

A Japanese labor statistic “MAIKIN” has a fundamental fragile structure

I am a molecular biologist in a human genetics field, and retired a long time ago. Though my carrier, I was aware of many errors and misuse of statistics even in the top class of Japanese scientists. So, I have been keeping in mind to use statistics adequately

Currently, a labor statistic, MAIKIN in Japanese, is one of the most hot political issues in Japan after revealing violation of rules in its survey. So, I searched available information on the survey, and easily found a fundamental fragile structure to tabulate the national average wage, that many people focus on.

The survey uses stratified sampling after dividing into 4 groups (called strata) in terms of number of laborers of “companies”, correctly, bases of companies, and including some other organizations in public domains, but here use “company” in ease. Why using stratified sampling? Most Japanese simply answer to reveal features in the respective groups, but haven’t thought an uneven structure of the target population, where big companies are rare, but have huge laborers, roughly 0.3% and >10%, respectively.

The political issue was aroused by the fact that our government has not been investigating in a periods about 1000 out of 1500 big companies in the Tokyo area, which violates the rule “complete survey.” But most people haven’t thought why such a rule is set. The lower limit of the big company group is set on 500 laborers, but a small fraction of the group have huge laborers, more than 10,000, which means more than 20-folds of the lower limit. If random sampling is conducted, such huge companies are sometime included, and others not. So, the result would considerably vary. In these cases, stable inclusion of such “influencers,” rather than random sampling, is required for stable and reliable results. In most natural scientific fields, extra-ordinal upper or lower cases are rare, and if so, statistic is done after logarithmic transformation. In contrast, it is quite common in economics fields where a large number of general public and a small number of millionaire with some intermediates. Through these, firm grasp of low probability events is the key concept which basic science tells (i.e. risk management).

Let us go back to MAIKIN. The statistics is essentially conducted by 2 steps. First, estimation of number of laborers and average wage per month per laborer (av. wage, in short) in the 4 respective groups. Second, tabulation of the national av. wage (n-av-wage), highlight most people concern, with a weighed meaning method, where the estimated numbers of laborers in respective groups are functioned as weight. So, the n-av- wage is very sensitive to weight shifts including natural drifts, change of the master

table for sampling, and others. I referred to “e-STAT” Japanese government provides, and found notable changes in the number of laborers in the groups as shown in Figure, where A group indicates larger companies with relatively high wage, D smaller companies with relatively low wage, with B and C as intermediates.

I would not like to get deeply into economics and politics, but I must add the followings to avoid any confusion. The master table for sampling is changed to its update version at an interval. A large drop in the D group on January 2018 occurred at such change time, and is well accounted for by time lag, since the master used there reflected a state on July 2014 and the current method restricts the number of laborers to those described in the master. Now our government has added gracious explanation on its web site and the Asahi newspaper recently reported an upward effect of the master change with values of ¥967 and 0.4%.on the n-av-wage. (my calculation ¥2,200). However, I wonder how many Japanese could imagine that about 1.9 million laborers suddenly disappeared in the particular group at the beginning of 2018 (1.55M in whole). It surely did not happen in the real world but it is a kind of magic appeared on its statistics. I hope the figure shown here may help many ordinary people and economists for better understanding the MAIKIN survey, and wish to improve statistics literacy in the Japanese society.

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February 10, 2019

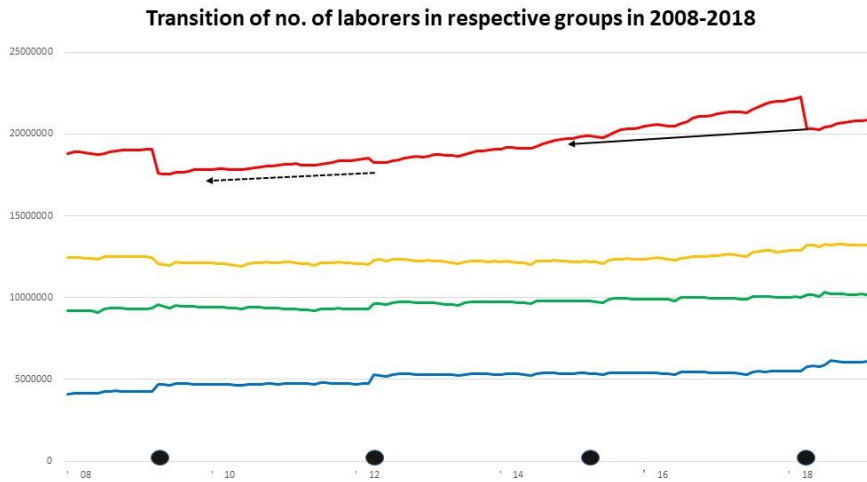
February 21, 2019            final revision

April 21, 2019              PDF conversion

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- A Large companies with relatively high wage
- B and C Intermediates
- D Small companies with relatively low wage

- Change time of samples
- ← Change of the master to reflect a state at the arrowhead