PE-10

Soundness Ranking of the Sex Ratio at Birth of Japanese Prefectures using Partial Order Theory.

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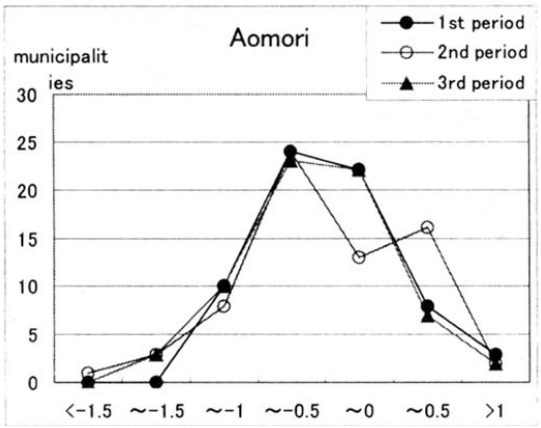
Introduction: The change of the male portion of children (sex ratio) at birth has been taken attention from the point of the environmental pollution. We proposed to apply a global equation to indicate a significant low or high sex ratio among general populations and showed a characteristic trend of the sex ratio in Japan. But more convenient method to compare the sex ratio at birth among various populations are needed in order to recognize if public health problems existed.

Method: The sex ratio at birth during 1974 to 1997 were obtained from the national census and these 24 years were divided into three periods. The normalized sex ratio (NSR) was calculated for all the municipalities in a prefecture by the method explained in our previous paper[1]. The histogram of the municipalities on divided NSRs was drawn for each prefecture and created indicators which reflect its shape. These three indicators as well as NSRs were used for making a linear ranking concerning soundness of the sex ratio for 47 prefectures, by using the HASSE Diagram method[2]

Results: An example of the histogram is shown below.



In this prefecture, the peak of the diagram is - 0.5, indicator of low NSR is 20%, and that of sound NSR is 69% for the 1st period. These three indicators and the NSR value for each prefecture (-0.39 for Aomori) were used in the ranking calculation. The resulting best and worst ten prefectures are listed below.

	Best ten prefectures		
	1st period	2nd period	3rd period
Best	Yamaguchi	Okinawa	Ooita
	Okinawa	Kagawa	Okinawa
	Tokushima	Yamaguchi	Saga
	Ehime	Hiroshima	Yamaguchi
	Nagasaki	Tottori	Ehime
	Kumamoto	Wakayama	Tokushima
	Kochi	Ooita	Kumamoto
	Saga	Kyoto	Kochi
	Hyogo	Kochi	Hyogo
	Wakayama	Kagoshima	Nagano

	Worst ten prefectures		
	1st period	2nd period	3rd period
	Saitama	Oosaka	Iwate
	Kagawa	Kanagawa	Tokyo
	Fukuoka	Iwate	Niigata
	Tokyo	Ibaraki	Fukuoka
	Nara	Aichi	Nara
	Oosaka	Hokkaido	Kyoto
	Niigata	Niigata	Aichi
	Kyoto	Chiba	Oosaka
	Ishikawa	Shizuoka	Ishikawa
Worst	Aichi	Tokyo	Saitama

[1]Matsuzaki SY. and Yamazaki M., Environ. Sci. 8, 115-6, 2001

[2]Halfon E. and Brueggemann R., Proceedings of the Workshop on Order Theoretical Tools in Environmental Sciences, Berlin, 1998