

Singapore's Rate of Natural Increase for Population

Natural increase is a component of population growth. It refers to the number of live-births in excess of the number of deaths. The rate of natural increase (RNI) is the natural increase divided by the mid-year population of the reference year, per 1,000 population. It is also the difference between the crude birth rate (CBR) and crude death rate (CDR). The CBR and CDR refer to the number of live-births and deaths respectively per 1,000 population of the reference year.

$$\text{Rate of Natural Increase (per 1,000 population)} = \frac{\text{Natural Increase}}{\text{Mid-year Population}} \times 1,000$$

$$= \frac{\text{Live-births} - \text{Deaths}}{\text{Mid-year Population}} \times 1,000$$

$$= \text{Crude Birth Rate} - \text{Crude Death Rate}$$

Resident RNI Mirrored Falling Crude Birth Rate Over the Last Decade

Over the past 10 years, the CBR of the Singapore resident population exhibited a general downward trend. Overall, the CBR dropped by 1.4 live-births per 1,000 residents, from 10.2 in 2008 to 8.8 in 2018 (Chart 1). On the other hand, the CDR showed a slight uptrend from 4.4 deaths per 1,000 residents to 5.0 over the same period¹. Together, this resulted in the RNI falling from 5.8 residents per 1,000 residents in 2008 to 3.7 in 2018. Dominated by the CBR,

the trend in RNI mirrored the falling CBR trend closely over the last decade².

Resident RNI is Projected to Turn Negative Around the Mid-2030s

Should the CBR continue to fall with a low total fertility rate (TFR)³, and the CDR rise with an ageing population, the RNI is projected to decline over time. From around the mid-2030s, the RNI is projected to turn negative, i.e. deaths outnumbering live-births⁴. This is the experience of other economies with similar population structures and fertility trends, like Japan.

Singapore's RNI was Higher Than Selected Asian Economies and the OECD Average

Across seven selected Asian economies and the OECD⁵ from 2008 to 2017, Singapore's RNI was consistently above that of South Korea, Japan and the OECD average since 2008, with Japan having a negative RNI during this period (Chart 2). On the other hand, Singapore's RNI had been consistently lower than that of economies with a younger age structure and higher fertility such as Malaysia, India, Indonesia and Viet Nam.

CHART 1

SINGAPORE'S RESIDENT CBR, CDR AND RNI

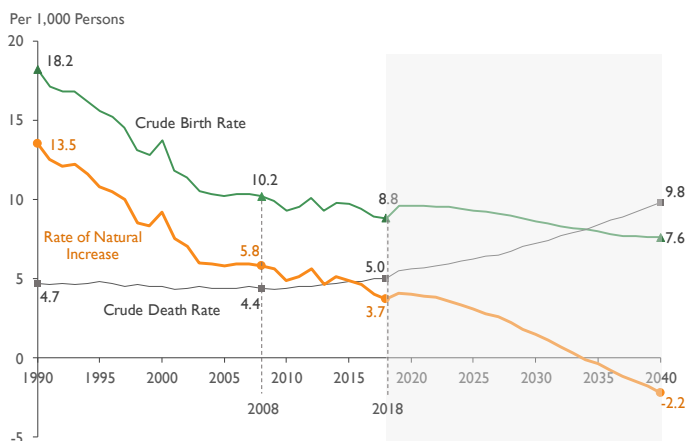
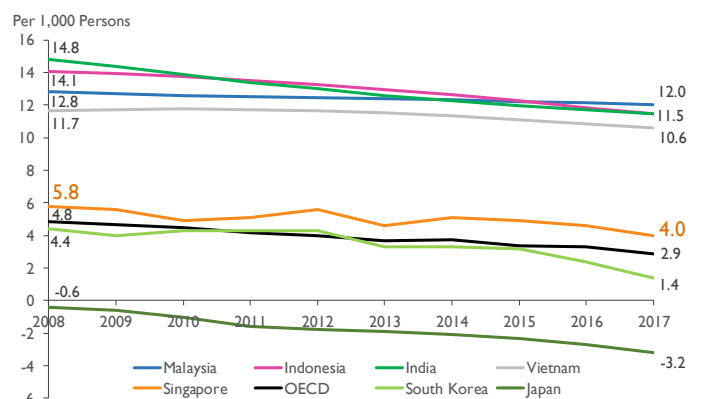


CHART 2

INTERNATIONAL COMPARISON OF RNI



1 The article on "[Age-Standardised Death Rate for Singapore](#)" provides an analysis on the rising CDR in spite of improvements in mortality in recent years.

2 More historical data on Singapore's CBR, CDR and RNI are available on the [SingStat Website](#).

3 The TFR refers to the average number of live-births each female would have during her reproductive years if she were to experience the age-specific fertility rates prevailing during the period.

4 Data from 2019 onwards are projections based on the midpoint of a range of scenarios.

The lower bound scenario assumes a TFR of 1.0 and immigration rates of 20,000 Singapore citizens and 30,000 permanent residents per annum; while the upper bound scenario assumes a TFR of 1.5 and immigration rates of 25,000 Singapore citizens and 35,000 permanent residents per annum.

5 Data for other economies and the OECD Average are obtained from the [World Bank's World Development Indicators Database](#) (as at 25 Apr 2019) based on the following data series: (1) "Birth rate, crude (per 1,000 people)"; and (2) "Death rate, crude (per 1,000 people)".