

*Regional Workshop on Statistical Literacy:
Increasing Effective Use of Agricultural and Rural Statistics
13-17 July 2015*

Session 1.4

The Cost of Being Statistically Illiterate on ARS



Statistical Literacy: A Complex Hierarchical Construct

- * **Efforts by the PARIS21 Secretariat – Task Team on Statistical Literacy**
 - * **Notion of statistical literacy as a hierarchical construct**
 - * **Identify levels of this hierarchy across the construct**

Statistical Literacy: A Complex Hierarchical Construct

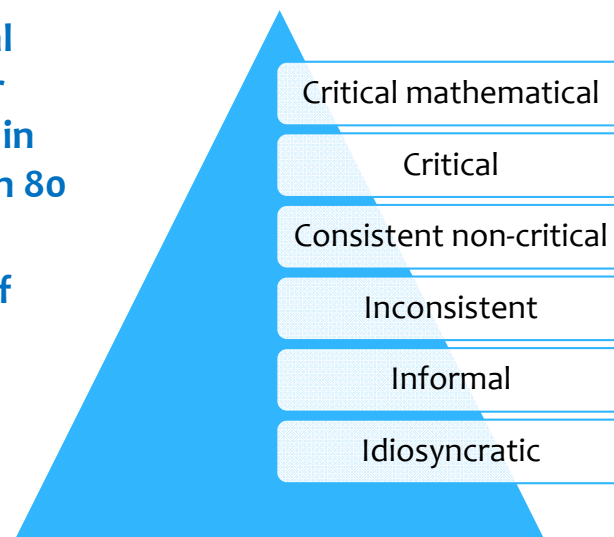
- * Study on the statistical understanding of over 3,000 school students in grades 3 to 9, based on 80 questionnaires
- * Suggested six levels of understanding:
 - * Idiosyncratic
 - * Informal
 - * Inconsistent
 - * Consistent non-critical
 - * Critical; and
 - * Critical mathematical

Source: <http://www.analyticshero.com/2012/10/25/31-essential-quotes-on-analytics-and-data/>



Statistical Literacy: A Complex Hierarchical Construct

- * Study on the statistical understanding of over 3,000 school students in grades 3 to 9, based on 80 questionnaires
- * Suggested six levels of understanding:



Source: <http://www.analyticshero.com/2012/10/25/31-essential-quotes-on-analytics-and-data/>



Benefits of Statistical Literacy

“Statistical literacy is becoming fundamental for living in a full democracy.

There is no doubt that, in the age of information and computers, if we really want to render the citizens as independent as possible and free of influence and conditioning, the only real course of action is to have them attain a higher degree of statistical... literacy.”

Biggeri and Zuliani (1999)

Source: Australian Bureau of Statistics, Statistical Literacy Background Paper
(<http://www.abs.gov.au/websitedbs/CaSHome.nsf/Home/Statistical+Literacy+Competencies.es>)



Benefits of Statistical Literacy

Understanding statistics encountered in everyday life helps enable citizens to make sense of a complex world.

→ Societal functioning, such as crime rates, the spread of diseases, population growth, employment rates, educational achievement and assessing chance based situations such as insurance policies.

Source: Australian Bureau of Statistics, Statistical Literacy Background Paper
(<http://www.abs.gov.au/websitedbs/CaSHome.nsf/Home/Statistical+Literacy+Competencies.es>)



Costs of Statistical Illiteracy

Source: Australian Bureau of Statistics, Statistical Literacy Background Paper
(<http://www.abs.gov.au/websitedbs/CaSHome.nsf/Home/Statistical+Literacy+Competencies.es>)



Costs of Statistical Illiteracy

Lack of statistical literacy can lead to “...misunderstandings, misperceptions, mistrust and misgivings about the value of statistics for guidance in public and private choices.”

(Wallman, 1993)

- *UNFPOS 4 (Prevention of misuse)*

Sound decision making at all levels becomes much more difficult.

Source: Australian Bureau of Statistics, Statistical Literacy Background Paper
(<http://www.abs.gov.au/websitedbs/CaSHome.nsf/Home/Statistical+Literacy+Competencies.es>)



Costs of Statistical Illiteracy: Case Example

Great Britain

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'Statistical illiteracy' leaves citizens at risk of being duped by politicians and businessmen, warns British Academy

A crippling fear of numbers has left large swathes of the British population virtually incapable of seeing through what politicians, officials and even salesmen tell them, some of the country's leading thinkers have warned.

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'Statistical illiteracy' threatening Britain's place in the world Photo: ALAMY

Source: Bingham, John. 'Statistical illiteracy' leaves citizens at risk of being duped by politicians and businessmen, warns British Academy. The Telegraph. (<http://www.telegraph.co.uk/education/educationnews/9615709/Statistical-illiteracy-leaves-citizens-at-risk-of-being-duped-by-politicians-and-businessmen-warns-British-Academy.html>)



Costs of Statistical Illiteracy: Case Example

Great Britain

Serious implications for the future of the UK's status as a world leader in research and higher education:

- employability of graduates
- competitiveness of the UK's economy

Lack of confidence with numbers - citizens, voters and consumers cannot play a full part

→ **Accountability:** To call politicians, media and business to account, skills are needed to know when spurious arguments (political spin or commercial sales pitches) are being advanced

Source: Bingham, John. 'Statistical illiteracy' leaves citizens at risk of being duped by politicians and businessmen, warns British Academy. The Telegraph. (<http://www.telegraph.co.uk/education/educationnews/9615709/Statistical-illiteracy-leaves-citizens-at-risk-of-being-duped-by-politicians-and-businessmen-warns-British-Academy.html>)



Costs of Statistical Illiteracy... In the context of ARS

Source: Australian Bureau of Statistics, Statistical Literacy Background Paper
(<http://www.abs.gov.au/websitedbs/CaSHome.nsf/Home/Statistical+Literacy+Competencies.es>)



Costs of Statistical Illiteracy: Case Example Philippines

DA to limit rice imports

(The Philippine Star) | Updated October 1, 2013 - 12:00am

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MANILA, Philippines - The Department of Agriculture (DA) remains steadfast on keeping rice importation to a minimum despite an apparently strong lobby to increase rice imports.

DA acting undersecretary for operations Dante Delima, also the national coordinator of the Agri-Pinoy Rice Program, said rice importation for 2013 had been enormously reduced and the target production sufficiency this year would be attained.

This is contrary to the statement issued in the Senate by director Romeo Recide of the Bureau of Agricultural Statistics that the country cannot become rice sufficient this year, virtually supporting calls of some quarters to increase importation up to 500,000 metric tons.

Allaying fears of a rice shortage, Delima assured "nobody will starve, except perhaps the rice syndicates, which have been used to raking in huge profits from importation and hoarding at the expense of the Filipino farmers and the rest of the nation."

Delima referred to the lobbyists as the same people who want to boot out DA Secretary Proceso J. Alcala and have him replaced by someone who would support their "selfish and greedy" cause.

"They (rice syndicates) are the ones being hurt by Secretary Alcala's determined implementation of President Aquino's Matuwid na Daan policy. Hence, they are using every opportunity to get back at us, including manipulation of statistics and outright lies.

Source: DA to Limit Price Imports. The Philippine Star. (<http://www.philstar.com/business/2013/10/01/1239955/da-limit-rice-imports>)



Costs of Statistical Illiteracy: Case Example Philippines

Keeping rice importation to a minimum despite agricultural statistics showing that the country is not rice sufficient.

- “The Ministry of Agriculture’s rice importation for 2013 had been enormously reduced”; target production sufficiency for 2013 would be attained.
- Contrary to the statement issued by the then Bureau of Agricultural Statistics that the country cannot become rice sufficient in 2013, virtually supporting calls of some quarters to increase importation up to 500,000 metric tons.

Source: Hagstrom, Jerry. Researcher: Critics Misuse Statistics To Bash Farm Subsidies. Congress Daily AM. (http://www.ase.tufts.edu/gdae/pubs/news/congressdaily_wise.pdf)



Costs of Statistical Illiteracy: Case Example Philippines

The screenshot shows a Reuters news article from July 9, 2014. The headline is "Philippines abandons timeframe for rice self-sufficiency" by Erik Dela Cruz. The article text states that the Philippines has shifted away from setting a target date for becoming completely self-sufficient in rice production, likely keeping its doors open to imports beyond the 2016 goal. It mentions that this is welcomed by Vietnam, a key supplier, and Thailand, which wants to offload rice from a controversial stockpiling scheme. A quote from Francis Pangilinan, head of food security, is included. A sidebar on the right features a "SHINJUKU" advertisement and a "TRENDING ON REUTERS" list.

Source: Dela Cruz, Erik. Philippines abandons timeframe for rice self-sufficiency. Reuters. (<http://www.reuters.com/article/2014/07/09/us-philippines-rice-imports-idUSKBN0FE0K820140709>)



Costs of Statistical Illiteracy: Case Example Philippines

Keeping rice importation to a minimum despite agricultural statistics showing that the country is not rice sufficient. (cont.)

- "Part of the reason for the spike in (local rice) prices was precisely because we missed our sufficiency targets" - Presidential Assistant for Food Security.
- "There was this tendency to downplay our import requirements, and therefore we did not import as much as we ought to, which created a tightening of supply."

Source: Dela Cruz, Erik. Philippines abandons timeframe for rice self-sufficiency. Reuters.
(<http://www.reuters.com/article/2014/07/09/us-philippines-rice-imports-idUSKBN0FE0K820140709>)



Costs of Statistical Illiteracy: Case Example USA

CongressDailyAM

Wednesday, July 27, 2005

AGRICULTURE

Researcher: Critics Misuse Statistics To Bash Farm Subsidies

Policymakers, journalists and economists have been misusing statistics from the Agriculture Department and the Environmental Working Group to criticize farm subsidies, a Tufts University researcher has concluded.

In a paper, Timothy Wise, deputy director of the Tufts Global Development and Environment Institute, noted that the misuse of data "can easily lead to mistaken policies."

Wise wrote that "the common refrain that farm incomes are now higher than non-farm incomes so there is little justification from either an equity or a social justice perspective for funding farm programs" and "the oft-quoted statement that 60 percent of farmers and ranchers never get any government support at all" are both "misleading."

Source: Hagstrom, Jerry. Researcher: Critics Misuse Statistics To Bash Farm Subsidies. Congress Daily AM.
(http://www.ase.tufts.edu/gdae/pubs/news/congressdaily_wise.pdf)



Costs of Statistical Illiteracy: Case Example

USA

Misreporting a lower proportion of farmers that receive government subsidies could lead to policy decisions to increase subsidies

- **The misleading truth is that only 40% of farmers in USA get a government subsidy.**
- **Although true, this statistic includes part-time retired and "lifestyle" farmers.**
- **If excluded, "...44 percent of lower-sales farmers, 82 percent of higher-sales farmers, 78 percent of large commercial farmers and 67 percent of very large farmers get government payments."**

Source: Hagstrom, Jerry. Researcher: Critics Misuse Statistics To Bash Farm Subsidies. Congress Daily AM.
(http://www.ase.tufts.edu/gdae/pubs/news/congressdaily_wise.pdf)



Costs of Statistical Illiteracy: Case Example

USA

Misreporting a lower proportion of farmers that receive government subsidies could lead to policy decisions to increase subsidies (cont.)

- **Many farmers who do not get subsidies are fruit and vegetable farmers.**
- **They have been traditionally outside the program but get an indirect benefit from reduced competition because farmers who receive subsidies cannot plant fruits and vegetables.**
- **"Analyses that lump all farmers together yield misleading conclusions."**

Source: Hagstrom, Jerry. Researcher: Critics Misuse Statistics To Bash Farm Subsidies. Congress Daily AM.
(http://www.ase.tufts.edu/gdae/pubs/news/congressdaily_wise.pdf)



Thank You!



Group Discussion

- Form four groups (2 groups with 5 members; 2 groups with 4 members)
- Discuss among your groups on any similar country experience when the decision- and/or policy-makers:

**Were not aware;
Did not understand;
Did not analyze; and/or
Did not communicate...**

Agricultural and rural statistics.

Time allotted: 15 minutes

Group Discussion

- Please cover the following:
 1. Main issue – what was misrepresented/misunderstood; or not used/analyzed/communicated?
 2. Who were the critical organizations?
 3. What was the cost to government? To the users and/or stakeholders? To the general public?
 4. What was the critical step that could have mitigated it? How things should have been done – considering the four components of statistical literacy?

Source: Hagstrom, Jerry. Researcher: Critics Misuse Statistics To Bash Farm Subsidies. Congress Daily AM.
(http://www.ase.tufts.edu/gdae/pubs/news/congressdaily_wise.pdf)

