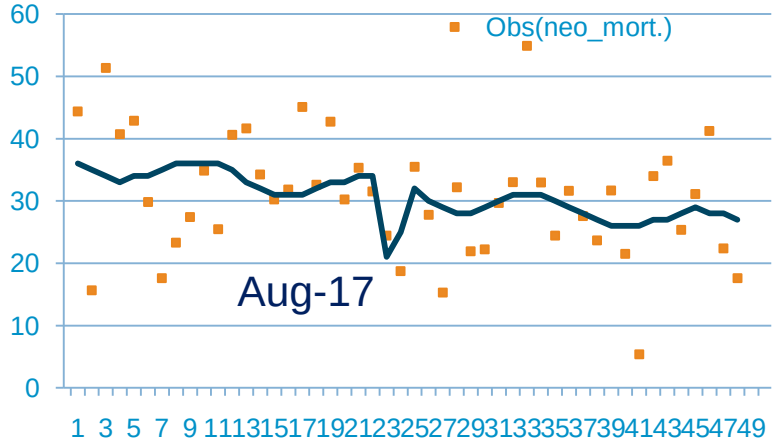
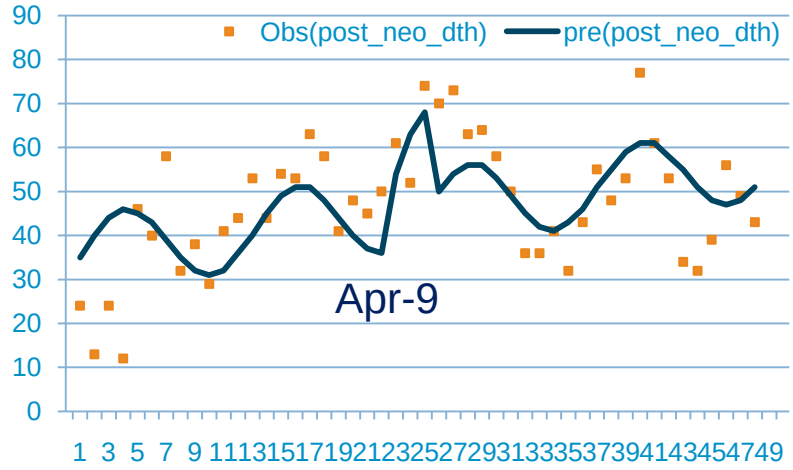
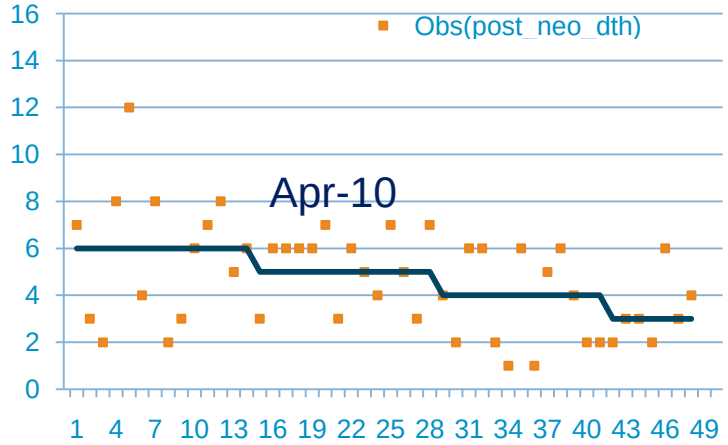
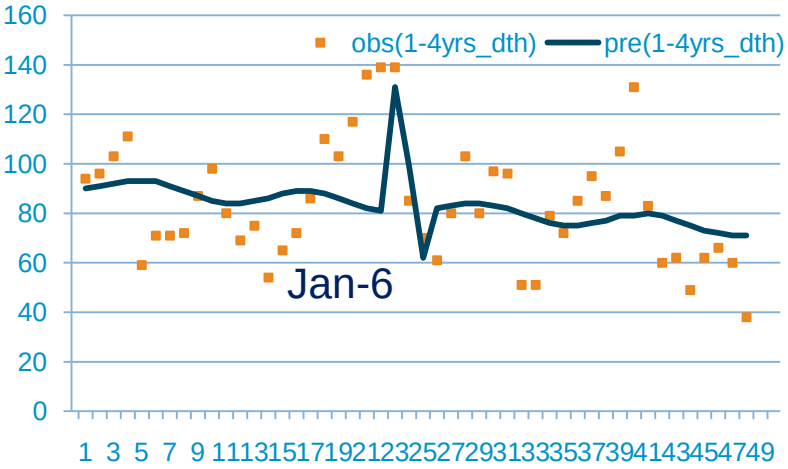


Fig 2: Number of deaths and trigonometric regression estimates by months and age groups, 1970-74 and 2003-06







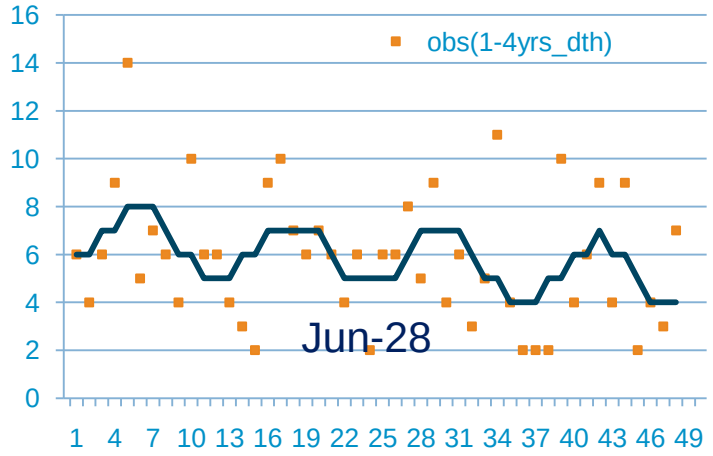
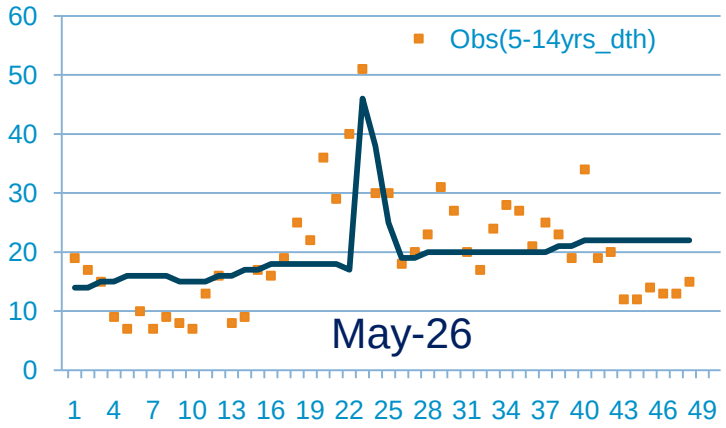
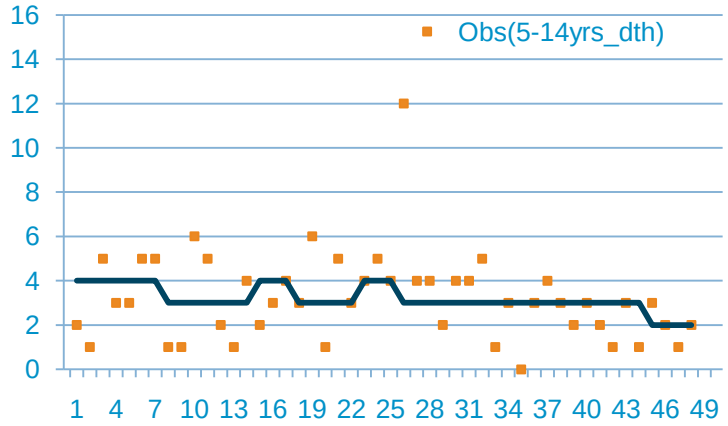
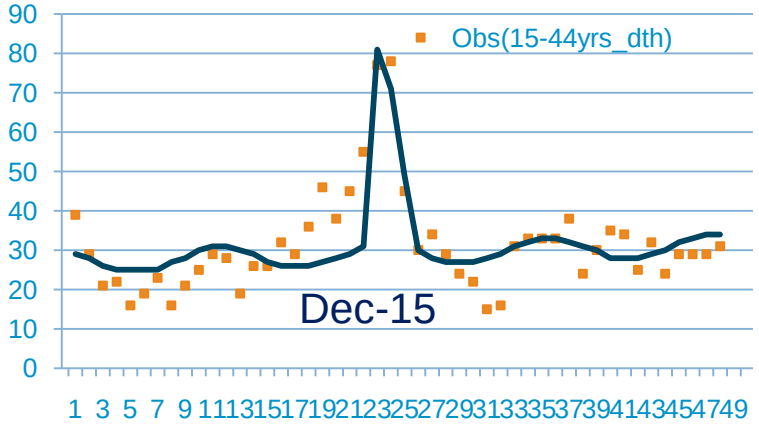


Fig 3: Number of deaths and trigonometric regression estimates by months and age groups, 1970-74 and 2003-06







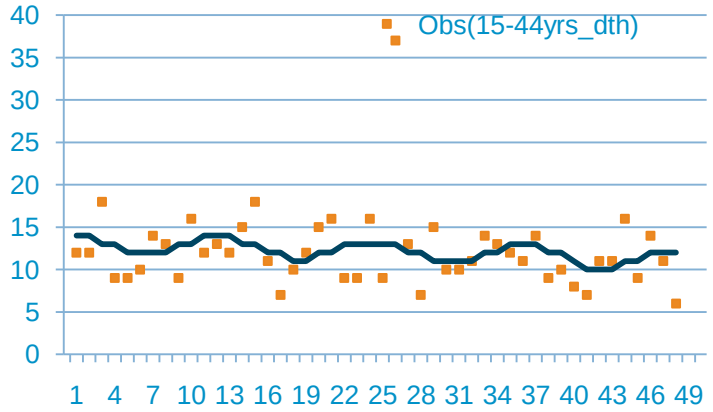
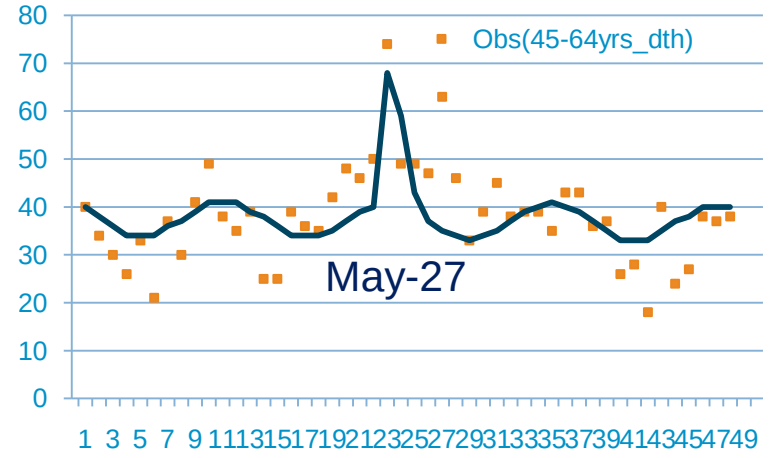
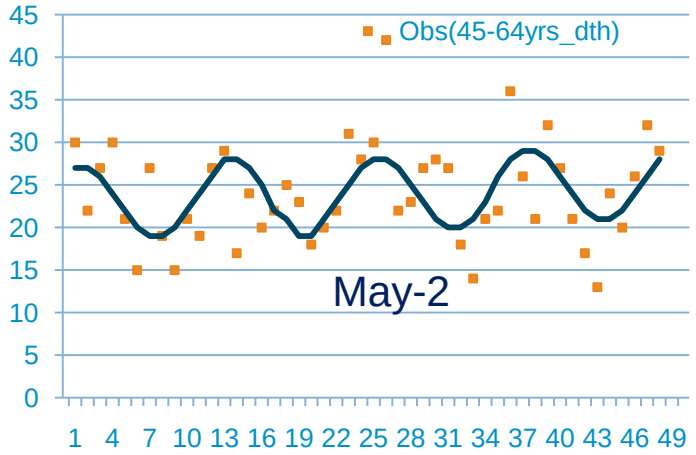
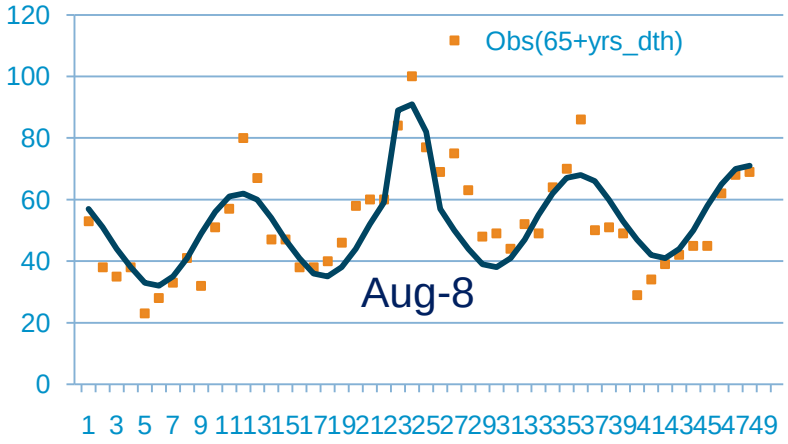


Fig 4: Number of deaths and trigonometric regression estimates by months and age groups, 1970-74 and 2003-06







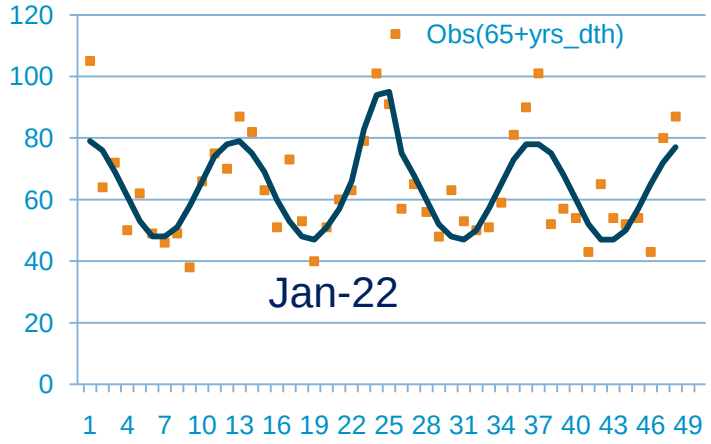
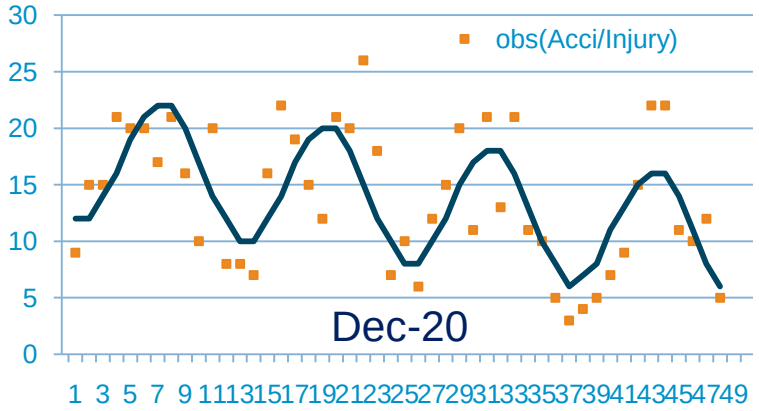
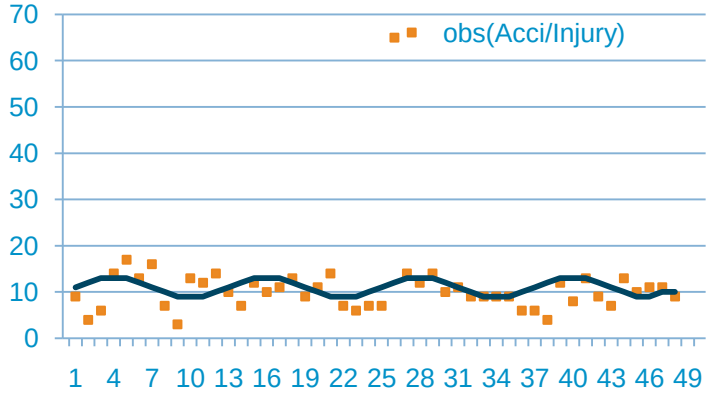
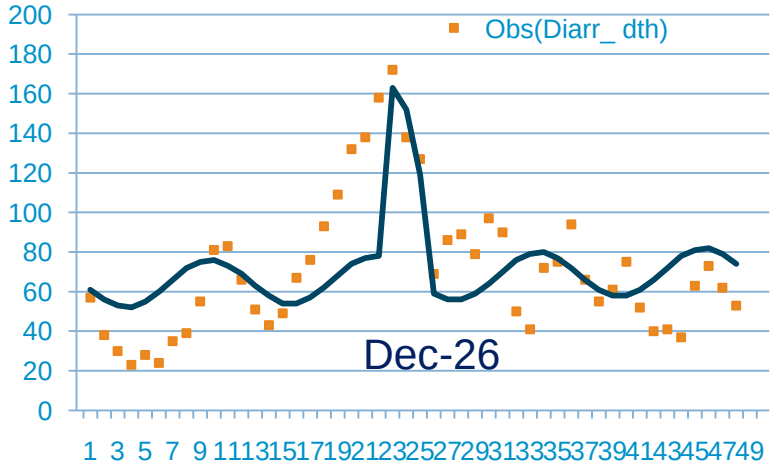


Fig 5: Number of deaths and trigonometric regression estimates by months and major cause of death, 1970-74 and 2003-06







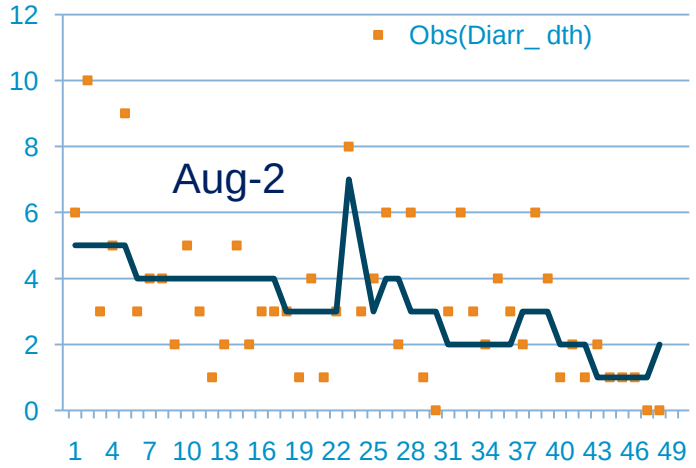
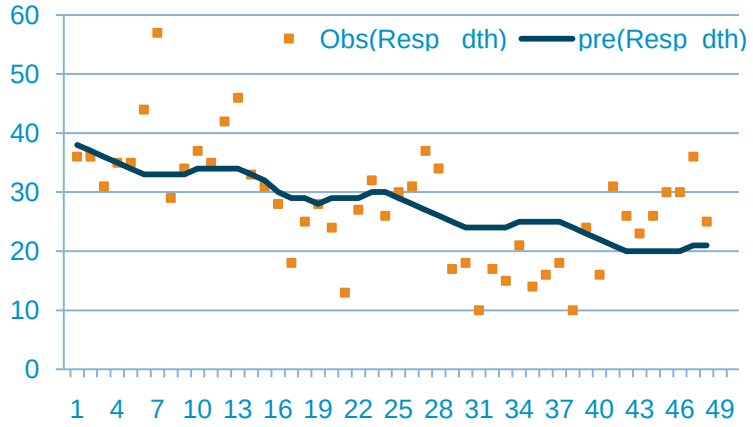
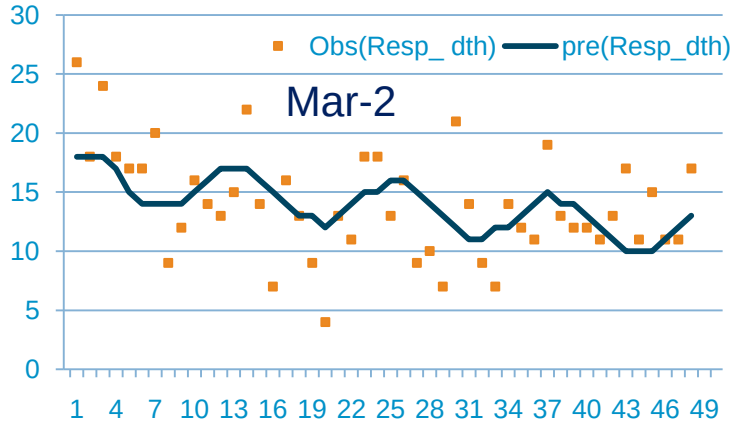
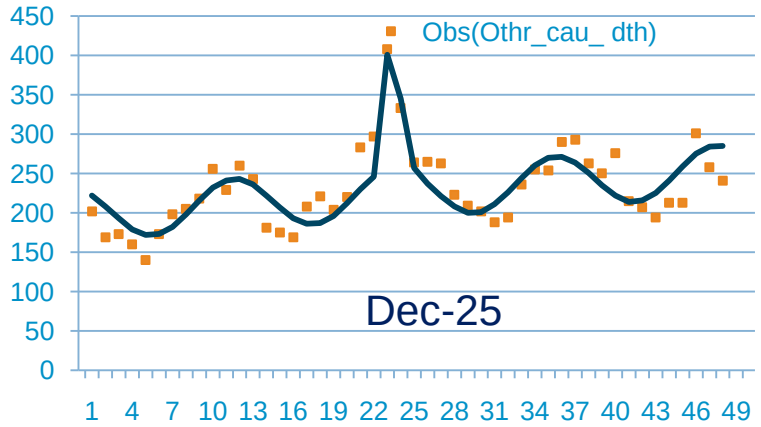


Fig 6: Number of deaths and trigonometric regression estimates by months and major causes of death, 1970-74 and 2003-06







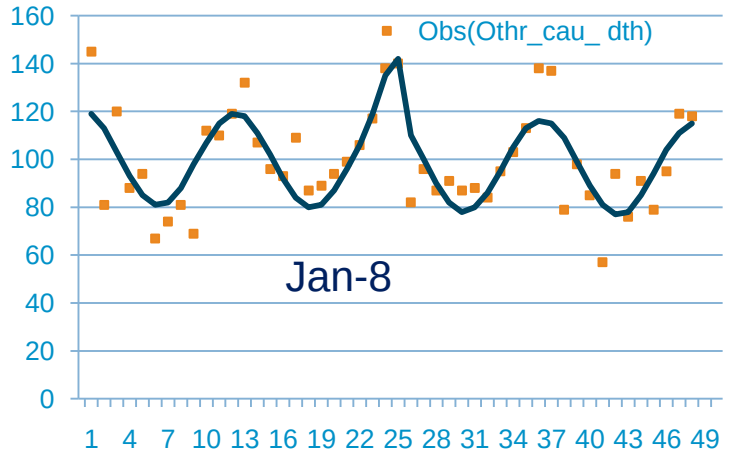
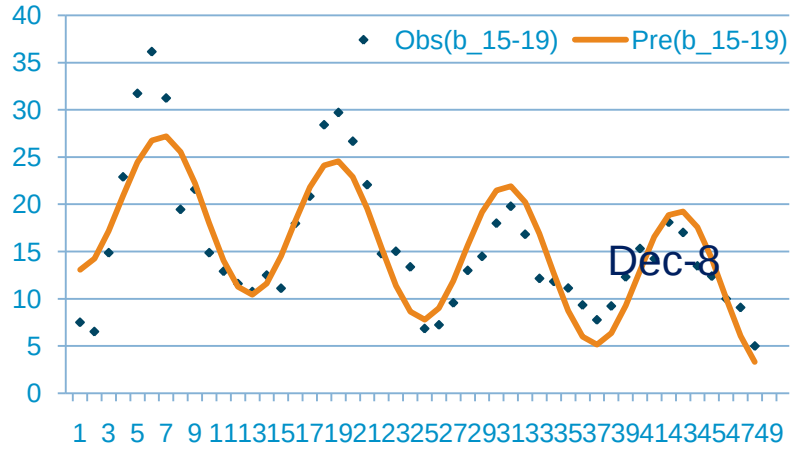


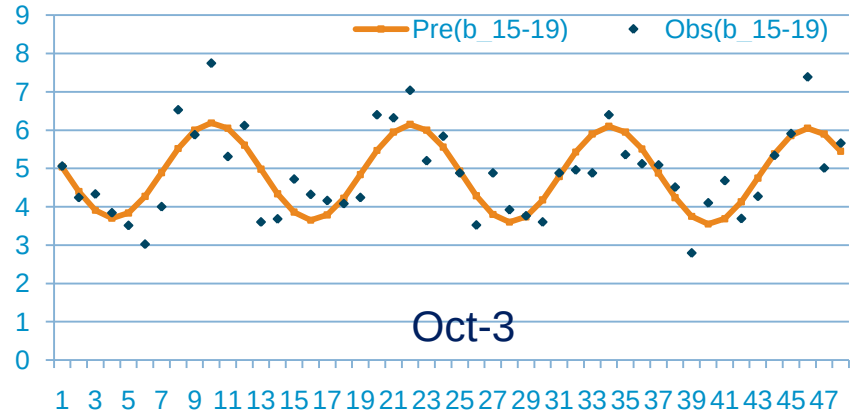
Table 1: Comparison of seasonal patterns 1970-74 with those for 2003-06 period

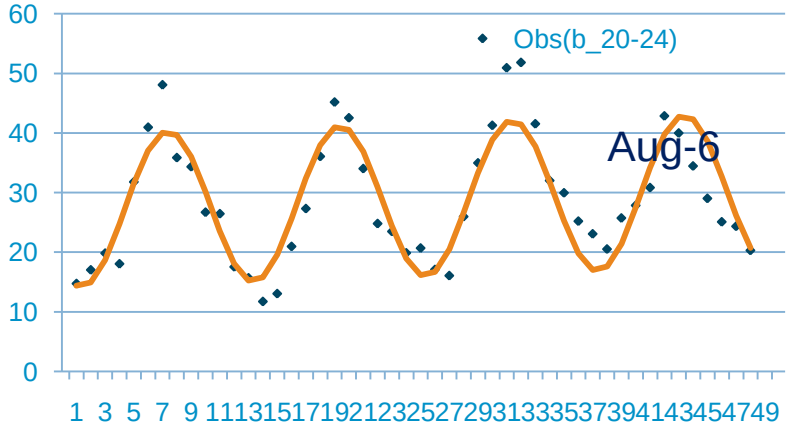
	Time period and parameter					
	1970-74		2003-06		Difference	
Group	r/m	Peak	r/m	Peak	r/m	Peak (days)
All deaths	11	Dec-8	18	Jan-18	+7*	+40*
Age groups						
Neo-natal mortality	30	Jan-11	6	Aug-17	-24*	+216*
Post-neonatal	14	Apr-9	3	Apr-10	-11*	+1
1-4 yrs	4	Jun-6	23	Jun-28	+19*	+22*
5-14 yrs	1	May-26	--	--		
15-44 yrs	9	Dec-15	--	--		
45-64 yrs	6	Dec-20	18	Mar-2	+12*	-72*
65+ yrs	20	Dec-26	25	Jan-22	+5*	+26*
Causes of death						
Injury	13	May-27	--	--		
Diarrhoea	13	Aug-8	24	Aug-2	+11*	-6
Respiratory	5	Jan-12	14	Mar-2	+9*	+50*
Others causes	14	Dec-25	20	Jan-8	+6*	+13 *

***p<.05**

Fig 7: Number of birth and trigonometric regression estimates by months and age groups, 1970-74 and 2003-06







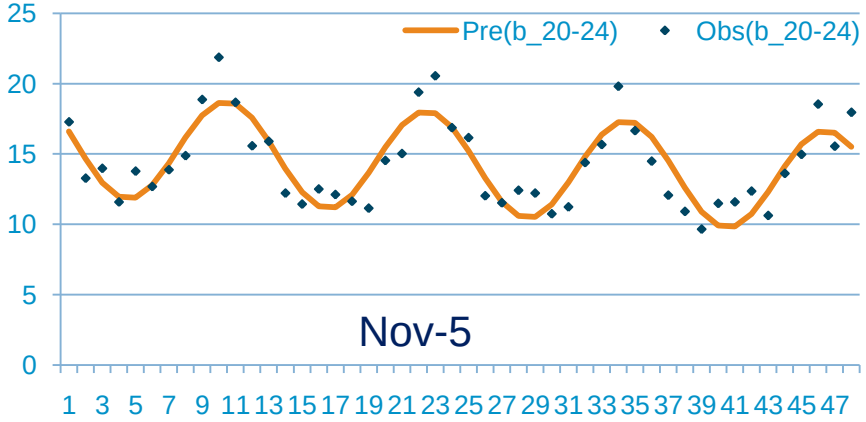
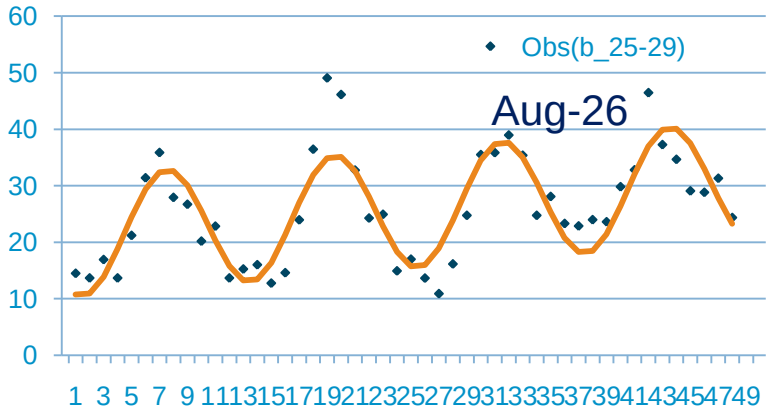
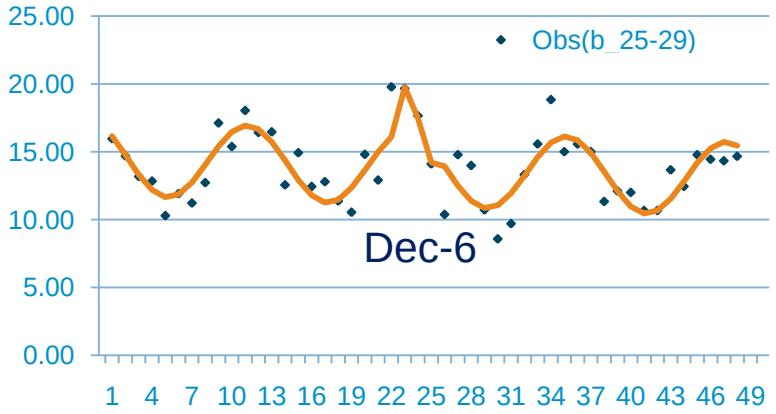
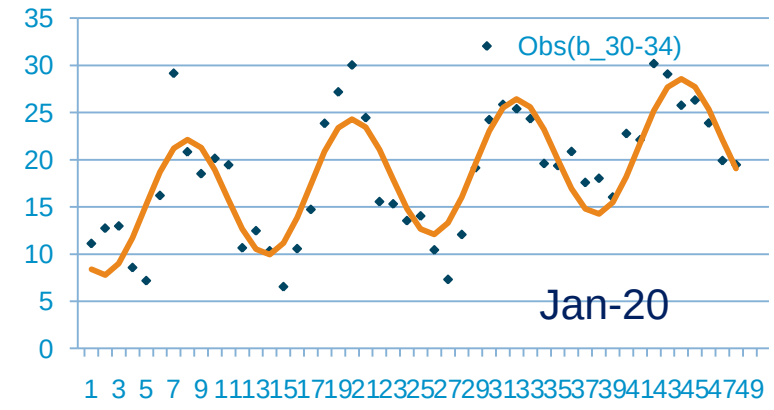


Fig 8: Number of births and trigonometric regression estimates by months and age groups, 1970-74 and 2003-06







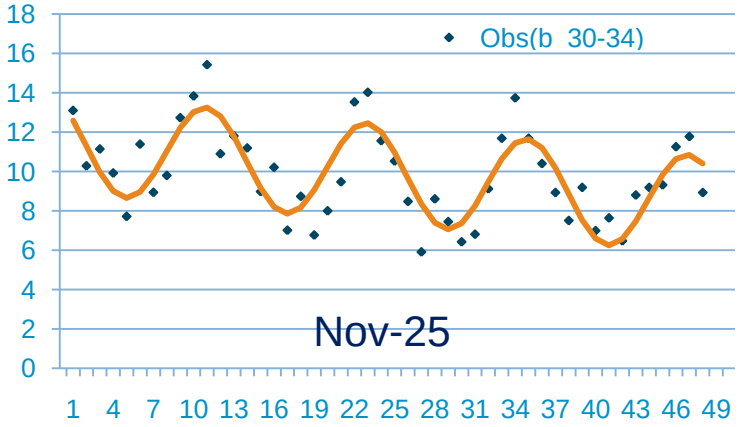
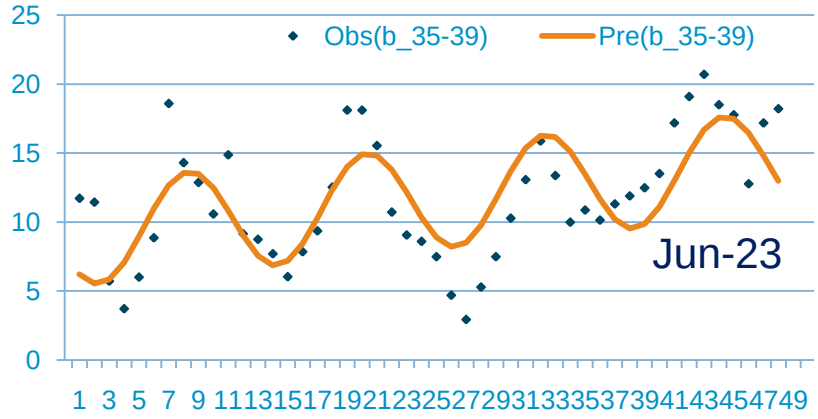
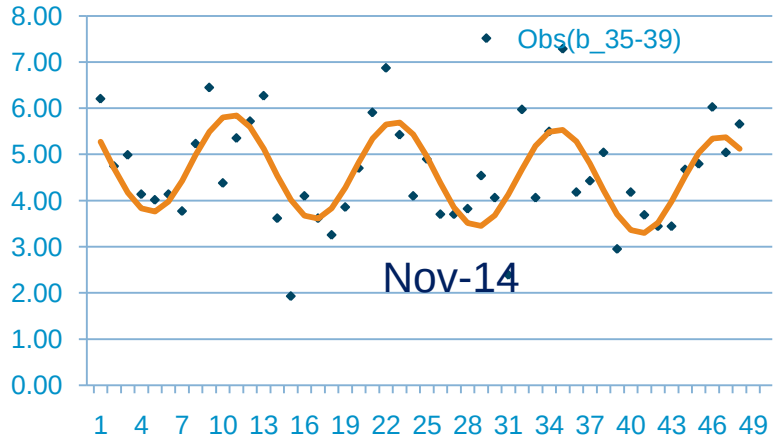
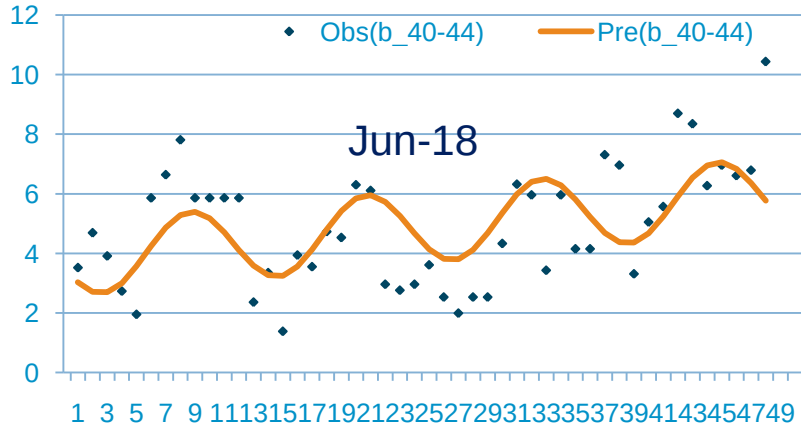


Fig 9: Number of births and trigonometric regression estimates by months and age groups, 1970-74 and 2003-06







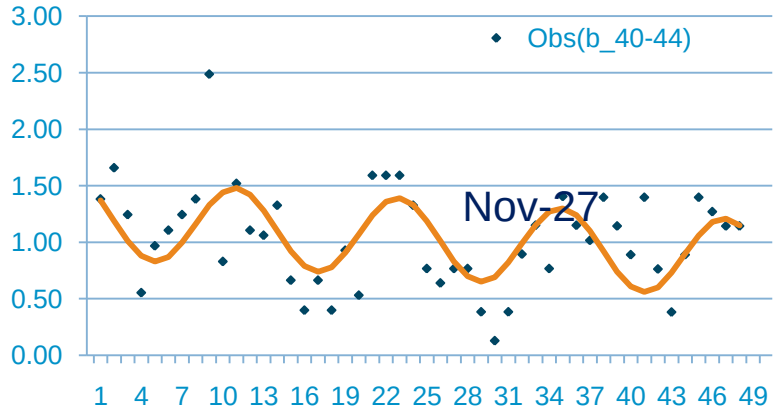


Table 2: Comparison of patterns 1970-74 with those for 2003-06 period

	Time period and parameter					
	1970-74		2003-06		Difference	
Group	r/m	Peak	r/m	Peak	r/m	Peak (days)
All births	81	Sep 3	23	Nov 15	-58*	+73*
Age groups						
15-19	75	Dec 8	25	Oct 3	-50*	-66*
20-24	81	Aug 6	25	Nov 5	-56*	+91*
25-29	75	Aug 26	20	Dec 6	-55*	+101*
30-34	74	Jan 20	25	Nov 25	-49*	+57*
35-39	53	Jun 23	23	Nov 14	-30*	+144*
40-44	40	Jun 18	25	Nov 27	-15*	+126*

***p<.05**

Summary

Death

For overall mortality, magnitude of seasonality increased and its peak has changed while this is not true across age groups. Magnitude of seasonality *increased for ages 1-4, 45-64, 65+ while it declined for others (neonatal, post-neonatal mortality) but insignificant peak for ages 5-14 and 15-44.*

For causes of death, diarrhoea, respiratory and other causes, the magnitude increased over time except insignificant peak for injury.

Summary (cont)

Birth

For overall birth, magnitude of seasonality has decline and its peak has changed while this is true across ages.

Thank you.