Dataset:

- I obtain my development and evaluation satellite images from the Google Earth Engine API [4].
- Daytime satellite imagery is obtained from the LANDSAT satellite [1] and nighttime satellite imagery is obtained from the VIIRS satellite [2]. To ingest the images, I use the Google Earth Engine API to obtain a daytime and a nighttime satellite image for 44,193 points that I had poverty levels for (see Ground Truth).
- For each of these points, I obtain the closest satellite image to the geographic coordinate of the wealth index. All in all, I collected 88,386 satellite images. Examples of both daytime and nighttime images are presented in Figure 1.
- All satellite images had initial spatial dimensions of 890x890 pixels but were downsampled to 256x256 pixel images.
- The nighttime images were single-channel (intensity) grayscale images, while the daytime images were 3-channel RGB images.
- I divided the initial images into training, tuning, and testing sets with the 80:10:10 split. The splits were executed on the country level to ensure that data from the same country is not in more than one set.
- The splits were consistent across daytime and nighttime images meaning that daytime and nighttime images of the same region were in the same split, ensuring consistency in reporting metrics across daytime and nighttime experiments.
- All evaluation is done on held-out test regions that were not used in model development. This mimics the real-world usage of such a network, where the network is expected to make predictions on regions unseen during training.
- I assemble a dataset of 88,386 images from 44,193 cities spanning Africa, South America, Asia, Europe, and the Caribbean. For each city, I obtain a daytime satellite image, a nighttime satellite image, and the city's wealth index.