Population Growth Dynamics in the Philippines (2015 – 2020)

# 1. Overview

The analysis draws on the two most recent population censuses conducted by the Philippine Statistics Authority (PSA) in 2015 and 2020. Because the government releases census data only every five years—and the 2025 results are not yet available—we lack annual observations and therefore cannot track short‑term population fluctuations or the immediate demographic impact of recent climate‑related events. Nonetheless, comparing 2015 and 2020 provides a snapshot of medium‑term demographic change across municipalities and cities.

# 2. Data Sources

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| Source | Description |
| 2015 PSA Census | Population counts at regional, provincial, and municipal/city levels. |
| 2020 PSA Census | Updated counts plus household numbers per municipality/city. |
| OpenStreetMap / Nominatim | Used to geocode latitude‑longitude coordinates for every municipality/city. |

# 3. Methodology

1. Data Cleaning – Aligned municipality/city names across the two censuses (accounting for spelling changes, splits, etc. ).
2. Geocoding – Leveraged the Python geopy wrapper for Nominatim to assign coordinates to each locality—enabling spatial visualisations and mapping.
3. Growth‑Rate Calculation – Growth Rate = (P2020 − P2015) / P2015 × 100
4. Visualisation Created:

* Interactive leaflet maps for 2015 population, 2020 population, and 2015‑20 growth rates.
* Interactive scatterplot by region (click twice on any region to see the constituent cities for that region).
* Regional box plots (particularly good at showcasing outliers).
* Municipality‑level heatmap.

# 4. Key Findings

* Nationwide trend: Almost all Philippine municipalities and cities have positive population growth between 2015 and 2020.
* Negative growth outliers: Only two localities—Cotabato Province (−7.6 %) and Navotas City (−0.77 %)—recorded a net loss of residents.
* Exceptional surge: Maguindanao Province registered a remarkable +42 % jump, largely due to administrative boundary changes associated with the creation of the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM).
* Regional clustering: Visayan growth was propelled by economic hubs such as Cebu (+13 %), while several remote or newly formed municipalities (e.g. Davao Occidental, +0.26 %) grew only marginally.

## Comparative Snapshot of Five Notable Localities

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| |  |  |  | | --- | --- | --- | | Municipality | Growth Rate | Primary Drivers | | Cotabato | −7.6 % | Armed conflict & displacement; 2019 earthquakes; 63 barangays carved out into BARMM. | | Navotas | −0.77 % | Urban saturation; net out‑migration to peri‑urban provinces; falling fertility. | | Maguindanao | +42 % | Annexation of new barangays & Cotabato City into BARMM; resettlement; high fertility. | | Cebu | +13 % | Job creation (tourism, IT‑BPO, manufacturing); infrastructure upgrades; migration. | | Davao Occidental | +0.26 % | Remote geography; limited industrial base; youth out‑migration. | |

# 5. Limitations

* Temporal granularity – Five‑year intervals hide short‑term climate shocks (e.g. typhoons, pandemic‑era shifts).
* Data gaps – Household‑level attributes data is only available for the 2020 census.
* Geocoding accuracy – Some rural barangays have approximate coordinates, introducing minor spatial error.

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