Enhancing Korean Infant Mortality Statistics by Linking Administrative Data and Survey

UN Expert Group Meeting on the Methodology and Lessons Learned to Evaluate the Completeness and Quality of Vital Statistics Data from Civil Registration

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STATISTICS KOREA

APPI
1. In 2015, Korean IMR was 2.7 deaths per 1,000 live births.

2. However, 20 years ago, the observed IMR was much lower than that of recent years due to the severe under-reporting of infant deaths.
1. Civil Registration and Vital Statistics System in Korea
2. Estimating the Completeness of Birth and Death Registrations
3. Improving Infant Mortality Statistics by Linking Administrative Data and Survey Data
4. Summary & Concluding Remarks
1. Civil Registration & Vital Statistics System in Korea
Civil Registration Systems in Korea

Family Register

- Administered by Supreme Court.
- Birth, death, marriage, and divorce are legally effective when they are recorded into family register.

Population Register

- Administered by Ministry of the Interior.
- Includes name, Resident Registration Number, place of residence, relationship of household members, etc.
Civil Registration & Vital Statistics Systems in Korea

- Migration
  - Migrants
- Birth
  - Parents
- Death
  - Relatives
- Marriage/Divorce
  - Individuals

City/County/District Office

- Within 30 days
- Within 14 days
- No time limit

Population Register
- On-line
  - Resident Registration Number

Family Register
- On-line

Vital Statistics System
- On-line

Public Administration & Security

Supreme Court

Statistics Korea
1. Statistics Korea operates online real-time web-based vital statistics system across all local registration offices.

2. All vital events have been first filed in online family register and then the registered information is sent directly to the online vital statistical system.

3. For statistical purposes only, the demographic characteristics are added in the vital statistics system.

4. Although Korea has a long tradition of family register, current type of CRVS was established in 1970. Since 1970, birth and death registration forms has included statistical purpose items.

Birth Registration Form in Korea

Family Registration Items

The following information is required for national population policy. You are obliged to provide accurate information in a faithful manner according to Articles 32 and 33 of the Statistics Act. All personal information will be strictly protected.

Vital Events Items

The following information is required for national population policy. You are obliged to provide accurate information in a faithful manner according to Articles 32 and 33 of the Statistics Act. All personal information will be strictly protected.
## Vital Statistics Dissemination

<table>
<thead>
<tr>
<th>Data</th>
<th>Release time</th>
<th>Format</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provisional</td>
<td>• 1 month after the registration of vital events</td>
<td>• Monthly Vital Statistics Report</td>
<td>• Total number of vital events by province</td>
</tr>
<tr>
<td>Final</td>
<td>• Marriage/ Divorce: 4 months after the year of events</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Birth: 8 months after the year of events</td>
<td>• News release</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Cause of death: 9 months after the year of events</td>
<td>• Annual report</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• On-line database (KOSIS)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• CD-Rom (Micro data)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• National Death Index</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Total number of vital events</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Vital rates by age, sex, education, occupation, and other characteristics (including cause of death and etc.)</td>
</tr>
</tbody>
</table>
2. Estimating Completeness of Birth and Death Registration
According to the UN principles and recommendations, a complete civil registration and vital statistics systems are achieved when every vital event has been registered in the system within a specified time period.

Completeness of the CRVS can be measured in terms of late registration and coverage. In this section, we illustrate the level of completeness of the birth and death registration in Korea.
Late Registrations of Births & Deaths

1. Late registrations* of births accounted for 0.9% of the total births in 2005.
2. Late registrations of deaths for 2005 explained 0.3% of the total deaths.

* Late registrations: registrations being made after the obligatory dues and within 10 years after the year of vital events

### Vital events

<table>
<thead>
<tr>
<th>Vital events</th>
<th>Number of timely registered records (A) (2005 Occurrence)</th>
<th>Number of late registered records (B) (2006~2015)</th>
<th>Total Events (C)</th>
<th>10-years delayed registration rates (B/C × 100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth</td>
<td>435</td>
<td>3.8</td>
<td>439</td>
<td>0.9%</td>
</tr>
<tr>
<td>Death</td>
<td>244</td>
<td>0.8</td>
<td>245</td>
<td>0.3%</td>
</tr>
</tbody>
</table>

Birth (in thousands); Death (in thousands)
The registration of deaths is a legal requirement in Korea. When a death occurs, a family should file the registration form along with the medical certificate at a local administrative office within a month.

Under coverage of deaths is minimal. More than 99 percent of the deaths is thought to be registered. For all Korean deaths, estimated under reporting rate in 2015 was 0.2%.

However, fetal and infant deaths are reported less accurately than other deaths.
3. Improving Infant Mortality Statistics by Linking Administrative Data and Survey
1. Since the late 1990s, more attention has been drawn for improving the coverage of infant mortality statistics and making them more useful.


3. Since 1999, Statistics Korea has collected extra information on infant deaths from crematories.

4. Since 2009, the Infant and Maternal Mortality Supplementary Survey conducted by Statistics Korea has expanded its coverage to include birth, fetal death, maternity care and demographic & health risk factors.
1. The infant, maternal mortality supplementary survey is a follow-back survey of hospitals and other medical care providers recorded on the death certificates, the Crematory Registration, and the Mother-Child Health Registration.
1. As a result of record linkage between registered infant deaths and complementary data, IMR increased from 2.3 deaths per 1,000 births in 1998 to 4.5 deaths in 1999.

2. After a few years of adjustment, IMR has steadily decreased to 2.7 deaths in 2015.

- Source: Birth Statistics in 2015, Death Statistics in 2015 (STATISTICS KOREA)
## Linkage System of Infant Deaths

### Total number of infant death in 2015

- **Registered Death:** 62.4% (A)
- **Unregistered Death:** 37.6%

1. Crematory Registration (B)
2. Mother-child Health Registration
3. National Forensic Investigation Institution, etc. (C)

<table>
<thead>
<tr>
<th>Data Linkage Source</th>
<th>Linkage Key</th>
<th>Coverage from each source</th>
<th>Total Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) Death Registration</td>
<td>Resident Registration No.</td>
<td>62.4%</td>
<td>62.4%</td>
</tr>
<tr>
<td></td>
<td>Date of death, address/ name of Infant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(B) Crematory Registration</td>
<td>Name of hospital/ Doctor, Hospital Charts No.</td>
<td>27.4%</td>
<td>89.8% (A+B)</td>
</tr>
<tr>
<td>(C) Mother-child Health Registration + National Forensic Investigation Institution, etc.</td>
<td>Name of mother, Date of death, address of Infant, Name of hospital</td>
<td>10.2%</td>
<td>100% (A+B+C)</td>
</tr>
</tbody>
</table>
Trends in the Proportion of Infant Deaths from the Civil Registration

1. Due to the improvements in public consciousness and public health insurance coverage, the proportion of infant deaths from the civil registration increased from 44.6 percent in 2005 to 62.4 percent in 2015.

- Source: Death Statistics in 2015 (STATISTICS KOREA)
1. One of the consequences of the improvements in the infant mortality statistics is the increased completeness of the birth registration. Now we have extra information about births from the infant death statistics, the coverage of the birth registration has become very close to 100 percent recently.
Improvement of Data Richness by the Supplementary Survey

1. Compared to the death registration, the Survey provides additional information on infant, mother, and delivery, which will be useful in supporting policies related to the healthy pregnancy and delivery.

<table>
<thead>
<tr>
<th>Registration items</th>
<th>※ Common Items in the Death Registration: Name of the Infant, Resident Registration No., Time/Date/Place/Cause of Death</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Survey items</th>
<th>Mother Info</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nationality</td>
<td>Education level</td>
</tr>
<tr>
<td>Resident registration No.</td>
<td>Diseases during pregnancy</td>
</tr>
<tr>
<td>Occupation</td>
<td>Height</td>
</tr>
<tr>
<td>Marital status</td>
<td>Weight</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>Smoking status</td>
</tr>
<tr>
<td></td>
<td>Duration of pregnancy</td>
</tr>
<tr>
<td></td>
<td>Time of delivery</td>
</tr>
<tr>
<td></td>
<td>Method of delivery</td>
</tr>
<tr>
<td></td>
<td>Antenatal care</td>
</tr>
<tr>
<td></td>
<td>Previous pregnancy result</td>
</tr>
<tr>
<td></td>
<td>Multiple births</td>
</tr>
<tr>
<td></td>
<td>Birth order</td>
</tr>
<tr>
<td></td>
<td>Height, Weight</td>
</tr>
<tr>
<td></td>
<td>Girth of the head</td>
</tr>
<tr>
<td></td>
<td>Apgar score</td>
</tr>
</tbody>
</table>

▲ Mother Info ▲ Delivery Info ▲ Infant Info
4. Summary & Concluding Remarks
Summary and Concluding Remarks

1. Statistics Korea has made considerable efforts to enhance the infant mortality statistics, particularly by diversifying the data sources of infant deaths such as Crematory Registration as well as by implementing the Infant and Maternal Mortality Supplementary Survey.

2. Collecting and combining information from several data sources could improve the coverage of vital statistics and identify the under-reporting cases.

3. Linking the administrative data and survey data contributed to the enhancement of vital statistics such as infant mortality and birth statistics. It also brought the richness to the data by addressing additional information which was not available in the civil registration systems.
THANK YOU!

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