



**STATISTICS INDONESIA**



# Measuring the ICT Indicators in Indonesia: Proposed Big Data Implementation

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- ❑ In Indonesia case, the use of Big Data for official statistics is now going into high consideration to be implemented:
  - a) BAPPENAS (The National Planning Agency) has set up the big data implementation for national development support, and stated in the National Plan for Medium-term Development 2015-2019
  - b) Statistics Society Forum, who is regularly monitoring and evaluating BPS in producing official statistics, support to BPS to use Big Data for producing tourism statistics and as well as the other official statistics.

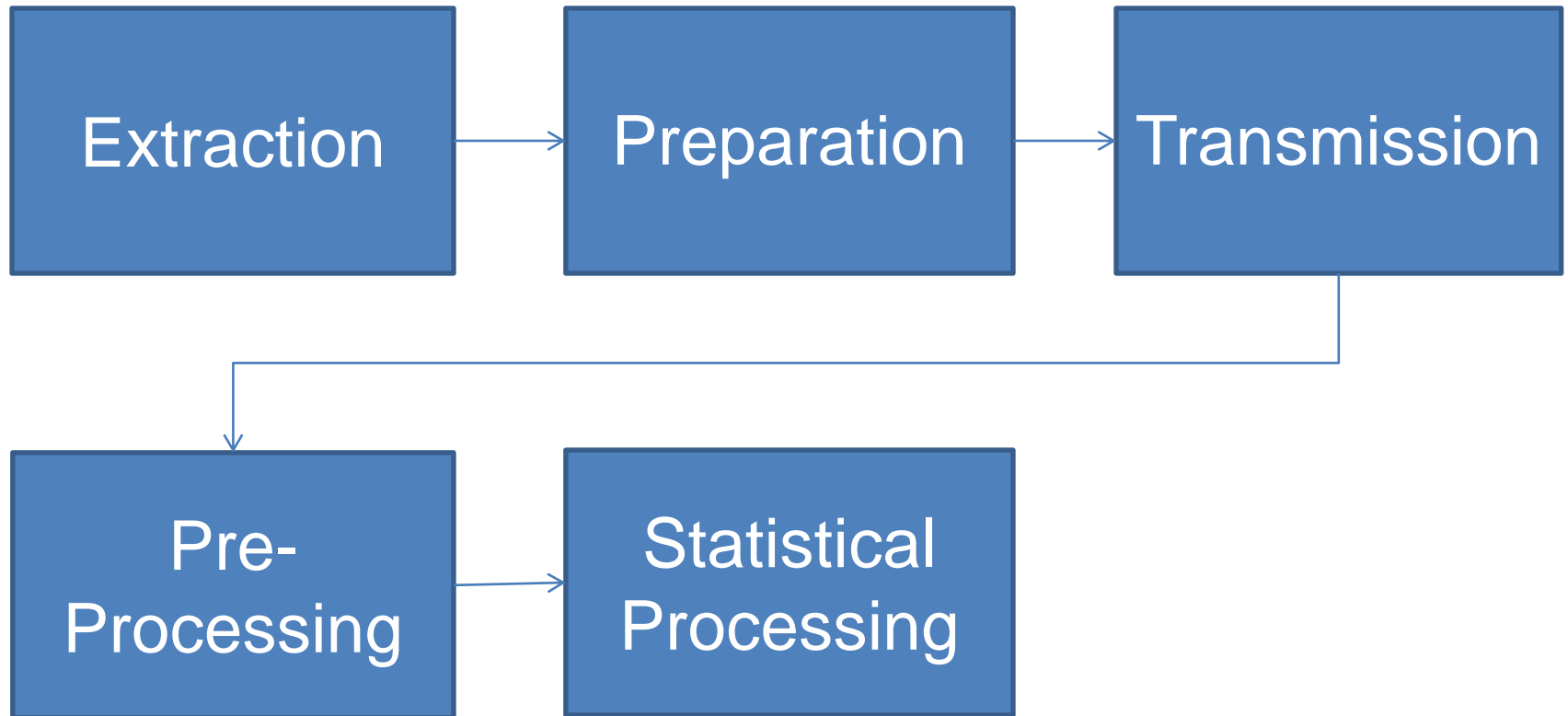


- ❑ However, BPS still finds some challenges to implement Big Data for official statistics:
  - a) Appropriate statistical methodology: Big data is non sample data. How to set up weighting for the data from Big Data to represent population?
  - b) Store and process the Data: impossible to store and process using common software tools;
  - c) Legislation umbrella: need specific legislation to manage Big Data implementation
  - d) Business analyst: lack of business analyst expert with have good knowledge and expertise to analyze the result from BigData. (IT expert with have a good statistics knowledge);
  - e) Finance: Implementation of Big Data need quite high investment.
- ❑ In this paper, it will be presented about proposed Big Data implementation in Indonesia.



# Proposed Big Data Implementation: Phases of Statistical Production from Big Data

Pelopop  
Data Statistik  
Terpercaya  
Untuk Semua





- ❑ BPS has started to use Big Data for complementing data on Foreign Tourism Statistics:
  - a) To produce Inbound foreign tourism statistics using MPD (Mobile Positioning Data);
  - b) Under mutual cooperation with Tourism Ministry with the motto of “go digital”;
  - c) Implemented since 2016;
  - d) Technical assistance from Estonia expert: BPS follow phases of statistical production from Big Data to get Foreign Tourism Statistics
  
- ❑ In term of ICT Statistics indicators, BPS has committed to consider Big Data as a new source to complimentary ICT statistics data from surveys result:
  - a) To produce internet user statistics: can be used the twitter penetration as a Big Data?
  - b) It is still under research and investigating by getting technical assistance from UN-Pulse Lab Jakarta.
  - c) Some BPS surveys to be referred for comparison of Big Data result: Susenas (National Socio Economic Survey); Survey of ICT Usage in Businesses, etc.



# Big Data for Inbound Tourism Statistics

## Data Sources

01

### Main Source:

administrative data from the Directorate General of Immigration, which covered all main airports.

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02

### Other data source:

Cross-Border Survey conducted by BPS in order to obtain tourist data at the border

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*To accurately capture and increase the coverage of inbound tourists data, BPS made serious efforts to improve the methodology to calculate the number of inbound tourists, by implementing Mobile Positioning Data (MPD) since October 2016, with the help of the Ministry of Tourism in obtaining the MPD from one of the biggest Mobile Network Operator in Indonesia.*

## Mobile Positioning Data

## » MUNICIPALITY

- 1 SANGGAU
- 2 NATUNA
- 3 MALAKA
- 4 BENGKAYANG
- 5 KAPUAS HULU
- 6 KEPULAUAN ANAMBAS
- 7 PELALAWAN
- 8 KUPANG
- 9 ROKAN HILIR
- 10 INDRAGIRI HILIR
- 11 SINTANG
- 12 KEEROM
- 13 KEPULAUAN TALAUD
- 14 KEPULAUAN SANGIHE
- 15 LINGGA
- 16 MALINAU
- 17 BOVEN DIGOEL
- 18 PEGUNUNGAN BINTANG
- 19 MAHAKAM ULU



*The MPD is used at cross-border posts in 19 regencies in which Immigration Check Point is not available and the Cross-Border Survey is difficult to be conducted due to geographical condition.*



**BORDER CROSSING**



**DAY 1 – 19**



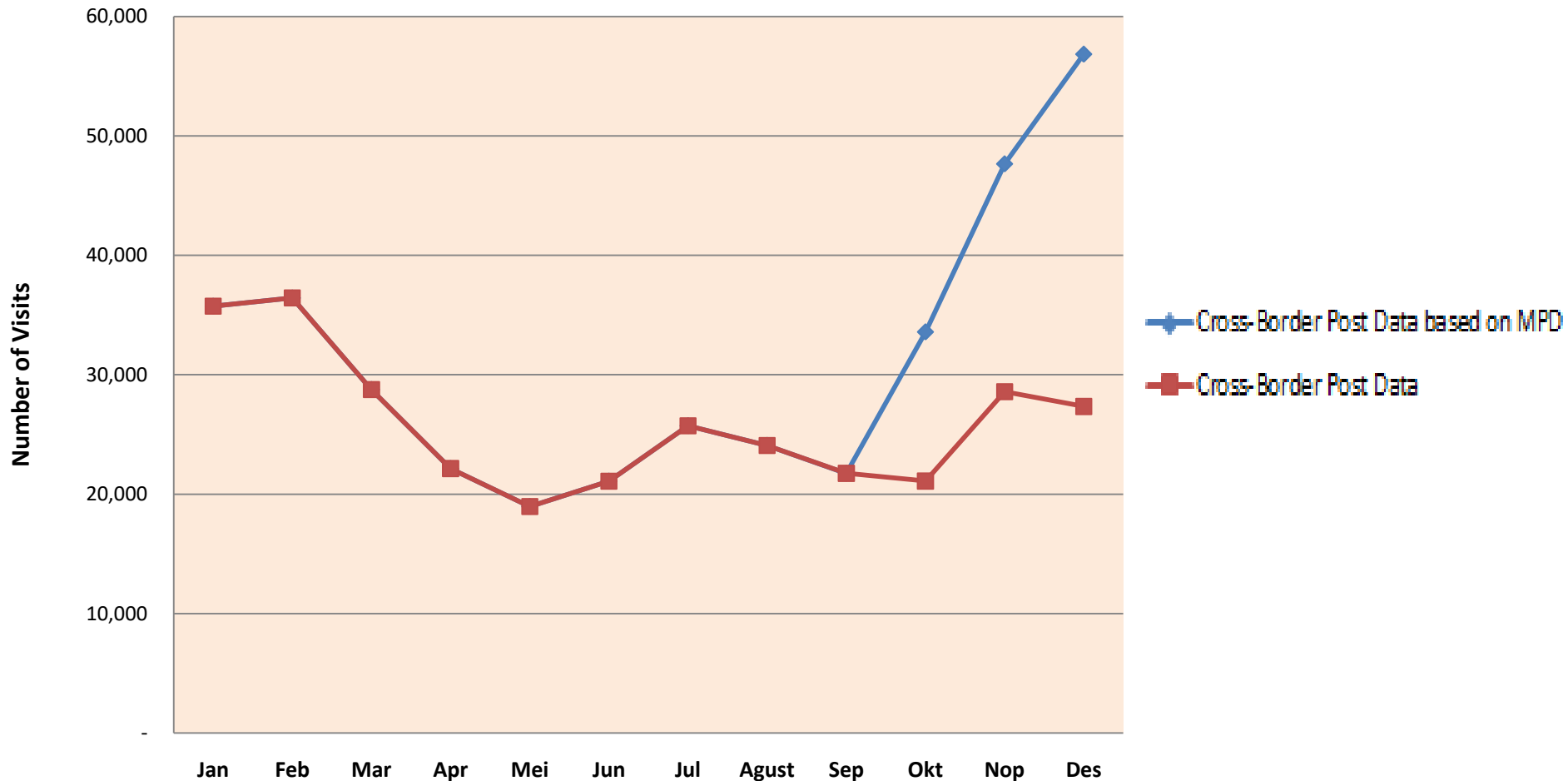
**FOREIGN TOURISTS**





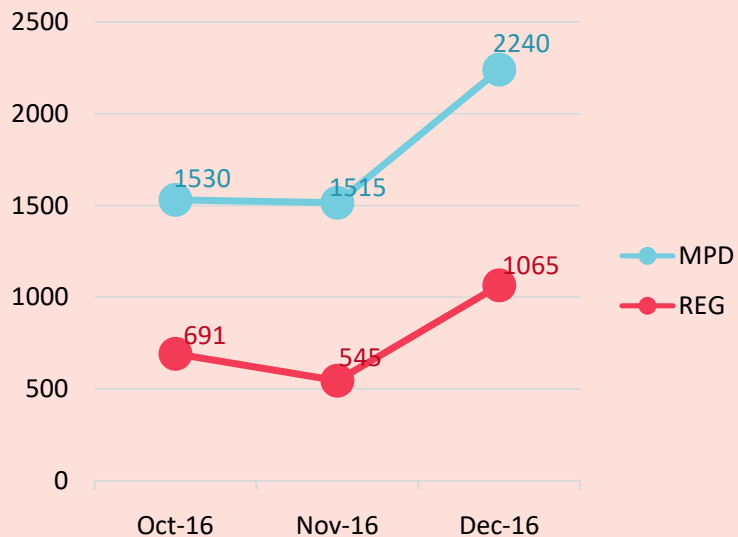
# Big Data for Tourism Statistics

**Number of Foreign Tourists Cross-Border Post (PLB)  
with basis MPD Data, 2016**

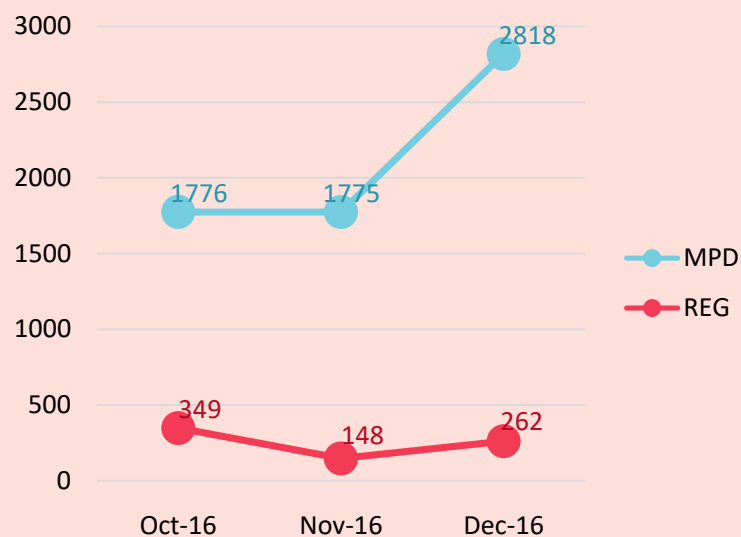


# Comparison between Regular Data and Mobile Positioning Data

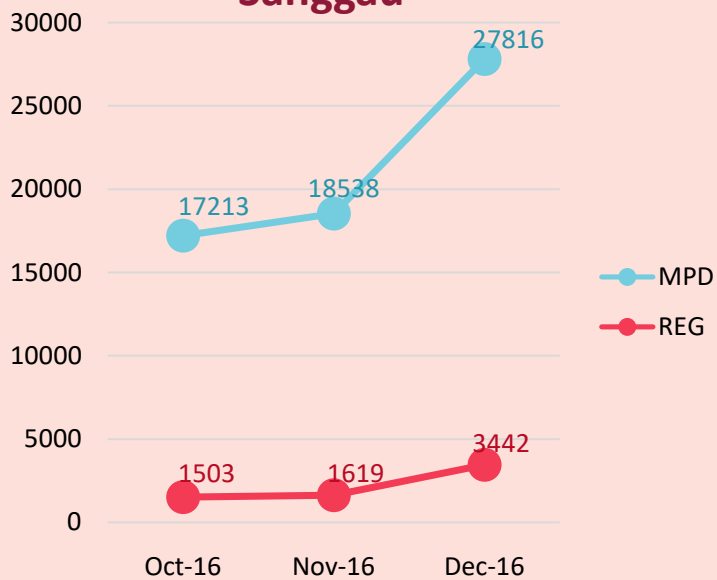
## Kapuas Hulu



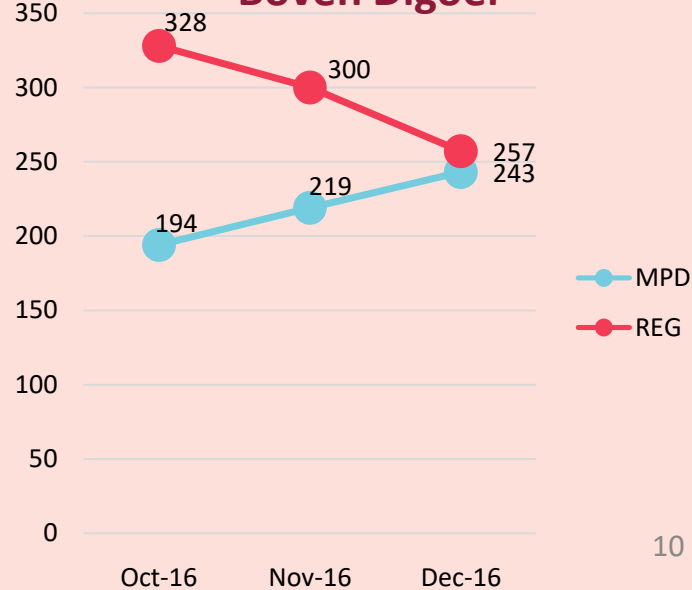
## Bengkayang



## Sanggau



## Boven Digoel



## Big Data for Predicting Commuting Patterns

- Collaboration with Global Pulse Jakarta
- using multiple sources of data, e.g. social media (Twitter) to better understand inter-city commuting patterns using social media
- Official Data: Jabodetabek Commuter Survey 2014
- Twitters (Februari 2014)
- Origin: Location of most tweets
- Destination: 2<sup>nd</sup> most tweets location



# Conclusion

**1** The use of mobile positioning data changes the process of



design



build



data collection



data processing



dissemination



Real time dissemination



**2** Big data as a part of data revolution needs to be developed, including for measuring the ICT Indicators. However the verification and its validation need to take into consideration.

# Thank You

Any questions and suggestion, email to:  
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*The Agent of Trustworthy Statistical Data for All*

