# The Iranian Vital Horoscope; Appropriate Tool to Collect Health Statistics in Rural Areas

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## Abstract

This paper aims to describe the Iranian Vital Horoscope System. This system has been designed to collect and display vital events within the community. Baseline population data are collected by health workers (*Behvarz*), and are entered onto the Vital Horoscope Chart. The objective of this data collection system is to compile relevant data to quantitatively assess the performance of the health unites at the different levels each year, according to conventional health indicators. Assessing indices reported based on this data sources confirmed the consistency of the Vital Horoscope as a data collection mechanism and provided face validity of the data source. However, further study is needed to evaluate content validity and reliability of data from this system.

**Keyword:** *Horoscope, Health, Iran*

## Introduction

The Vital Horoscope, which is a facility-based data source, was established by the Iranian Ministry of Health and Medical Education (MOH & ME) in 1988 (1). This data source has been designed to collect and display vital events such as births, and deaths as well as family planning activities within the community. Baseline population data are collected by health workers (*Behvarz*) employed at the Health House, who conducts a census in the villages served by the institution, and these data are recorded in the family file. Subsequently, the data are entered onto the Vital Horoscope Chart. Physically, this is a sheet of paper 50 cm by 70 cm large, always kept pinned to a wall in the Health House (Fig.1) Throughout the year, monthly tallies of vital events are entered on the chart, which is sent to the District Health Centre at the end of the year, where the data are entered into a customized computer program (called *Zij*) and are sent to the Tehran for consolidation (2). The rationale for filling in this chart is to make available accurate and up-to-date information on the population under coverage as well as vital events, which can be used for estimating health and population indices of each Health House (and the entire population in rural areas). Unlike other systems such as the Iranian Nation Organization for Civil Registration (ICOCR) birth and death registration systems, the data are not affected by issues related to delayed registration, since these data are not a legal basis for identity or benefits (3). The objective of this activity was to compile relevant data to quantitatively assess the performance of the Health House each year, according to conventional health indicators such as birth rates, fertility and family planning measures, and infant and maternal mortality rates. Another objective was to make available the latest and most comprehensive data for different forms of population and health research (1, 4). The Vital Horoscope was also implemented in the Health Posts in urban areas in 1991. However, this system is not relatively efficient in urban areas. A recent evaluation of the structure and functionality of the Vital Horoscope system identified several strengths and limitations of this system, largely in terms of the quality and utility of aggregate data reported by the system (5). These are described below.
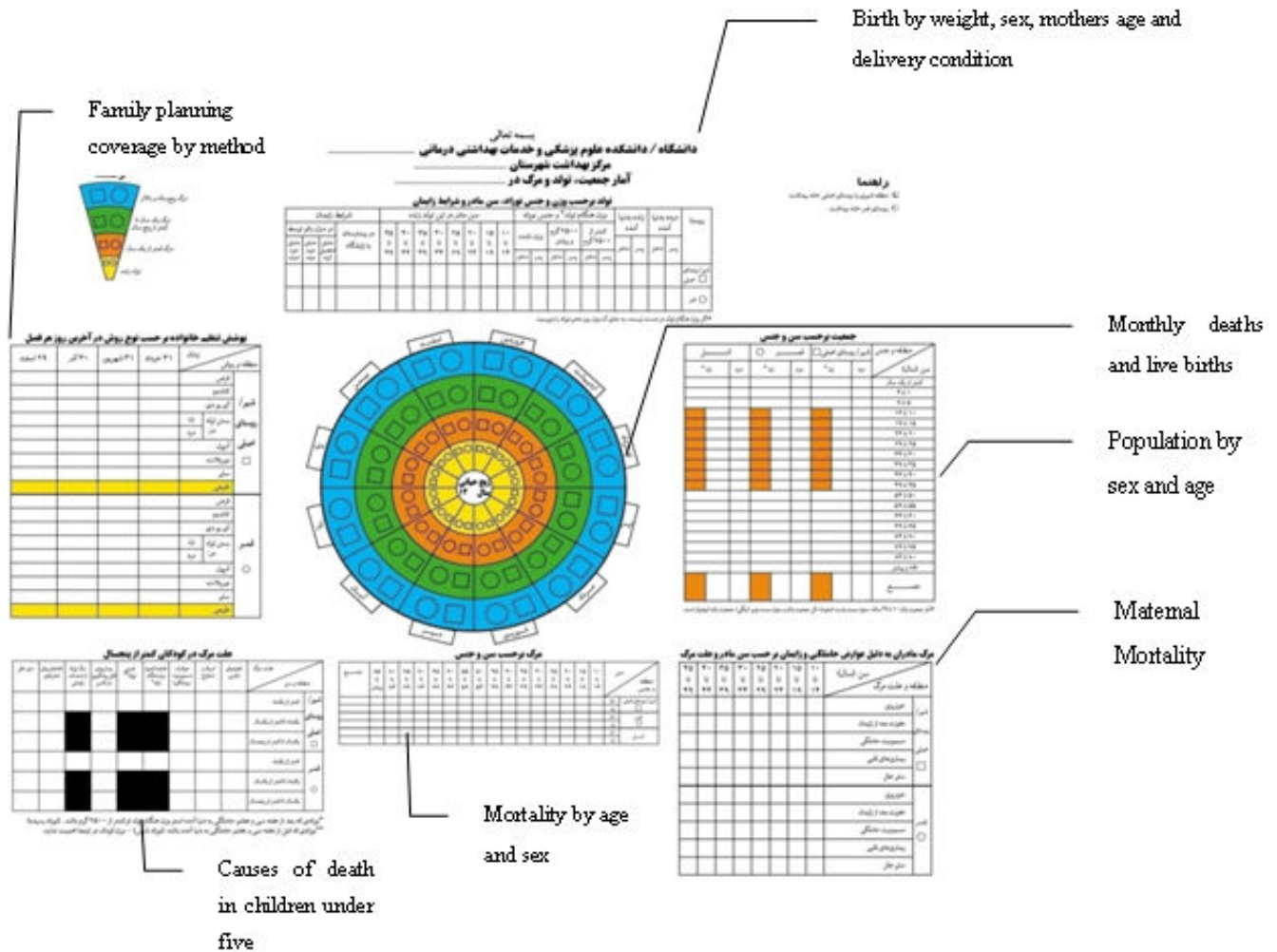
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**Fig. 1**: The Iranian Vital Horoscope

### Strengths

This is the only data source that contains health and demographic information by village, district and province in Iran.

Based on this data source several important indicators of health outcomes (about 214) such as mortality (e.g. maternal mortality rate and infant mortality rate) and fertility (e.g. age specific fertility rates) can be measured.

### Limitations

The causes of deaths are collected only for maternal mortality and deaths under 5 yr for broad cause groups.

This data source includes aggregate data and individual information is not presented in the chart.

### Estimation mortality indices from Vital Horoscope for rural areas

Fig. 2 shows the trend in neonatal, infant and child mortality rates of Iran based on the data from Iran's Vital Horoscope system for rural areas for the period 1993-2007. Neonatal mortality rate has remained fairly steady around 18 per 1000 live births by 2003 and then have been decreasing to 12.9 in 2007. However, both the infant and child mortality rate (less than five years mortality) have been decreasing over the period, from 37.2 and 46.3 per 1000 in 1993 to 18.9 and 22.5 in 2007, respectively. Probably the main reason for declining infant and child mortality is decreasing deaths due to infectious

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diseases such as diarrhea and pneumonia, which are common causes of death among under fives (6, 7).

Fig. 3 shows the trend in risk of adult mortality defined as the probability of dying between ages 15 and 59 ($_{45}q_{15}$) for Iran (rural areas) by sex based on the Vital Horoscope, for the period 1992-2004. In contrast to child mortality rates, the reported risks of adult mortality for both sexes had a fairly steady trend (around 0.09 for females and .13 for males) between 1992 and 2001. However, the reported risk of dying for adults particularly for males has increased in recent years. This is likely to be due to improvements in completeness of death registration, but this should be closely monitored and subjected to further investigation, to identify any real epidemiological phenomena such as a rise in injury or cardiovascular mortality among young adult males in Iran.

Recently, the Iranian MOH&ME published the results of the analysis of data from the Iranian Vital Horoscope (VH) over the past decade (1). To check the consistency of this data source, the relationship of several variables (e.g. percentages of various age groups, sex and age-specific fertility rates) with each other were checked graphically (1). For instance, Fig. 4 shows the correlation between the proportion of the population aged less than one year and under five years based on this report. In a well functioning system, these two variables should be strongly correlated with each other (as they are, with $r = 0.97$).

Fig.5 and Fig. 6 show the trend in age specific fertility rates and age specific mortality rates,

respectively, based on the Vital Horoscope data for period of 1993-2003. These figures provide further evidence to support claims about the reliability of the Vital Horoscope data. Likewise, several population indices (e.g. proportion of population age groups) according to the Vital Horoscope were compared with other sources such as the 1996 census and DHS 2000. The authors claimed that these comparisons also confirm the consistency of population data from the Vital Horoscope with other sources. From these comparisons, they concluded that there was reasonable consistency across indices which supported their claims about the high quality of data form the Vital Horoscope (1). There is some justification for this claim. For example, since age-specific death rates increase exponentially with age (8) the logarithm of death rates should be linear after younger adult ages which is what we see in recent years in the Vital Horoscope data (see Fig. 6). The bump at older ages in earlier years is due to aggregating data for ages 65+. It is important to note, however, that while the age pattern of mortality (i.e. death and population data) reported via the Vital Horoscope appears reliable; it is not clear how complete the system is for capturing deaths at different ages.

These results tend to confirm the consistency of the Vital Horoscope as a data collection mechanism and provide face validity of the data source. However, the best way to check the validity and coverage of a population data is by conducting a Post Enumeration Survey (PES).
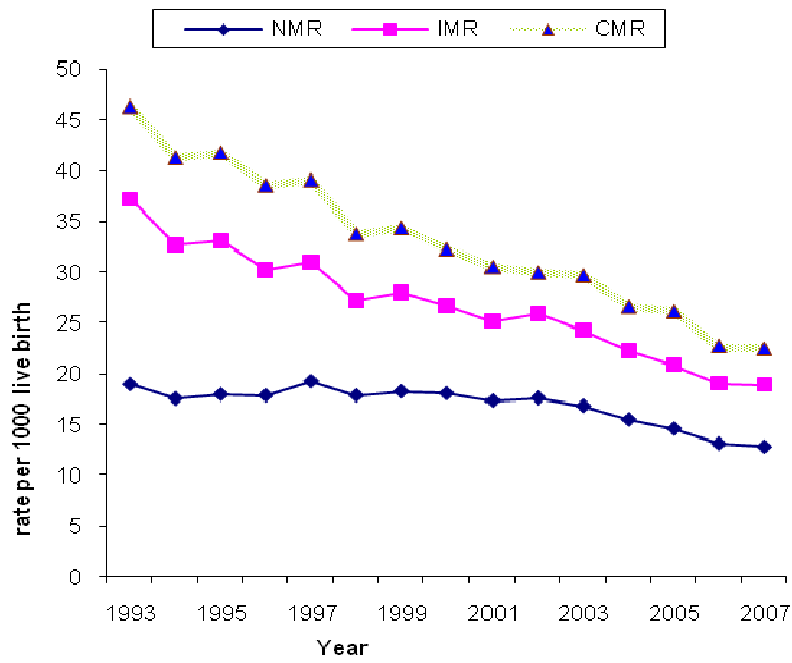
**Fig. 2:** Neonatal, infant and child mortality rates according to the Vital Horoscope for rural areas, Iran, 1993-2007
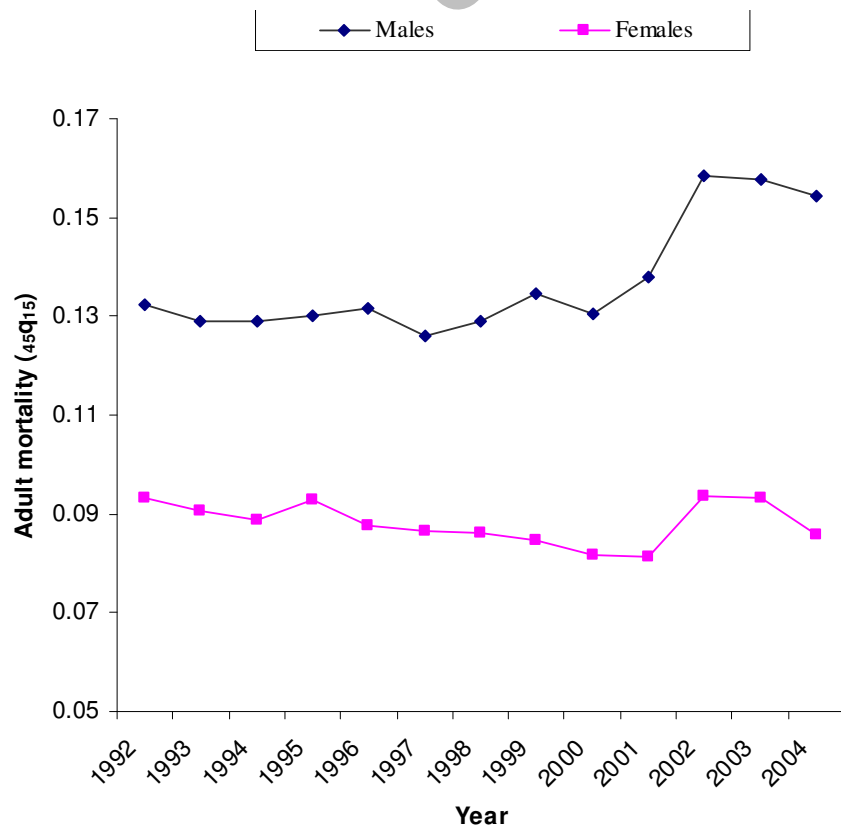


**Fig. 3:** Adult mortality ($_{45}q_{15}$) by sex according to data from the Iranian Vital Horoscope for rural areas, 1993-2004
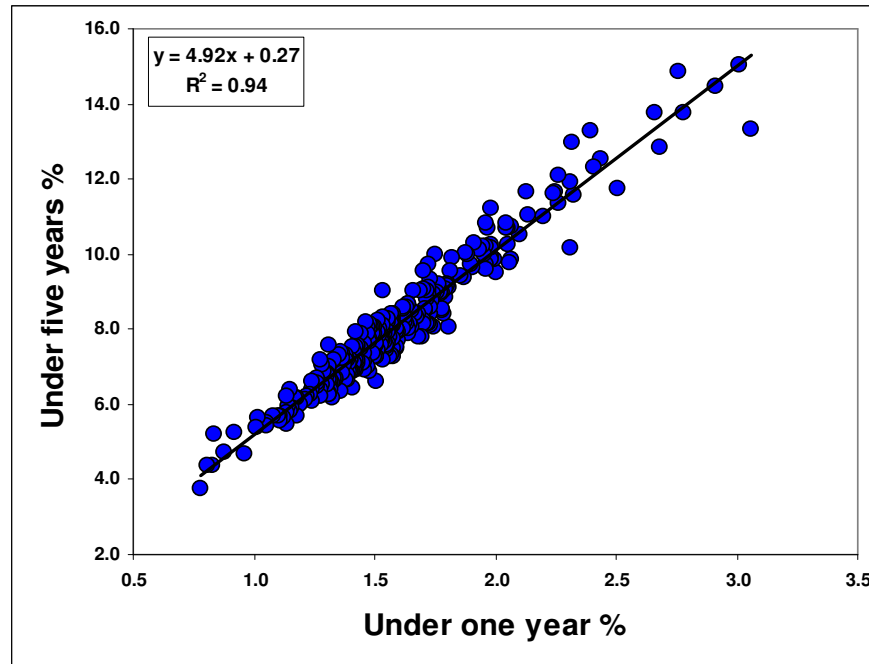
**Fig. 4:** Correlation between proportions of population aged under one year and under five years in rural areas based on Vital Horoscope of 281 districts, Iran, 2000- 2002 (1)
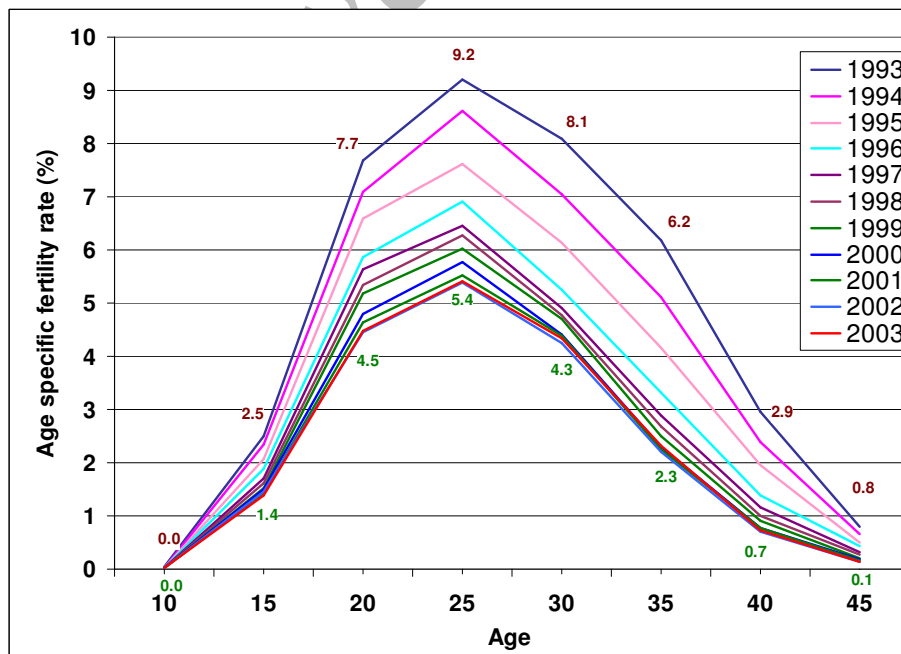


**Fig. 5:** Age specific fertility rates based on the Vital Horoscope for rural areas, Iran, 1993-2003 (1)
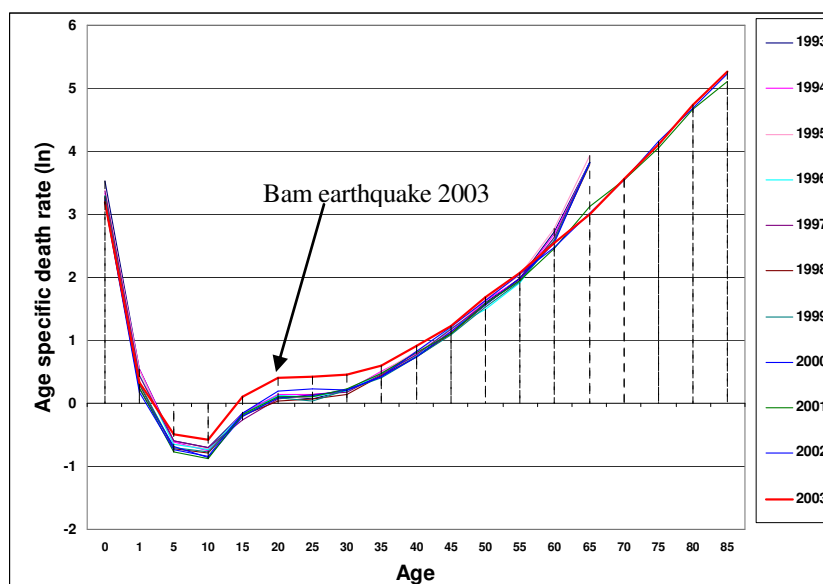
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**Fig. 6:** Age specific mortality rates based on the Vital Horoscope for rural areas, Iran, 1993-2003 (1)
Note: Before 2000 the terminal age group in the population data from the Vital Horoscope was 65 years and above

## Conclusion

In conclusion, generating reliable data from routine systems to make decisions based on evidence is a major challenge in many developing countries. In Iran, data collected in the Vital Horoscope is a conventional data source to generate health statistics, particularly for rural areas. The Vital Horoscope can be categorized as a 'Health Services' data source, and this includes reporting from both health facilities as well as the community. Population data and other events (death and birth) are collected and recorded continuously. These data too appear of reasonable quality. Therefore, data source can be used to provide estimates of population at risk and various health Indies. Assessing indices reported based on this data sources confirmed the consistency of the Vital Horoscope as a data collection mechanism and provided face validity of the data source. However, further study is needed to evaluate content validity and reliability of data from this system.

Due to the facing with demographic and health transition in Iran and shifting to chronic disease particularly in adulthood, collecting data on major risk factors have been considered as a priority. Hence, policy-maker at the MOH&ME decided to modify the Vital Horoscope and new set of data (e.g. risk factors, intervention coverage) are collected in this system. This new Vital Horoscope system (named Health Horoscope) was launched in three provinces in 2004 as a pilot program and after assessing practicality issues, it will be expanded to all provinces.

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