

## Research on the Modes of Statistical Education and Training in China

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Since China is a populous country, there are numerous personnel working in statistics. According to subjects of the statistical education and trainings, they can be divided into four categories, namely

- Official statistical system covers 200,000 people, of which, 100,000 belong to comprehensive statistics (statistical offices at national, provincial, municipal and county level), and the other 100,000 belong to statistical departments. What's more, there are 100,000 statisticians of villages and towns which are directly under the administration of official statistical offices and 100,000 employed assistant surveyors.
- Statistical practitioners: There are millions of statistical practitioners engaging in statistics in the surveyed entities.
- The popularization of statistical knowledge to the public covers the students of primary and secondary schools and colleges, officials at various levels and the general public in society.
- International statistical training focuses on the training of official statisticians in developing countries, in order to raise statistical capabilities.

### 1. Trainings to statisticians in official statistical system

Staff composition: There are 400,000 official statisticians, statisticians of villages and towns directly under the administration of official statistical offices, and the employed assistant surveyors, of this total

- 100,000 are from statistical offices at national, provincial, municipal and county level
- 100,000 are from statistical departments
- 100,000 are statisticians of villages and towns
- 100,000 are assistant surveyors

There are many personnel working in China's official statistical system, and the qualities of them have a direct bearing on the quality of statistics and on the credibility of official statistics. Upon years of research and practice, we uphold that official statistical system adopt the mode of N+X, which is conducive to the professional competence of statisticians. In this mode, N refers to 2 to 4 universal basic knowledge, and X refers to professional statistical knowledge. Thus, N+X refers to the indispensable basic knowledge of those working in official statistics, and it belongs to what should be learned and grasped.

How to realize N+X?

1.1 Trainings to the personnel of county statistical offices (including those of villages and towns): 2+1

“2”refers to the universal basic knowledge: the realization of statistical basic knowledge by Excel and brief statistical analysis.

This conclusion is reached based on years of training practice and vast survey researches.

Considering that the older statisticians have relatively low educational level but more

practical experience, and those newly recruited personnel in the past 10 years have various professional backgrounds, the trainings of statistical basic knowledge is necessary. Excel has a very strong statistical function, which is enough for the statistical work at county level. When compiling textbooks, the statistical basic knowledge shall be integrated with the strong practical applicability of Excel, e.g. applying Excel to classify and compile statistics, work out statistical tables and charts, and conduct statistical analysis, etc.

Since the county governments have attached great importance to the local eco-social development, the statisticians at county level must grasp the preliminary statistical analysis capabilities, e.g. increase rate, ratio, structure, factor analysis, suggestions and solutions, etc, to provide consultancy to the decision making of the county governments.

“1” refers to the knowledge of statisticians in their professional field, e.g. industrial statistics, statistics in trade, statistics in price, etc.

The contents of training to statistician of villages and towns are basically same with those of county statisticians, but with more emphasis on applicability and operability.

#### 1.2 Trainings to personnel of municipal statistical offices: 3+1

“3” includes: the realization of statistical basic knowledge by Excel, brief statistical analysis, and the basic knowledge of National Accounts.

The realization of statistical basic knowledge by Excel and the brief statistical analysis are similar to those of the county statisticians (including the statisticians of villages and towns), but the basic knowledge of National Accounts is the added contents. The reason for adding this content is: National Accounts covers the core content of economics, and upon training the trainees can get a comprehensive understanding to the whole process, which is beneficial to statistical analysis.

“1” refers to the statistical basic knowledge of statisticians in their professional field, i.e. industrial statistics, statistics in price, etc.

Different from the trainings to statisticians at county (villages and towns) level, municipal statisticians can independently select other courses on the basis of 3+1, e.g. economics, statistical analysis software, etc.

#### 1.3 Trainings to personnel of provincial statistical offices: 4+1 (including the personnel of National Bureau of Statistics of China)

“4” refers to the universal basic knowledge: statistical basic knowledge, computer technology (statistical analysis software), statistical analysis report, and National Accounts (or sample survey).

The meaning of “1” is same with the above.

Based on this, each personnel can also select other courses according to his interest, e.g. macro-economic situation, economics, cloud computing, etc.

The trainings to the personnel of NBS are similar to those of provincial statisticians, with slight changes and improvement. In terms of the selective course, in particular, lectures are normally arranged for every two weeks, with the contents covering macro-economic situation,

world economic outlook, big data, leadership, etc.

The trainings to statisticians at various departments are independently organized and implemented by the departments in accordance with the national statistical methods and regulations.

#### 1.4 Trainings to assistant surveyors

The assistant surveyors are employed to collect data on agricultural output, livestock output and price for urban and rural household survey, etc. , and the basic contents of the trainings to them include Statistics Laws and regulations, professional ethics and professional skills.

Concerning the trainings to the above four category of personnel, the textbooks, teaching films and courseware are compiled and made by Statistical Trainings and Education Center of National Bureau of Statistics of China (NBS), and various statistical offices are responsible and implement the trainings, in such forms as teaching face-to-face, watching video-clips, learning on-line, etc.

## 2. Trainings to statistical practitioners

There are millions of statistical practitioners in the legal entities regularly submitting statistical table to the statistical offices. According to the data in China's Statistical Yearbook, in 2011 there have been 9.6 million legal entities in China.

To part of the statistical practitioners, we adopt two forms of training.

### 2.1 The affirmation by Statistical Competence Test

Based on the Statistics Law, NBS issued the Methods on Affirmation of Statistical Competence in 2005, specifying that "In such statistical subjects as national organ, social organization, enterprises and institutions and other organizations, the personnel undertaking regular official statistical surveys shall possess statistical competence, and obtain the Statistical Competence Certificate."

To obtain the Statistical Competence Certificate, the practitioners shall sit the National Statistical Competence Test based on the trainings they have received. The contents of the Test include statistical basic knowledge and statistical practice, and the basic knowledge of Statistics Law. Only by passing the two courses can they obtain the Statistical Competence Certificate which is valid throughout the country and lifelong.

From 2005 to the end of 2012, there have been 2.1 million personnel obtained Statistical Competence Certificate, yet we still have a long way to go to realize the goal that all practitioners have the Certificate.

### 2.2 Further education

Obtaining the Statistical Competence Certificate is not once for all, the obtainers need also to attend one further education every two years, which requires at least 48 class hours. The contents of on-going training are closely related with the statistical work, which will be helpful to the improvement of working efficiency and the quality of statistics.

The courses of further education are:

- Guideline of Filling in and submission of Integrated Questionnaires for Industrial Enterprises
- Guideline of Filling in and submission of Integrated Questionnaires for Construction Enterprises

- Interpretation of Hot Issues in Statistics
- Interpretation of Statistical Terminologies and Hot Issues
- Thirty Q&As on Statistical “Four Major Projects”
- Interpretation of New Statistics Law
- Guideline of Filling in and submission of Grass-root Statistical Table
- Grass-root Statistical Analysis: Case Study
- Business Statistical Analysis Methods and Case Study
- Grass-root Statistical Report Writing
- The Realization of Statistical Analysis by EXCEL
- Basic Computer Skills for Grass-root Statisticians
- Excel and Statistics

At present, there are about 300,000 statistical practitioners attending the on-going training every year.

### 3. The popularization of statistical knowledge to the public

Among the statistical education and trainings, this work covers the biggest scale and involves the most personnel. Currently, we conduct the work from three aspects:

#### 3.1 Adding the basic statistical knowledge to the textbooks of primary and secondary school

Since its initiation in 1990s, statistical contents have all been added to the mathematical textbooks of primary school, junior high school and senior high school in certain proportion, including statistical data, data compilation, statistical chart, calculation of mean value, probability, statistical distribution, etc. The implementation of this work realized the concept of “statistics shall be grasped from the baby and from students” in real sense.

**统计与可能性**

任意摸一个球，可能是什么颜色的球？

每次摸出1个球，再放回口袋，一共摸40次。

先估计一下，红球和黄球可能各摸到多少次。再把每次摸得的结果用画“正”字的方法记录下来，一画表示1次，一个“正”字表示5次。

**摸球结果记录表**

红球	
黄球	

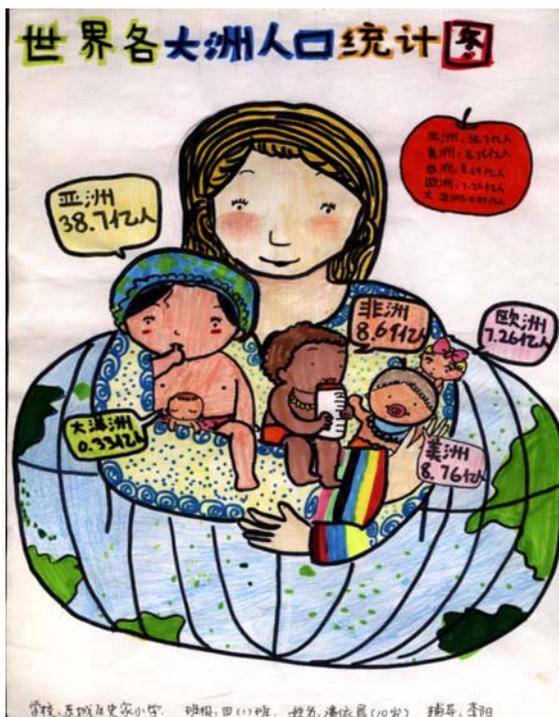
你能把记录的结果填在下面的统计表里吗？

**摸球结果统计表**

次数	合计	红球	黄球

统计的结果和你的估计差不多吗？你发现了什么？在小组里交流。

To coordinate in the teaching of primary school and middle school, NBS has initiated the trial of Statistical Chart Contest of Primary and Middle School Students, in order to make statistical thinking embedded in their mind.



3.2 Statistical Module Contest is held to college students

Throughout the country, there are over 170 institutions of higher learning having statistical major or statistical course. To cultivate the backup talents of statistics, NBS organizes one National Statistical Module Contest of College Students every two years; normally with around 400 groups attending the contest (each group has 3 students).

3.3 Popularizing statistical knowledge to government leaders at various levels

Basic statistical knowledge trainings are carried out to the cadres at county (director) level or above, in order to make them recognize

statistics, pay attention to statistics, and do statistics strictly by law. NBS has compiled the textbook of Applied Statistics Theories, and made it a compulsory textbook for them to read.

3.4 Popularizing statistical knowledge to the public

Since the general public accepts statistical knowledge in a passive or unconscious manner, the statistical offices need to adopt the forms favored by the public to popularize statistical knowledge. To this end, NBS made the documentary of How to Produce Statistics—GDP, How to Produce CPI, Income and Expenditure of Urban and Rural Residents, etc., so as to make the public understand the basic statistical knowledge, gradually understand statistical work, and get rid of the prejudice and doubt to statistics.

#### 4. Actively conducting international statistical trainings

From 2009, NBS began to carry out international statistical trainings. Till now, 22 international workshops and seminars have been carried out, covering various topics such as National Economic Accounting, industrial statistics, population statistics, social statistics, PPP, etc., and 423 international participants have been trained.

The international statistical workshops are conducted from two aspects:

4.1 Cooperating with United Nations Statistics Division (UNSD) to train statisticians of developing countries by setting up Trust Fund Program

In 2009, the Chinese Government and United Nations (UN) signed the Cooperation Agreement to establish Trust Fund Program, according to which the Chinese Government donates 5 million RMB every year to UN to organize workshops for official statisticians of developing countries, to raise statistical capacity. Every year, under the Trust Fund Program, 3 to 4 international workshops are held in China, with the participants of statisticians of the developing countries in the Asia-Pacific Region.

4.2 Independently carrying out international statistical workshops by establishing China International Statistical Training Center (CISTC)

In January 2010, with the approval of the Chinese Government, NBS established CISTC, which marked the formal initiation of international statistical training. In January 2011, the Memorandum of Understanding on Cooperation in International Statistical Training between the Chinese Government and UN was signed, and the organization of international training is formally named as China International Statistical Trainings Center in collaboration with UN Statistics (CISTC). CISTC has Advisory Committee and Academic Committee. The members of Advisory Committee includes the chief of such organizations as World Bank, World Health Organization, International Labor Organization (ILO), and United Nations Educational, Scientific, and Cultural Organization (UNESCO), and the head of statistical offices of Brazil, Russia, India, Republic of Korea, and South Africa. This strong team fully reflects that NBS has the resolve and determination to earnestly learn from the internationally advanced experience, and also reflect the emphasis and support attached by the international organizations and the Chinese Government. The Committee is jointly chaired by Mr. Ma Jiantang, Commissioner of NBS, and Mr. Paul Cheung, Director of UNSD. Every year CISTC holds 6 to 8 multinational (bilateral) international statistical workshops.