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FOR DEVELOPMENT



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Tourism Statistics based on Mobile Positioning Data

Session 5. Producing Data on Sustainable Tourism

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There is an indication of underestimate on tourism administrative data that has been using by BPS-Statistics Indonesia. Immigration records from some “remote” boarder gate or traditional cross boarder gate are not fully received by BPS. Cellular phone operators capture some non-Indonesia cellular phone activities in those places. We are assuming that neighbor’s phone cell signal captured during two to seven days (formula 7/20) as a tourist.

However there are also some evidences that some tourists having more than one cellular phone, while some are not using cell phone, or change to local number when traveling to those places. Local people also possible using neighbor’s sim card to communicate with their relation. To reduce noise on cellular data we applied 7/20 formula and formula suggested by Sarpono which is:

$$\text{Addition Tourist} = \frac{MPD - WCI}{x} * P * (1 - P_w) * (1 + P_{nonpc})$$

Where

MPD = Non-Indonesia Cellular Phone data

WCI = Immigration Data

x = Average number of phone cell actively used

P = Ratio Foreigner Traveler

P_w = Ratio Foreigner student/worker traveler

P_{nonpc} = Ratio Foreigner Traveler not using phone cell