5.2. Appropriateness of MPD for tourism statistics

The Handbook on the Use of Mobile Phone Data for Official Statistics published by the UNSD in September 2019 recommended NSOs to use **probing/signalling or call detail record (CDR)**. Signalling data is usually more valuable as it can capture not only roammers/international visitors but also it can capture inbound tourists/travellers that avoid calling or sending SMS while roaming to avoid expensive charges. Signalling data captures more inbound and domestics trips than CDR data and overcomes some under-coverage issues of CDRs, especially in areas that are harder to reach.

For **inbound and domestic tourism**, signalling and CDR is the best source although they can exhibit more noises. While for **outbound tourism**, CDR is the best data. For domestic tourism, domestic data which consists of domestic subscribers is (preferably) used as a main data source and, when possible, accompanied by inbound (roammers) and outbound data in order to include foreigners who are defined as residents of the country of reference (inbound), exclude domestic subscribers who are residents of other countries (outbound) and exclude trips that are made for the purposes of reaching a destination outside the country of reference (outbound).

Looking at signalling and CDR data for inbound tourism in several municipalities in Indonesia (Figure 1), the former detects on average, 3.47 times more roammers at the border areas compared to CDRs. It could imply that signalling data caught more roammers entering areas in Indonesia. However, the ratio differs for each kabupaten. For example, in Malaka, on the border with Timor-Leste, the multiplier is up to 158.75 times. The effect is higher in hard-to-reach areas rather than in the relative heavily populated areas.

![Figure 1. Comparison of Probes/Signalling and CDR data in Indonesia, 2018](image1)

**Source**: MPD processed by Positium for Indonesia

In Figure 2, MPD error (RMSE) decreases significantly after adjusting for noises which imply that

![Figure 2. Comparison of RMSE of MPD with different filters, Indonesia](image2)

**Source**: Positium