



The involvement of the Department of Statistics, Malaysia at

THE INTERNATIONAL STATISTICAL  
INSTITUTE'S 'WORLD STATISTICS  
CONGRESS 2021 - The Hague'

Virtually Platform, 11-16 July 2021

Day 4 (15 July 2021)

VOLUME 4

## Scientific Programmes of the Day

**LIVE**  
Session

**1** Introduction of the  
Day-4\_Live

**27** Invited Paper Sessions  
(IPS)\_Live

**4** Special Invited Paper Session  
(SIPS)\_Live

**1** Plenary Session: President's  
Invited Speaker

**2** LIVE Workshops

**15** IPS\_Non-Live

**7** Contributed Paper Sessions  
(CPS) Oral Presentation

**NON-LIVE**  
Session



## Plenary Session

how

Discussions on the origami of data science, which include folding new methods and computational approaches into an online atlas of cancer, a virtual Great Barrier Reef, an ethical social discourse platform and a personalised learning program

President's  
Invited  
Speaker:  
The Origami  
of Data  
Science

WHO

Professor  
Kerrie Mengersen



WHAT

- About origami, where by a flat square paper folded into a sculpture that promotes appreciation and imagination
- By using the same notion, we could apply the concept of origami in the context of data science, whereby a data analysis method or computational algorithm is folded into a software product which then serves for interpretation and implementation

### Short Bio: Ms Kerrie Mengersen

- Distinguished Professor in Statistics at the Queensland University of Technology in Brisbane, Australia
- Deputy Director of the Australian Research Council Centre of Excellence in Mathematical Frontiers
- Director of the QUT Centre for Data Science
- Elected Fellow of the Australian Academy of Science and the Australian Academy of Social Sciences
- A member of the Statistical Society of Australia and the IMS, ASA, RSS, ISBA and ISI



POPULATION & HOUSING  
**CENSUS  
MALAYSIA 2020**

YOUR DATA IS OUR FUTURE

# Live Workshops

## WHO ?

Staffs and experts from the IPUMS collection of FREE-USE data projects from the University of Minnesota in the United States

## WHAT ?

- IPUMS collection of databases at the University of Minnesota comprise the world's largest repository of census and survey microdata
- IPUMS standardises the data and harmonises variables to make research faster and simpler
- IPUMS adds value to the data by constructing family interrelationship (pointer) variables, creating corresponding geographic shapefiles, and building crosswalks between data sources

1

## IPUMS Data Collection: How to Access & Use Free Census & Survey Microdata

## HOW ?

- IPUMS integration and documentation makes it easy to study change, conduct comparative research, merge information across data types, and analyze individuals within family and community contexts. Data and services available free of charge
- The project manager share about How to become a user, how to navigate the basic features to find data, learn about the functions of the IPUMS data access system, and discover how to create our own custom microdata extract

## WHERE ?

For more information and to become an IPUMS user, visit <https://www.ipums.org/>



2

## ISI Author Workshop

Editors-in-Chief from ISI Journals

## WHO ?

## WHAT ?

## HOW ?

- To share helpful tips and key takeaways on how to be selected for publishing in ISI journals
- To provide information that could assist authors in selecting a journal, writing article and navigating the peer review process

- The workshop is specially tailored for statisticians in their early career
- 15 minutes of Q&A session with the speakers



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**CENSUS MALAYSIA 2020**  
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# DOSM Contributions

**MISSED** the IPS Non\_Live at the ISIWSC virtual platform? **NO WORRIES!**  
Come and connect with us. Just scan the **QR CODE** and enjoy watching the brilliant presentation of **DOSM** at **YouTube @StatsMalaysia**



**As IPS Non-Live Organiser and Speakers**

## The Mirror Has Two Faces: An Analysis of Asymmetries in Official International Merchandise Trade Statistics






### 63<sup>rd</sup> ISI WORLD STATISTICS CONGRESS 2021 - The Hague

Virtually 11<sup>th</sup> - 16<sup>th</sup> July 2021  
17:00 - 07:30 (Malaysia Time)

**15<sup>th</sup> July 2021  
3.00 PM (MYT)**

#### “Statistics and Data Science for a Better World”

#### Invited Paper Session (IPS)

#### The Mirror has Two Faces: An Analysis of Asymmetries in Official International Merchandise Trade Statistics

**Introduction:**  
International merchandise trade plays a vital role in economic development, linking producers and consumers in various countries into a global economic system. Mirror or asymmetrical analysis is one of the most used instruments for comparison data quality of external trade statistics between partner countries. Theoretically, the exports reported by an exporting country should mirror the imports reported by its reporting partner. In reality, however, due to the way that trade statistics are reported and recorded as well as many other methodological reasons, this is usually not the case. Even though currently many consider these discrepancies as norm rather than the exception, it is important to approach this scenario accordingly and develop strategies and methods for reconciliation exercises for better analysis.



**Organiser:**  
Ms. Wan Siti Zaleha  
Wan Zakaria



**Speaker:**  
Ms. Siti Haslinda Mohd Din



**Chair of the IPS Sessions**  
YBhg. Dato' Sri Dr. Mohd Uzir Mahidin  
Chief Statistician Malaysia

### SPEAKERS AND PAPERS OF THE SESSION:

- Reflecting Methodological Causes of Bilateral Asymmetry for the Forthcoming Revision of IMTS Concepts and Definition**  
Speaker: Mr. Markie Muryawan (United Nations Statistics Division)
- Utilizing Microsoft Power BI to Identify Asymmetries in Intra-ASEAN International Merchandise Trade Statistics (IMTS): the Size and Potential Sources**  
Speakers: Mr. M. Fathur Rachman, Ms. Lia Emalia & Ms. Maria F. Widowati (ASEANStats)
- Analysis of Asymmetries in Official International Merchandise Trade Statistics: A Case Study of Malaysia**  
Speaker: Ms. Siti Haslinda Mohd Din (International Trade Statistics Division)
- Outlook on the Future Work to Address Bilateral Asymmetries in the Context of Microdata Exchange of Merchandise Trade Statistics**  
Speaker: Mr. Ulrich Eidmann (Eurostat)
- Bilateral Trade Asymmetries in Asia Pacific**  
Speaker: Ms. Janine De Vera (Asian Development Bank)

**Discussant:**  
Mr. Ronald Jansen  
Department of Economic and Social Affairs United Nations




When the mirror reflects two faces. Let's watch the intellectual discussion's recording in YouTube to unlock the mystery!




**POPULATION & HOUSING CENSUS MALAYSIA 2020**  
**YOUR DATA IS OUR FUTURE**



## The Origami of Data Science

Primary - President's Invited Speaker: The Origins of Data Science

Origami (fold paper)

- Origami in Data
- UNESCO Scientific Award 2018
- SDG 4.7
- UNESCO Award to Lady's World
- WORLD

Primary - President's Invited Speaker: The Origins of Data Science

Unifying space - "Infinite Dimension"

Primary - President's Invited Speaker: The Origins of Data Science

PROFESSOR'S ROOM

Primary - President's Invited Speaker: The Origins of Data Science

The Origins of Data Science

ACEMF

18th WIC July 2021

Primary - President's Invited Speaker: The Origins of Data Science

Origami - folding space

Primary - President's Invited Speaker: The Origins of Data Science

Origami - from paper to cube

Primary - President's Invited Speaker: The Origins of Data Science

First book on Origami (1797)

"The Science of Our Thousand of Years Origami"

Primary - President's Invited Speaker: The Origins of Data Science

Origami - from paper to cube

origami - from paper to cube

### SIPS 229 - Measuring the Performance of National Statistical Systems

#### Need Data about Data

Pillars	Dimensions
Data Use (2017-2020)	Accessibility, Availability, Quality, Timeliness, International Harmonization
Data Services (2018-2020)	Quality of Data, Methods, Timeliness and Availability of Modern Systems, Timeliness and availability of Data Access Services
Data Products (2018-2020)	Cost, Coverage, Data Accuracy, Data Quality
Data Location	International Harmonization, International Data, Timeliness, Timeliness and availability of Data Access Services
Data Data Location	International Data, Timeliness, Timeliness and availability of Data Access Services

"When you change the way you look at things, the things you look at change."

Max Planck, Quantum theorist and Nobel Prize winner

katawave.com  
#BusinessImagination

#### SPI and Development Outcomes

Pillars	Dimensions
Data Use (2017-2020)	Accessibility, Availability, Quality, Timeliness, International Harmonization
Data Services (2018-2020)	Quality of Data, Methods, Timeliness and Availability of Modern Systems, Timeliness and availability of Data Access Services
Data Products (2018-2020)	Cost, Coverage, Data Accuracy, Data Quality
Data Location	International Harmonization, International Data, Timeliness, Timeliness and availability of Data Access Services
Data Data Location	International Data, Timeliness, Timeliness and availability of Data Access Services

only used development outcomes. So if we can adjust...

#### Statistical Performance Indicators

The SPI is:

- Forward looking
- Measures less advanced systems, and more advanced systems
- Covers entire national statistical system
- Open Data + Open Code
- Gives countries incentives to build modern statistical systems



## IPS Non-Live 88 - The Mirror has Two Faces: An Analysis of Asymmetries in Official International Merchandise Trade Statistics

### DISCUSSION AND CONCLUSION

- Based on findings, it can be concluded that it is almost unfeasible to have perfect symmetrical bilateral trade data between countries.
- The degree of discrepancies differs from country to country though most of the discrepancies were consistent from time to time.
- Inconsistencies can be resulting from several possible conceptual and measurement variations between the estimation practices of different countries such as differences in valuations of imports and exports; differences in attribution of trade partners; differences in recording re-exports; and et cetera.
- Triangular trade was a common reason in the existing literature, the result of analysis from entropot countries does not show substantial differences from other countries except for MY imports versus SG exports.
- For better understanding the situation, further in-depth analysis should be carried out on a specific country, industry or products and time period which might steer to a solution in order to reduce the discrepancies where possible.

### Old Issue - New Interest

- Developing Trade in Value Added (TIVA) or Global Value Chains (GVCs) analytical data sets
- Measuring commercial part of illicit financial flows through trade mis-invoicing
- The forthcoming revision of IMTS 2010 as endorsed by UN Statistical Commission in 2021
- Opportunity to identify and amend relevant recommendations to reduce bilateral asymmetries and provide granular data to assist its analysis

### METHODOLOGY

**Merchandise Trade Data Sources**

Malaysia: Department of Statistics Malaysia  
 Vietnam: Trade Statistics Database (COMTRADE)  
 Singapore, Thailand, Philippine, Indonesia, China, the United States of America (USA), Hong Kong and The Netherland: IHS Markit

**Data Series**

Annual trade data from 2002 until 2020

**Method of analysis**

- Index of discrepancy (Guo, 2010) calculated for export of Malaysia vs import of selected countries and vice versa
- Pattern of discrepancies were observed for each country and for better understanding, further analysis was done at Harmonised and Coding System (HS)-2-digit level

**Index of discrepancy**

$$\text{Asymmetry} = \text{Value}(R) - \text{Mirror Value}(P)$$

$$\text{Discrepancy} = \text{ABS} \left( \frac{\text{Value}(R) - \text{Mirror Value}(P)}{\frac{\text{Value}(R) + \text{Mirror Value}(P)}{2}} \right)$$

**Where:**

- R is the Reporter
- P is the Partner
- Value is the statistical value as recorded by the Reporter
- Mirror Value is the mirrored statistical value as recorded by the Partner

**Rules of mirror analysis (Podgorica, 2015):**

- 0% - 15% : the discrepancy is considered low.
- From 15% to 50% - the discrepancy is considered medium. Higher than 30% discrepancy deserves additional analysis.
- More than 50% - discrepancy is considered high.

### Utilizing Microsoft Power BI to Identify Asymmetries in Intra-ASEAN International Merchandise Trade Statistics (IMTS): the Size and Potential Sources

by  
 M. Fathur Rachman, Lia Emalia, Maria F. Widowati (ASEANstats)

### Case Study: Asia Pacific

ADB

### Trade asymmetries

- DOS Malaysia**  
 Detection of bilateral asymmetries at HS-2 digit  
 Overview of methodological reasons
- ASEAN Stat**  
 Detection of bilateral asymmetries at HS-6 digit  
 Data driven tool for detection
- Eurostat**  
 Reconciliation of high-value commodities  
 Solution with Micro-Data Exchange reports replacing partners imports
- Asian Dev Bank**  
 Overview of methodological reasons for trade asymmetries  
 Solution with Multi-Region ICF to estimate economic activity of exports
- UNSD**  
 Overview of methodological reasons for trade asymmetries  
 Solution to amend the methodology in upcoming IMTS revision



## Cross-Cultural Leadership in Statistics and Data Science for a Better World

## Leadership in Statistics and Data Science



### Teaching statistics and data science

- This matters across diversity but most at foundation, introductory, across disciplines
- Importance for statistics cannot be emphasized enough: 'service' and mainstream.
- For many years, statisticians have advocated authentic experience of data investigations from start.
- Cameron (2009) comments that thorough grounding in this full process is an appropriate foundation for most statisticians wherever they may be employed.

### Final Remarks

Thoughts on helping women rise to become inclusive leaders:

- Know statistics for computers
- Know the business: understand underlying business activities
- Provide experience: Communicate
- Appreciate diversity: Be a role model for your students. Be a mentor to the diversity of activities. Encourage feelings of assistance for their talents and enjoyment
- Balance corporate and self: Consider yourself as the needs of your company, while staying honest
- Develop kindness: Kindness goes a long way
- Discover appropriate paths: ...and don't forget that you're here to help what you do, but who you are, and develop ethics

### Final Remarks

*I thank to all of my mentors and followers. I devote this chapter to them!*

## CPS Oral Presentations: Statistical Literacy

### Online Assessment for a large first year service unit Challenges of COVID-19

A/PROF AYSE AYSIN BILGIN  
MACQUARIE UNIVERSITY,  
DEPARTMENT OF MATHEMATICS AND STATISTICS, AUSTRALIA  
JULY 2021

### Aims for the solution

- Keep the student voice in the assessment
- Provide reach, timely feedback to the students
- Eliminate logistic problems
- Discourage academic dishonesty – safeguard academic honesty
- Achieve consistency of marking

### Ranking of universities in Statistics: a shift towards excellence?

### Conclusion

- Looking at the current ranking methodology (e.g. journals) has not captured much of the changes in the world class universities
- It has a profound consequence for lower tier universities such as the University of Wollongong
- One of the potential improvements of WUOL methodology might be to weight journals in different ways including an online journal ranking with particular weight being given to the articles published in peer-reviewed journals
- The current WUOL approach might require change and shift towards a methodology that addresses the performance
- To provide a more holistic view of the university's performance

### Dropout and completion in the Bachelor in Statistics in Brazil: use of survival analyses in a competing risk scenario

Adriana Caroline Demora Pereira  
Andreia Sá de Sá  
Giselle Oliveira Sá

### Results

- To assess the effects of variables on completion or dropout rates, two models were adjusted, in which the first model (the most of interest) is the proportional hazards model over a mixture.

Variable	β	SE(β)	Wald	p-value
sex	0.000	0.000	0.000	0.000
age	0.000	0.000	0.000	0.000
gender	0.000	0.000	0.000	0.000
year	0.000	0.000	0.000	0.000
month	0.000	0.000	0.000	0.000
day	0.000	0.000	0.000	0.000
hour	0.000	0.000	0.000	0.000
minute	0.000	0.000	0.000	0.000
second	0.000	0.000	0.000	0.000
nanosecond	0.000	0.000	0.000	0.000

- The completion rate for this bachelor in Statistics is about 80% for women is 1.43 times the completion rate for men.
- The student being enrolled in complementary education in the first year of graduation increases the completion rate by 1.37%.
- Students who were engaged in complementary activities in the first year of graduation have the dropout rate 13% lower than students who were not.



**Department of Statistics, Malaysia** added 16 new photos from July 15 at 9:30 PM to the album: **International Programmes 2021**

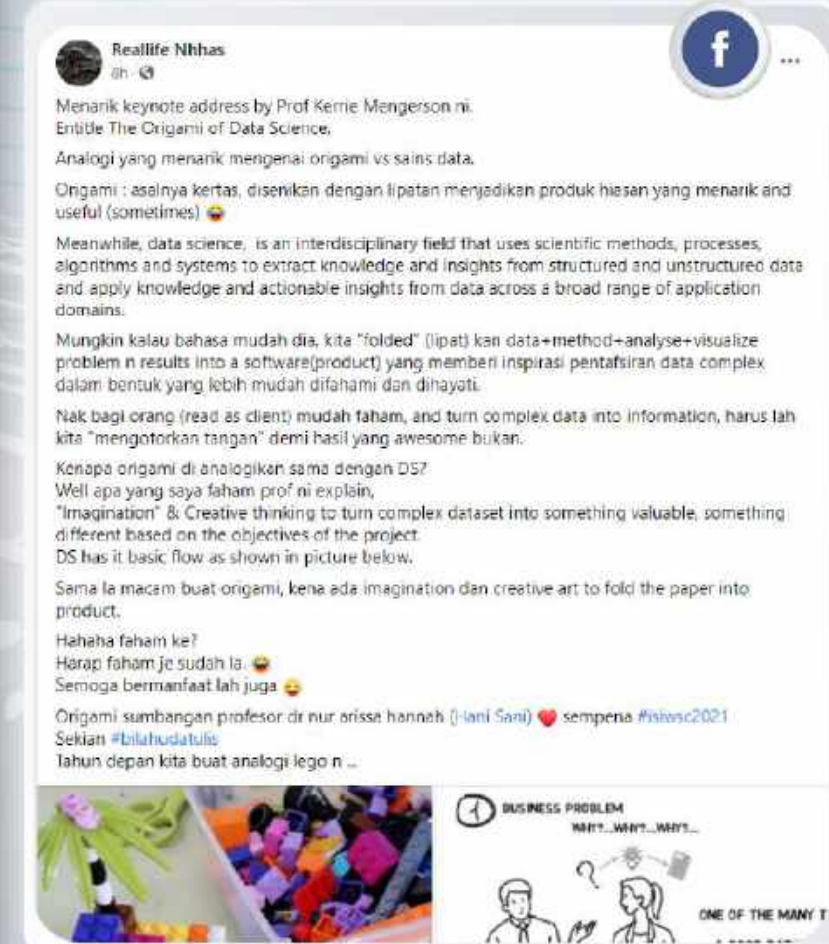
**INTERNATIONAL PROGRAMME (Day-4@ISIWSC2021)**

The fourth day of # ISIWSC2021 was successfully concluded with various interesting topics on IPS LIVE as well as IPS Non-Live and CPS talks. 1st Non-Live with DOSM as an organiser was launched and was discussing the use of Asymmetric Analysis in Merchandise Trade Statistics. Both national and international speakers shared their experiences on this method of analysis which is used as an instrument to compare the quality of external trade statistical data between partner countries. Our gratitude towards UNSD, ASEANStats, ADB, Eurostat for your excellent presentations.

The highlight of the day is President's invited Speaker: The Origami of Data Science session. Thank you Prof. Kerrie Mengerson for your magnificent explanation about origami in the context of data science where the computational algorithm approaches is folded into a software product that inspires interpretation and implementation. Thank you professor for the great knowledge-sharing platform.

Looking forward to more interesting sessions. Stay tuned for the #ISIWSC2021 !!

- #ISIWSC2021
- #NoOneLeftBehind
- #StatsMalaysia
- #MyStatsDay
- #MyCensus2020
- #MenghitungMalaysia
- #DataAndaMasaDepanKita
- #Covid19
- #StayAtHome
- #MyStats4Lives
- #InternationalProgrammeDOSM



**Mohd Azrol** @MohdAzrol - 9h

Trust in public institutions and trust in statistics

Trust is gaining more relevance in the statistical system of several countries; therefore, National Statistical Offices should prioritize the measurement of the interpersonal and institutional trust through regular statistical programs.

Moreover, due the context of Covid -19, data has revealed the importance of improving trust, particularly in the public health service. However, there are other fields where trust can also be measured to be improved, for instance, trust in government, public safety and justice institutions, quality of public services, political parties, civil service, banks, universities, family, and neighborhood.

Thus, it is necessary to improve the methodology on measuring trust in the public sector and to contribute to the comparison between trust in criminal institutions and perceptions.

#StatsMalaysia  
#MyStats4Lives  
#Isiwsc2021

7 likes 2 comments

**Azreen** @axreen - 1h

This session will be an opportunity to draw inspirations and experiences from being part of the collaborative and to elucidate the learnings and initiatives to strengthen administrative systems.

@StatsMalaysia

#MyStats4Lives #isiwsc2021

**Our country's experience strengthner**

- It is important to establish links with the institutions of the National Statistical System (NSS), since their collaboration is particularly necessary in a decentralized NSS and under rigid legal frameworks.
- The robustness of the work with administrative records necessarily involves the establishment of a governance and data management framework that can also be used by other NSS institutions.
- Beyond access to administrative records, essential aspects: technology, methodology, statistical production.

**Bhutan's experience on administrative records**

- Establishing a governance and data management framework that can also be used by other NSS institutions.
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Strengthening Administrative data: what countries have learned a nd applied from the administrative data collaborative

**Iera\_Nzh** @Iera\_Nzh - 12m

Day 5: IPS 213 Session -Implications of the Digital Economy for Official Statistics

Great sharing from presenters on digitalization and measurement of inflation & the hedonic quality adjustment method in the compilation of price indexes.

#MyStats4Lives  
#isiwsc2021  
@StatsMalaysia

Effective measurement in the 21<sup>st</sup> century

**MulianiTaha** @MulianiTaha - 8h

Without good statistics, countries are held back in responding to the COVID-19 pandemic and moving towards a better future; SPI address this motivation and build upon previous research to interpret and measure statistical capacity. @StatsMalaysia

#MyStats4Lives  
#ISIWSC2021

Now watching the SPIs on Measuring the Performance of National Statistical Systems. This session introduce the Statistical Performance Indicators that was developed by the World Bank to monitor the statistical performance of countries @StatsMalaysia

#MyStats4Lives  
#ISIWSC2021

**nabilanazwa** @nabilanazwa - 44m

The COVID-19 virus may result in loss of parental care due to death, illness or separation thus this will placing children at heightened risk of violence, neglect or exploitation.

@StatsMalaysia  
#MyStats4Lives  
#isiwsc2021

**Adibah Aisyah Abd Razak** @cikadibahaisyah - 50m

Many of us know about origami. In the same way, The origami of Data Science is a data analysis method or computational algorithm is folded into a software product that inspires interpretation and implementation.

@StatsMalaysia  
@UNDatsForum  
#UNData  
#MyStats4Lives  
#ISIWSC2021

**Azreen** @axreen - 1h

Strengthening Administrative data: what countries have learned applied from the administrative data collaborative

@StatsMalaysia  
#MyStats4Lives #isiwsc2021

**Mohammad Ilyas** @241lyas - 1h

Survey sampling is often the only practical way to gather data on a large population. That's why survey sampling is so important.

#MyStats4Lives  
#ISIWSC2021

**Afzeinizam Abdullah** @MohdAfzeiniaz15 - 7h

It is important to send your paper to the right journal for the reviews

@StatsMalaysia  
#MyStats4Lives  
#ISIWSC2021







**DOSM congratulates and appreciates all speakers** for their fabulous efforts and willingness to **share variety of informative findings** that allowed delegates and participants **to acquire new methods and ideas** in improving the official statistics for decision-making process.

*Congratulations*



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