

The Challenges of National Statistics Office in the ICT Revolution

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Statistics Bureau,
Ministry of Internal Affairs
and Communications

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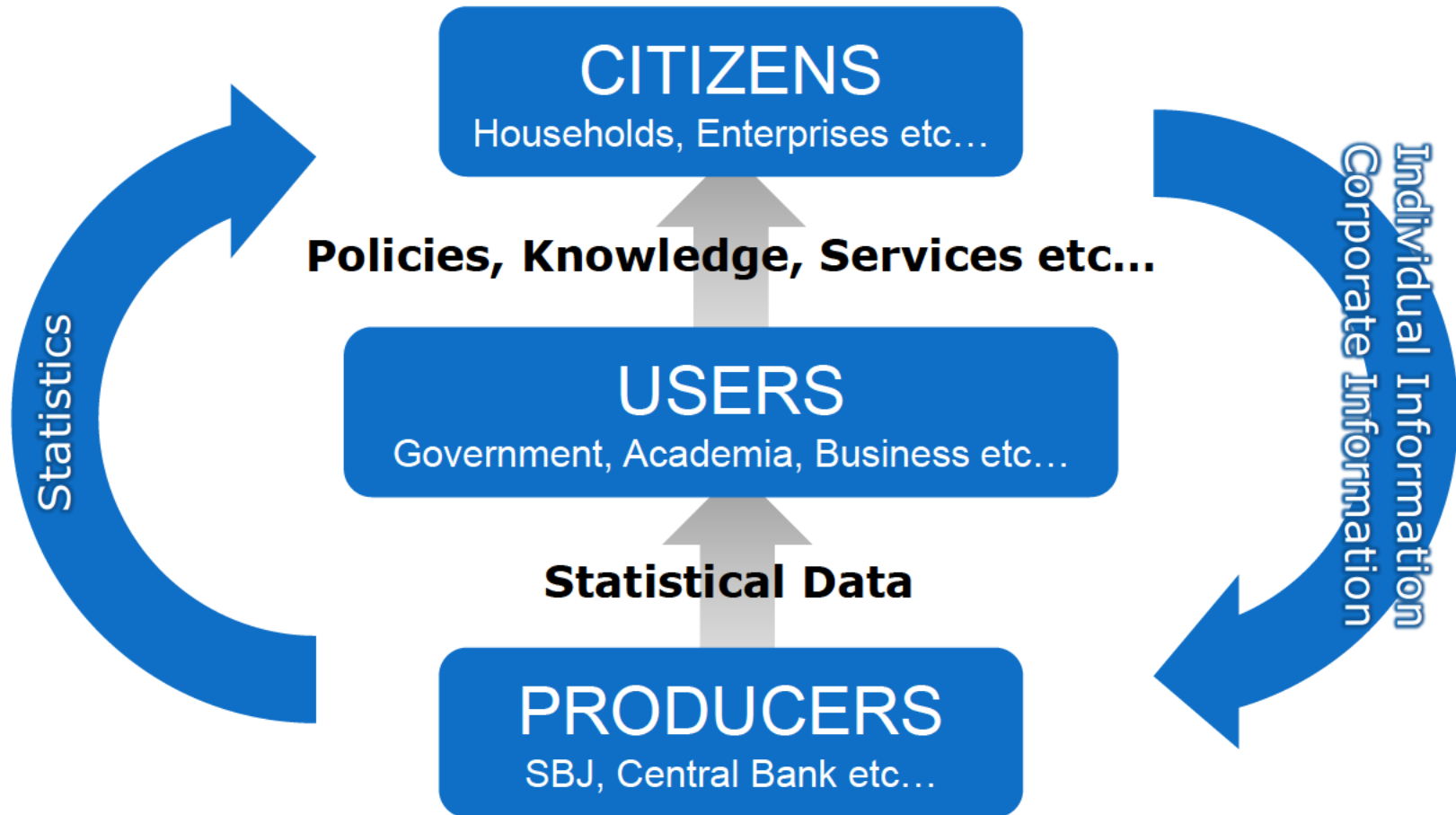
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1. Our Mission

Statistics: Information Infrastructure for Society



Our Mission and Guiding Principles



Statistics Bureau,
Ministry of Internal Affairs
and Communications

To produce relevant, objective and accurate statistics for society

To provide readily accessible and valuable statistical information

To cooperate closely with local statistical offices

To build up a high level of expertise, and
to contribute to the development of statistics in Japan and abroad

To pay due attention to response burdens, and
to protect statistical confidentiality

2. Background

~Changing Environment Around Official Statistics~

Growing Demand for Open Data

G8 Open Data Charter published in June 2013

“missed opportunity”

Data are not always shared in ways that are accessible to the public.
Open data have huge potential to build better societies.

Open Data Strategies in Japan

Jul. 2012 Open Government Data Strategy

Jun. 2013 Declaration to be the World's Most Advanced IT Nation

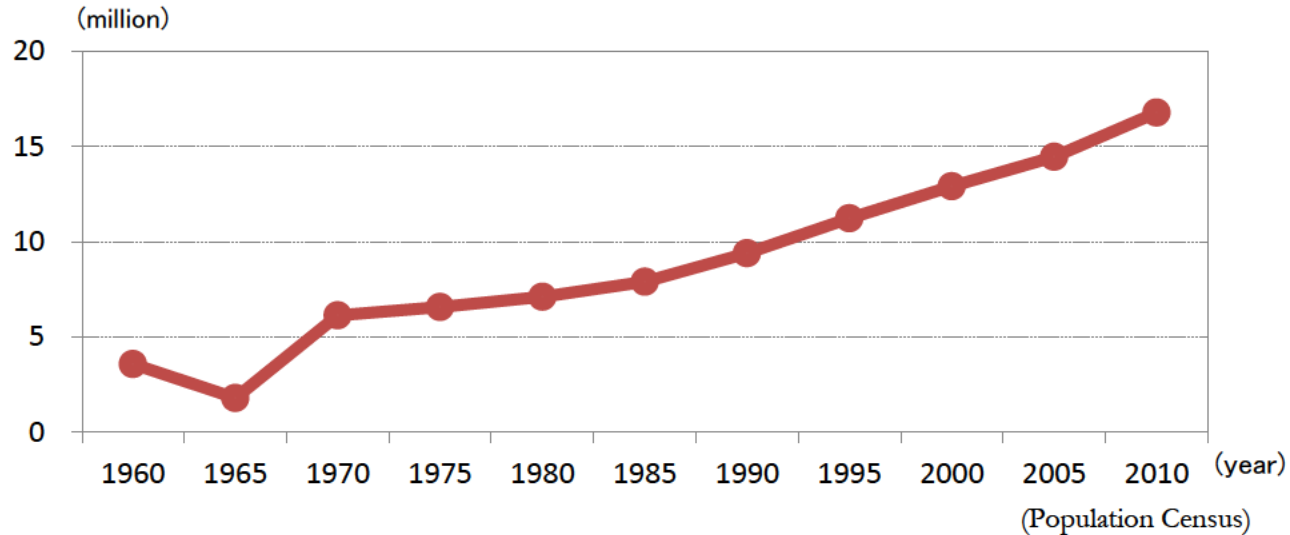
Fundamental Principles of Official Statistics (1994~)

Official statistics are to be made available on an impartial basis.

- We will encourage advanced uses of open official statistics.

Changes in Lifestyle and Attitude

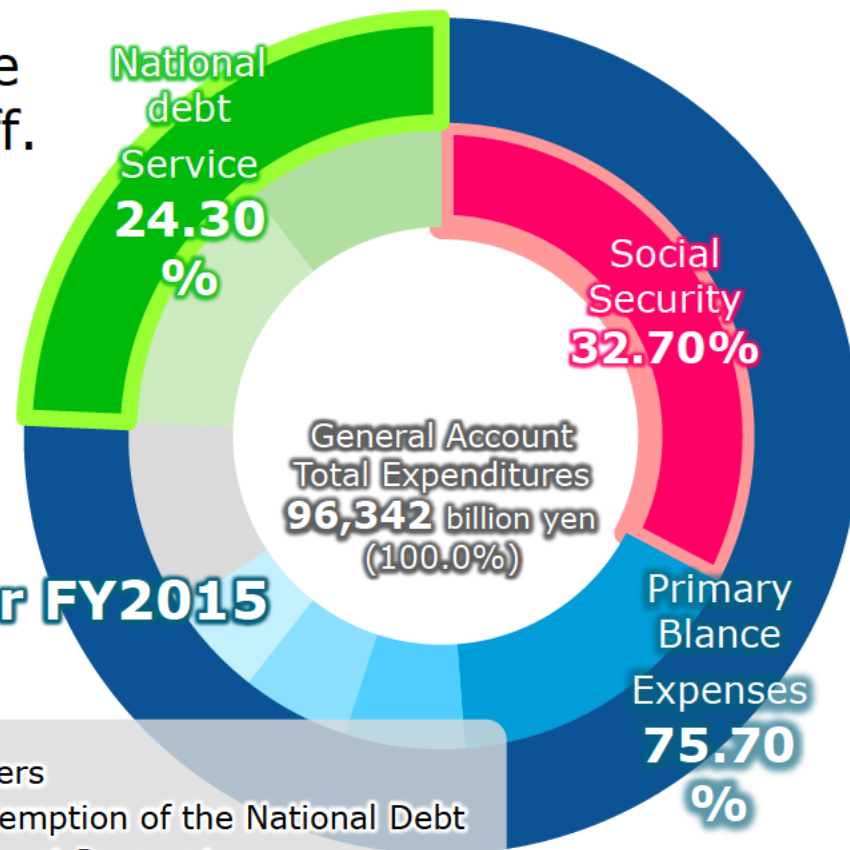
- Increasing number of one-person households



- Increasing number of apartments and condominiums with self-locking doors for main entrances
- Growing concerns around privacy
Act on the Protection of Personal Information was enforced in April 2005.

Constraints in Financial and Human Resources

- Increasing pressures to reduce budget and streamline the staff.
 - Severe fiscal condition
 - Decreasing number of staff



General Account Budget for FY2015 in Japan

- | | |
|-------------------------------------|-----------------------------------|
| ■ Local Allocation Tax Grants, etc. | ■ Others |
| ■ Public Works | ■ Redemption of the National Debt |
| ■ Education & Science | ■ Interest Payments |
| ■ National Defense | |

What we should consider is...

Growing Demand for
Open Data

Changes and
Constraints

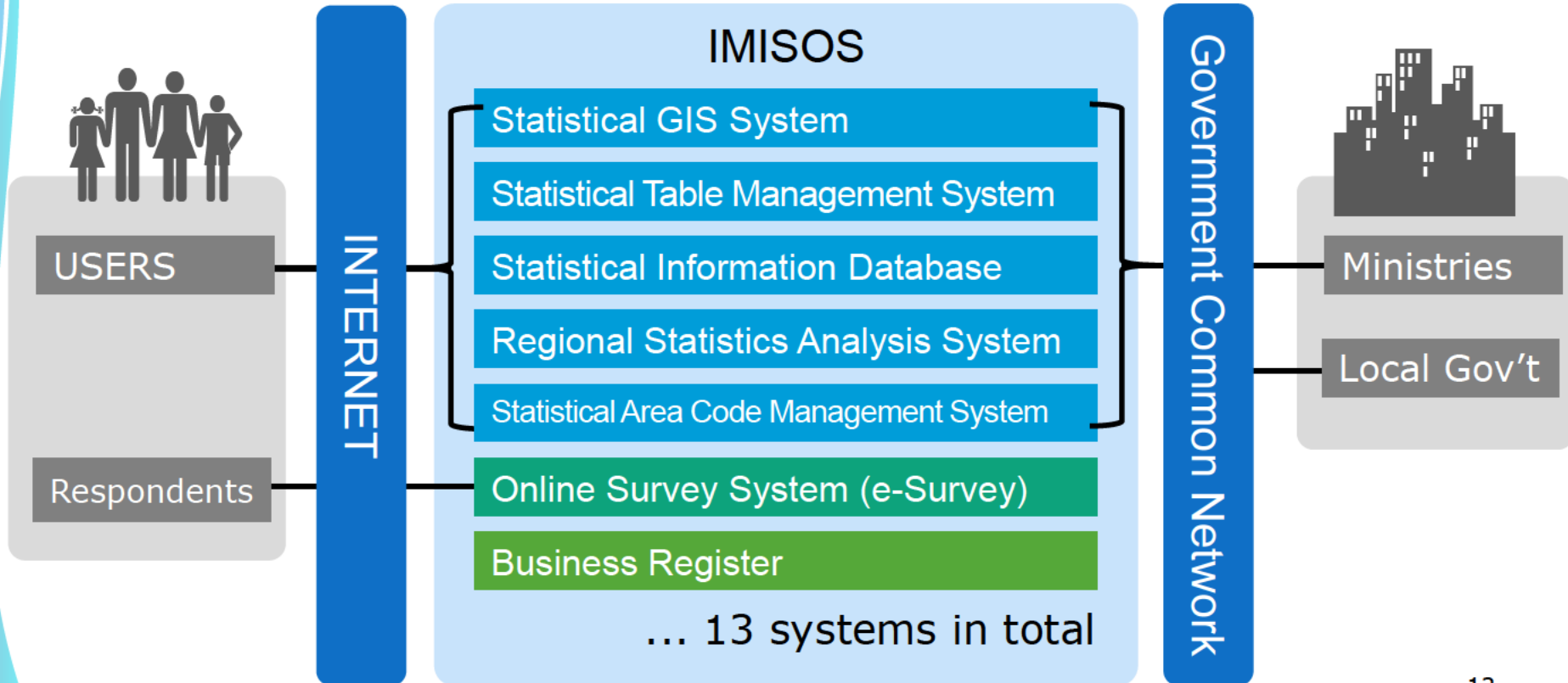


- Making use of advanced ICT
- Developing new data sources,
e.g. administrative records, big data
- Achieving higher efficiency in production of official statistics
(without compromising quality requirements)
- Developing human resources for advanced uses of data
(inside and outside NSO)

3. Statistical Open Data in Japan

~ Advanced Use of Statistics ~

The Inter-Ministry Information System for Official Statistics (IMISOS)



e-Stat: Portal site for official statistics

The screenshot shows the e-Stat portal interface. At the top right, there are links for "Contact Us", "Help", and "Japanese". The main header features the "e-Stat" logo and the text "Japan in figures" and "e-Stat is a portal site of the Government Statistics for Japan statics." Below this is a navigation bar with four main sections: "Search for statistics of Japan", "Easy Access to main statistics", "Learn metadata", and "Search Statistics site & Links".

The "Search for statistics of Japan" section includes a search box and the text: "You can search statistics that managed by various ministries. Search by keyword (Specify conditions)".

The "Easy Access to main statistics" section includes the text: "By the maps and charts, statistics can be visible." and lists links for "Japan in Figures and Graphs" and "Main Economic and Financial Statistics(IMF)".

The "Learn metadata" section includes the text: "Explains the basic terms and code of statistical data." and lists links for "Statistical Classifications (Industry, Occupation, etc) (Japanese only)" and "Statistical Area Code (Japanese only)".

Other features include a "Quick poll" button with the text "Please give me cooperation." and a "Let's study about Statistics" button with the text "Understand & Study Statistics".

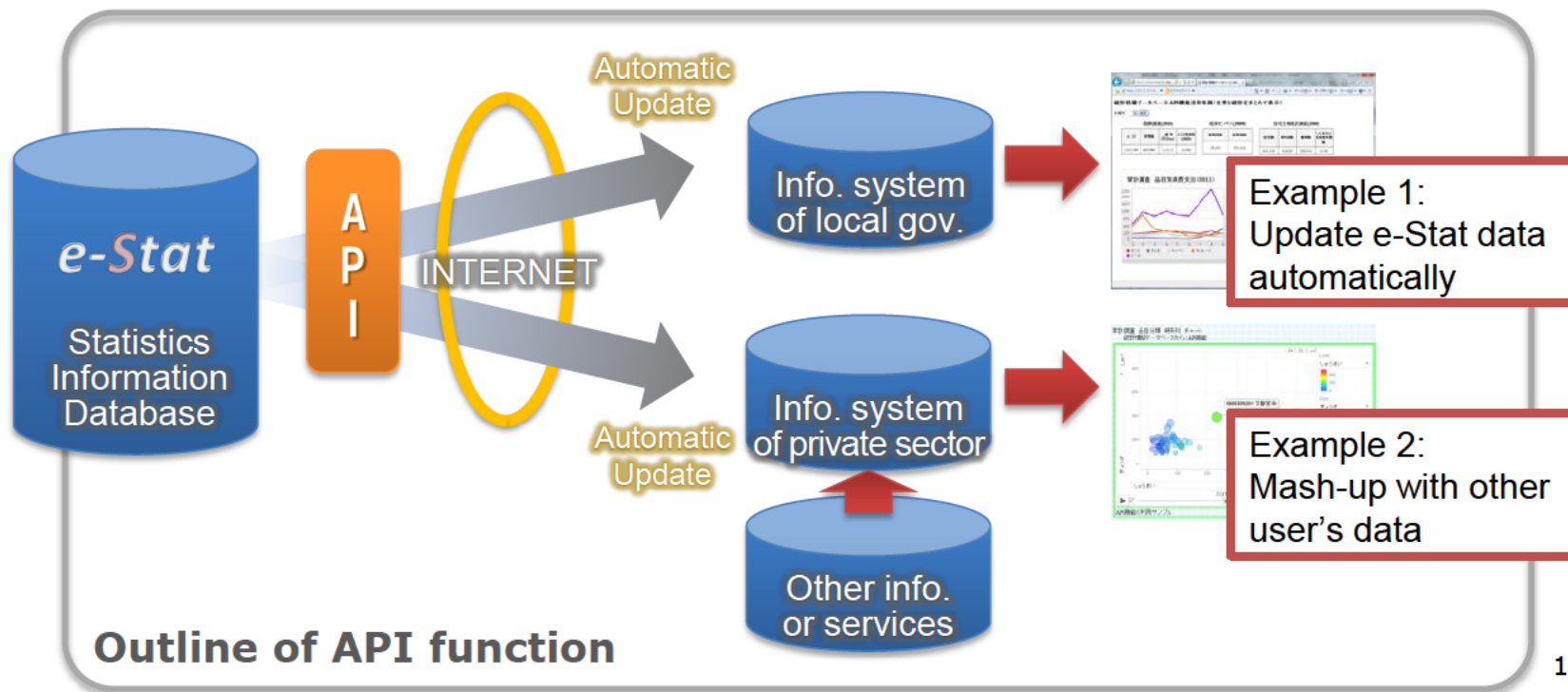
A "Ranking" section is visible at the bottom right, showing a table with columns for "Keyword" and "Statistical table".

Ranking	Keyword	Statistical table
1	8	Gdp
2		Population
3		

- **Statistical information database:**
Approx. **590,000** tables for **490** types of official statistics
- **Accessed:** approx. **20 million** times (FY2014)

API function for advanced use of statistics

- The API function installed into e-Stat offers several benefits.
 - The most recent data of e-Stat is automatically updated to the user's system.
 - Advanced analysis of statistical data by mash-up with other data of users is available.



Example of using API functions

- Data provided by SBJ help the private sector to develop new services.



The screenshot shows a Google Maps interface with a red location pin. A white callout box points to the map, containing the text: "The system automatically downloads up-to-date data from the population census and calculates the estimated price of real estate." To the right of the map is a property details panel. The panel title is "若松町周辺の予測販売価格" (Estimated sales price around Wakamatsu-cho). The price is listed as "¥28,100,000 [?]". Below the price, there are fields for "種類" (Type: 中古マンション等), "階取り" (Floor: 1LDK), "建築年" (Year built: 2008年(平成20年)), and "用途" (Use: SRC). There are two orange buttons: "詳しい査定依頼" (Request detailed appraisal) and "周辺内覧希望" (Request viewing in the area). At the bottom of the panel, there is a disclaimer: "物件のスペックを選択すると、予測販売価格が表示されます。この予測価格より実際の価格が高い場合は割高物件、安い場合は割安物件と考えられます。但し、実際の売買は個別の事情により左右されます。本サービスはこの価格による売買成立や買取等を保証するものではありません。"

Example of using API functions

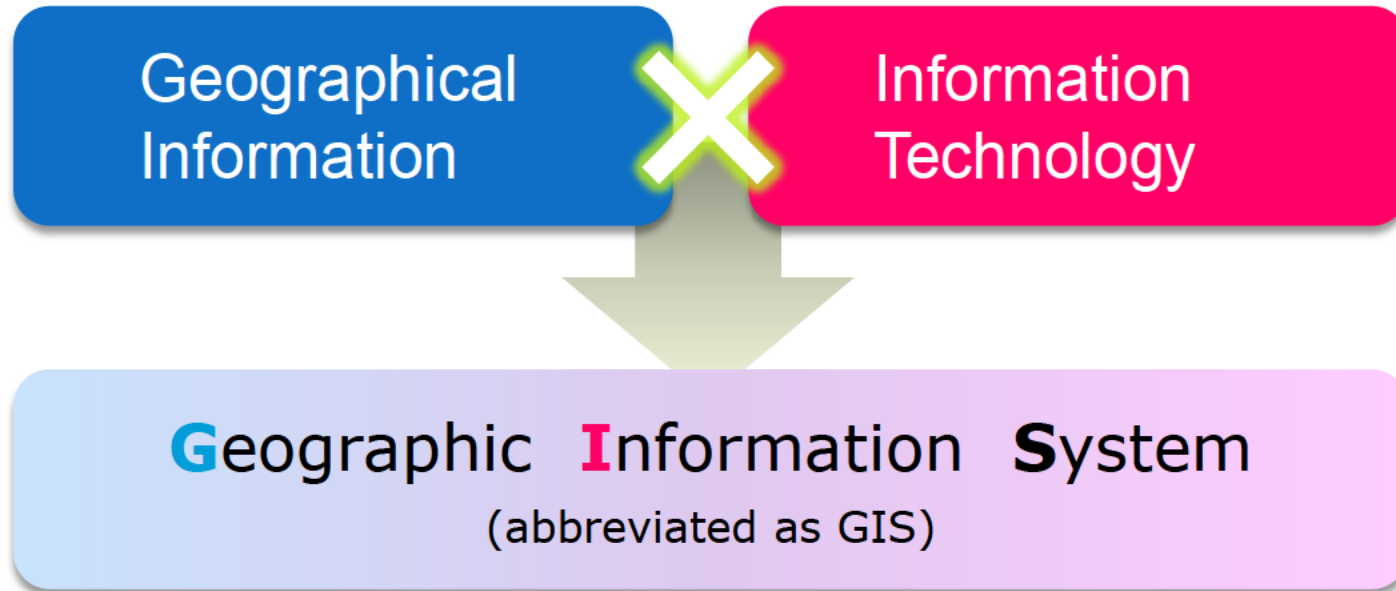
- “Smartphone App on Statistics” was released on 15 April 2014.
- The aim of this app is to promote the use of official statistics, especially among the young generation.
- The app offers several unique contents.
For example, combined with GPS, the app provides you statistical data about the city around you.



Smartphone
X
e-Stat



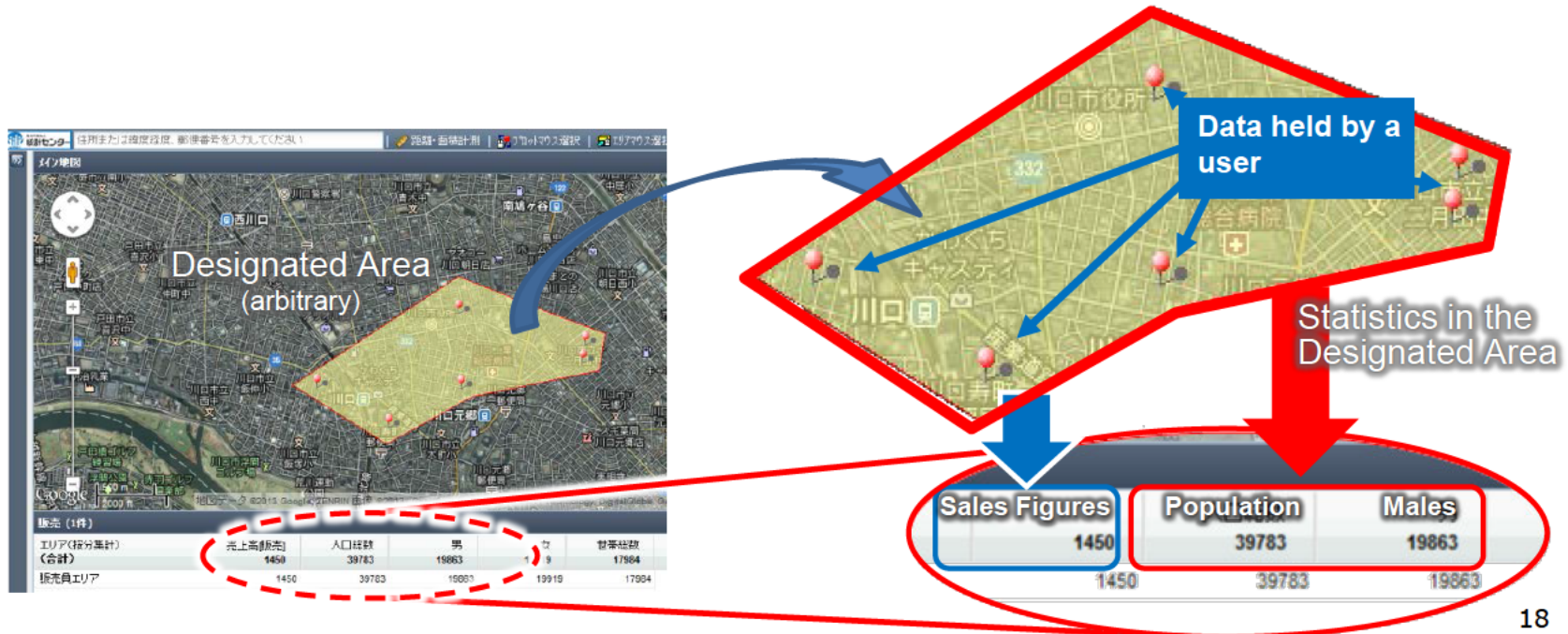
Statistical GIS for Advanced Use of Statistics



- Statistical GIS is a system integrating statistical data into geographical information.
- Statistical GIS allows for further analysis of data and advanced use of official statistics.

Example of using Statistical GIS

- “jSTAT MAP”, statistical GIS installed into e-Stat, enabling
 - retrieval of data held by a user
 - compilation of statistics data in an arbitrarily designated area



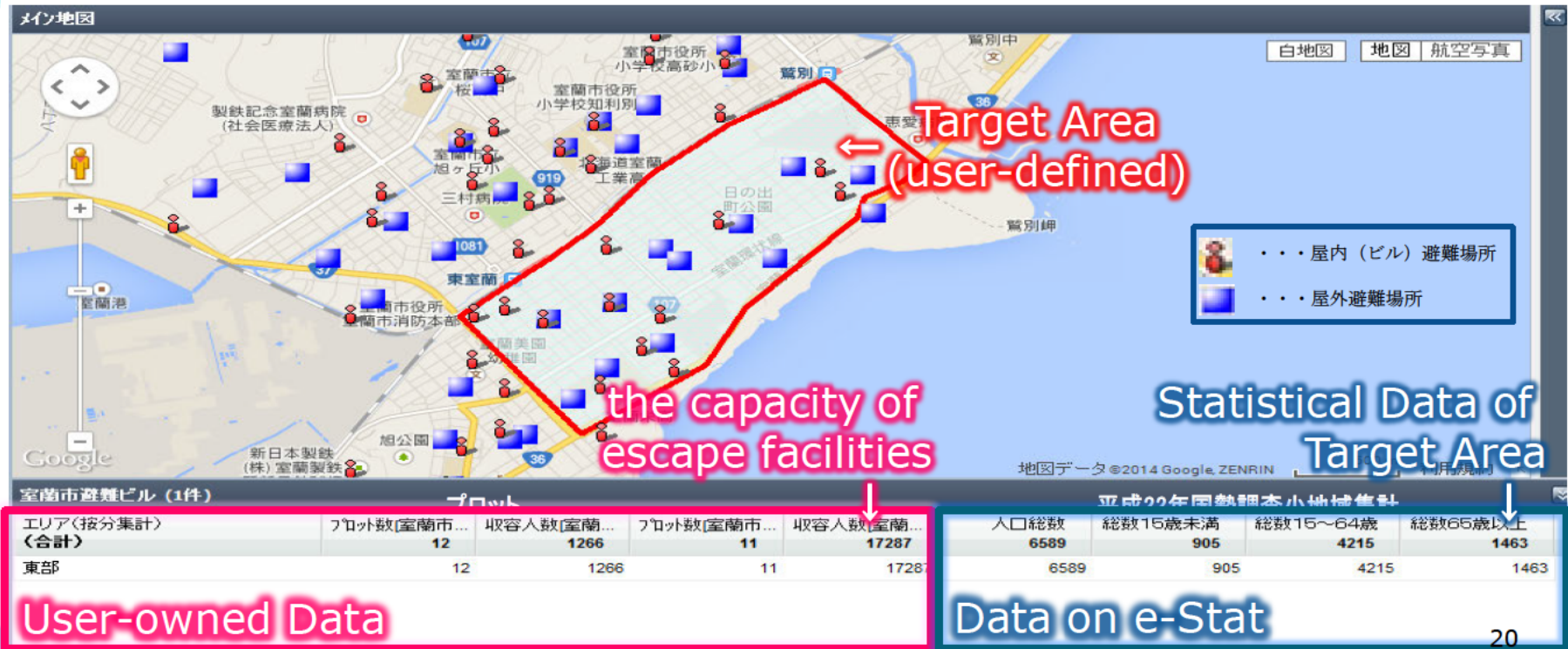
Example of using Statistical GIS

- SBJ releases an app which enables use of "jSTAT MAP" on tablets.



Example of using Statistical GIS

- Preparation against earthquakes is a critical issue in Japan.
- Statistical GIS serves as a powerful tool to determine areas to evacuate.

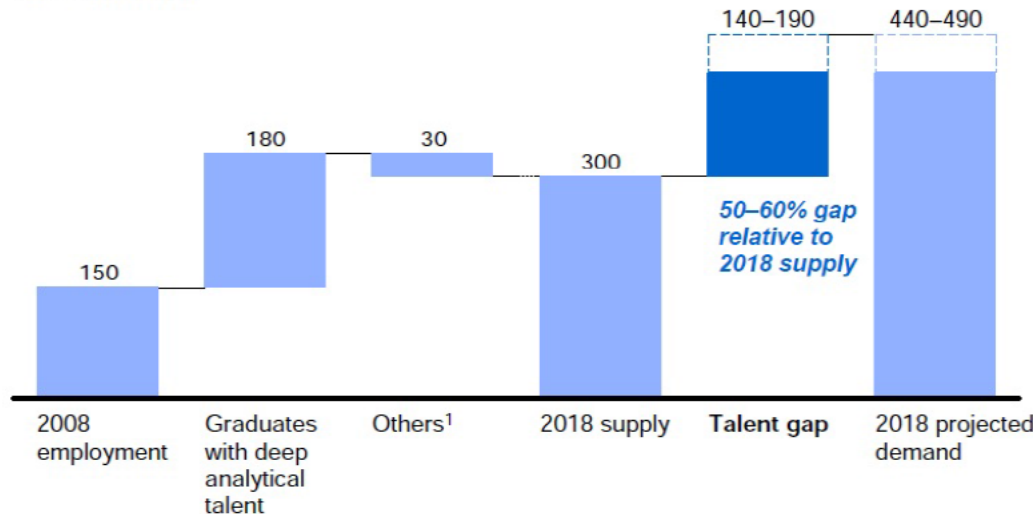


Shortage of Highly Skilled Analytical Talent

- In spite of growing demand for advanced data analyses, human resources with high analytical skills are in short supply
➔ Human resource development needed for highly skilled analytical talent.

Demand for deep analytical talent in the United States could be 50 to 60 percent greater than its projected supply by 2018

Supply and demand of deep analytical talent by 2018
Thousand people



Data Science School: Introduction to Data Analysis

- "Data Science School" provides basic information about how to utilize statistics on computers and/or smartphones.
- This site includes contents which show basic knowledge of statistics for business through manga (cartoons), graphs, and interviews.

カール・ピアソンの標準偏差

イギリスの数理論計学者で、記述統計の大成者であるピアソンは「ヒストグラム」、「標準偏差」など、学校の学習指導要領にも採用されている統計学の基本的な概念を初めて統計学に導入した。彼は著書「科学の文法」で、あらゆる現象は科学の対象になりうるとし、特に統計学を科学という言語における文法に例えて説明し、アインシュタインや、留学中の夏目漱石にも大きな影響を与えた。

標準偏差は、データのばらつきを示す数値で、ピアソンは標準偏差という共通の尺度で、平均から何百分離れているかをいう計算を考案したのですね。

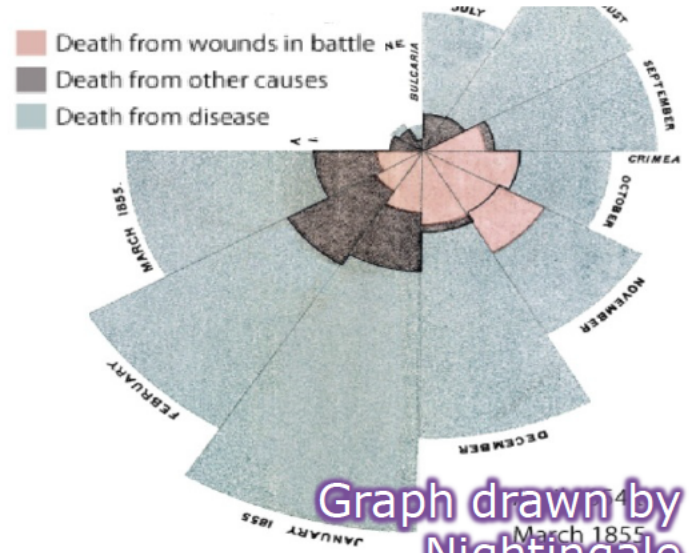
正規分布における平均値と標準偏差の関係

平均 μ
標準偏差 σ

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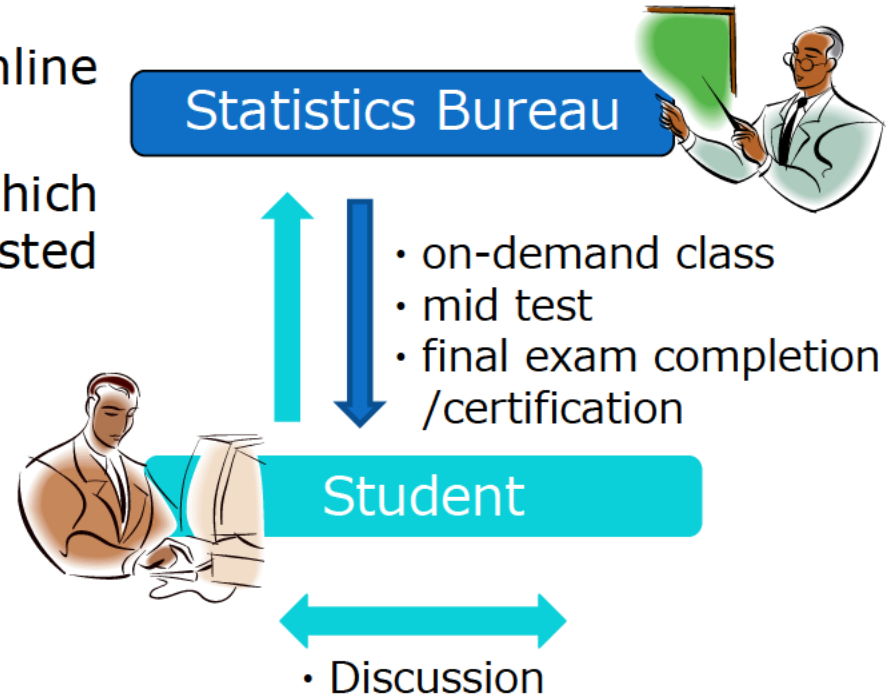
Manga (cartoon) about noted statisticians



Graph drawn by Nightingale March 1855

Data Science Online Course: Advanced Steps of Data Analysis by MOOC

- SBJ launched a massive open online course (MOOC*),
“Data Science Online Courses”, which are open to anyone who is interested in learning about statistics.
- Example:
a four hour course:
10 minutes each lesson,
6 lessons per week,
for 4 weeks

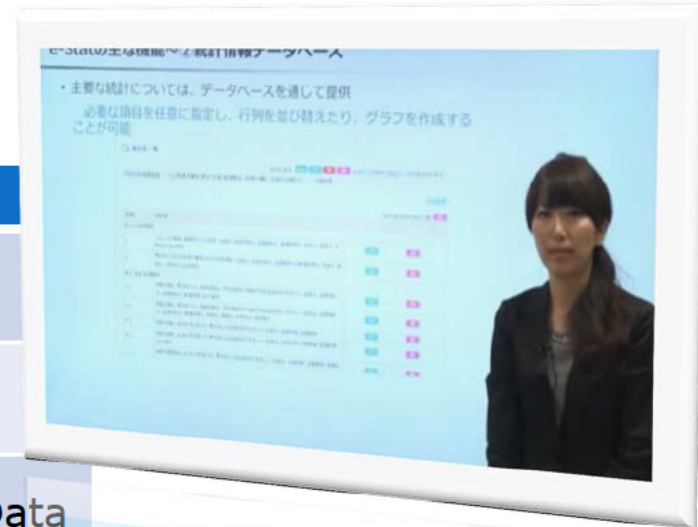


*MOOC: Model for delivering learning content online to any person, with no limit on attendance, free of charge.

The first course, “Introduction to Data Science”

- The first course, “Introduction to Data Science” ,was given from March to May 2015.
- The course provided basic knowledge on statistics and the way to utilize official statistics.
- More than 15,000 people registered.

Week	What to learn
1 st	How to Utilize Data Statistical techniques of the new age
2 nd	How to Characterize Data Distribution, Representative Value, Proportion
3 rd	How to Reveal Relationships between Data
4 th	How to Use e-Stat & Summary



What is MOOC?

First Launched in 2006
by educator Salman Khan

Free of Charge

Unlimited Participation



Open Access via the Web

Online Submission of Reports

Online Exams

Online Discussion Board



Global MOOC

- KHAN ACADEMY
- UDACITY
- coursera
- edX

Local MOOC

- FutureLearn (United Kingdom)
- France Université Numérique (France)
- XuetangX (China)
- **JMOOC** (Japan, since Oct. 2013)

4. Topics of Population Census 2015

Population Census: Guiding Japan's Future

Civil Life

To obtain basic data for academic research, estimates of future population, etc.

Policy

To obtain basic data for employment policies, social welfare plans, disaster prevention measures, etc.

National Governance

To enumerate the legal population to allocate local tax, to provide the sampling frame for surveys, etc.

Democracy

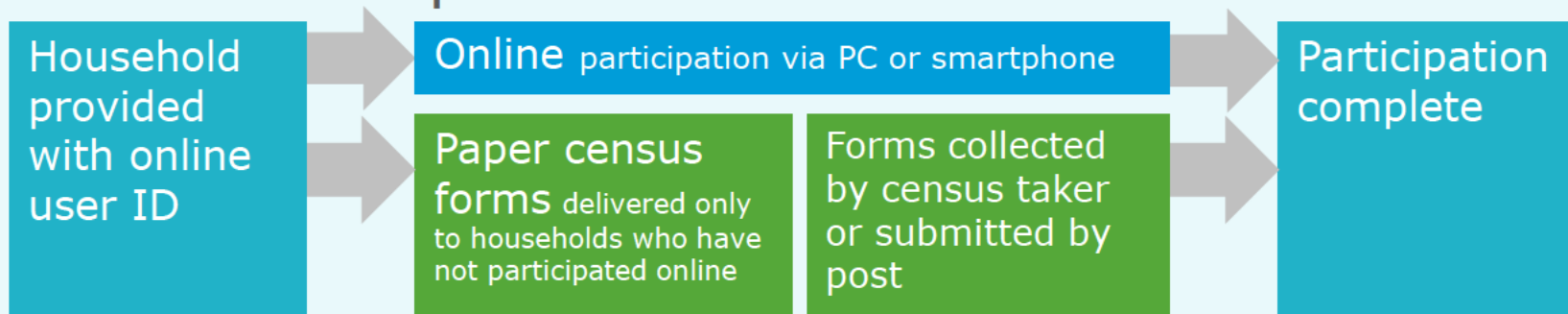
To determine the electoral boundary delimitation, the number of parliament seats, etc.

About Population Census 2015

Census “Big Challenges”

- Representing on online survey of **51 million households** in Japan.
- More than 19 million answers via the Internet.
- Enabling participants to **answer census questions on a smartphone**.
- Revealing the consequences of the East Japan Earthquake (2011).

Flowchart of Population Census 2015



The Largest Online Surveys in the World

- **19.6 million** households took part in the census.
- This number makes Population Census 2015 in Japan **the largest online survey in the world.**

	Total Number of Households [million]	Number of Online Responses [million]
Japan (2015)	51	19.6
Italy (2011)	22	8.4
Korea (2010)	18	8.4
Canada (2011)	13	7.2
Spain (2011)	14	5.5
Germany (2011)	41	4.0
United Kingdom (2011)	23	3.7
Poland (2011)	13	0.25
Brazil (2010)	57	0.03

Online Survey with Smartphone

- Online Population Census System supports smartphones, and detects incorrect entries and blank entries.



Top Menu



Log In Form



Questionnaire



Extensive and Various PR Campaign

- Mass media
 - TV, radio, newspaper, etc.



- Internet
 - Search engine, YouTube, etc.

- Campaign character
- Event



Release of the Results

- Census results are released in a suitable manner.
 - Publication of printed tables
 - Dissemination on computer media
 - Online dissemination
 - ~ using API functions
 - ~ using Statistical GIS

< Release Schedule >

Feb. 2016	Preliminary Counts of the Population and Households
Jun. 2016	Preliminary Sample Tabulation
Oct. 2016	Basic Complete Tabulation on the Population and Households
⋮	



5. Conclusion

Conclusion

Under the changing environment,
SBJ will take on new challenges.

SBJ will:

- make full use of advanced ICT
- encourage advanced use of official statistics
- make efforts to obtain cooperation and assistance of the general public
- promote collaboration with academia and the private sector



SBJ aims at “Statistics for All, with All”

Thank you for your attention



I wish to acknowledge the contribution of
IYAMA Ryo and NAKAMURA Kotaro.