



Why Africa? Why Kenya?

“(1) Expanding Labor Force, (2) Increased Access to Education, (3) Diversifying Economy and (4) Improved Access to Financial and Healthcare Services” Africa, and specifically Kenya, has been overlooked as key regions for foreign investments due to the lack of insight into local key economic indicators, but as recently seen, Kenya’s GDP is increasing at an alarming rate (1.46%) since 2000, compared to the rest of the world (0.79%). We hope that our Dashboard will provide the necessary historical and projected information to understand the socioeconomic landscape of Kenya at a granular level.

Key Indicators of Economic Growth

Total Fertility Rate Average number of children a women will have over her lifetime
Education The average number of years of education the average person completes
Gross Domestic Product (GDP) by Sector The total market value of all the goods and services produced and sold annually per industry
Gross County Product (GCP) [2]
 The Percentage of Gross Value Added (GVA) attributed to a specific County

Data Sources

- The Demographic and Health Surveys (DHS) Data
- WorldPop Population Density
- Kenya’s Bureau of National Statistics
- Institute for Health Metrics and Evaluation (IHME)

Live Demo



Interact with the models:

- Population
- Fertility rate
- Education level
- GCP as a % of GVA
- Sector level GDP for each County
- GINI Index

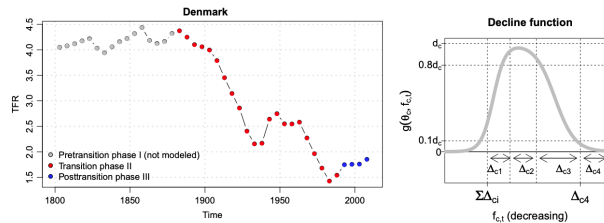
Approach & Methodology

Population Modeling

Our team uses the estimated TFR and life expectancy based on county-level DHS data in conjunction with the UN’s sub-national population prediction model to forecast TFR, Population, and Population by Gender.

Total Fertility Rate [1]

Bayesian model from Ševčíková et al. decomposes TFR into three phases: pre-transition high fertility, the fertility transition, and post-transition low fertility. The decline in fertility is modeled as the sum of two logistic functions. The post transition, is autoregressive, transitions are determined deterministically through heuristics.



$$f_{c,t+1} - \mu_c = \rho_c(f_{c,t} - \mu_c) + \varepsilon_{c,t}, \quad \text{with } \varepsilon_{c,t} \stackrel{iid}{\sim} N(0, \sigma_\varepsilon^2).$$

The three phases of TFR (left); double logistic curve with country parameters c where $f_{c,t}$ is TFR and $g(\theta_c, f_{c,t})$ is the first order difference in TFR [1].

GCP By Industry

Kenya has only recently started to monitor GDP by sector for a county, therefore we’ve used the four year (2017-2020) proportional reported average for each sector to understand historical sector trends for each county.

Key Findings

Takeaway 1: Nyandarua county has seen the largest relative increase in GVA from 2000 to 2020 [E].

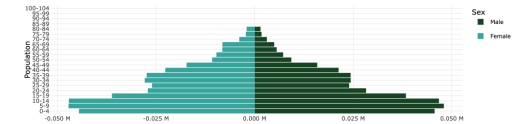
Takeaway 2: Nairobi’s population will peak around 2060 and begin to decrease due to the decrease in fertility [B, D].

Takeaway 3: Nairobi has seen a significant increase in individuals aged 15-29, while agriculture-based counties have a lack of individuals aged 15-29, indicating city-pull migration [A, C].

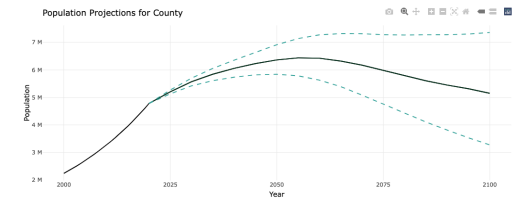
Takeaway 4: Nairobi’s fertility rate is falling below the replacement rate and stabilizing between 1.5 and 1.7 while the education level is increasing, signaling a transition towards industrialization [D].

Key Findings (Cont.)

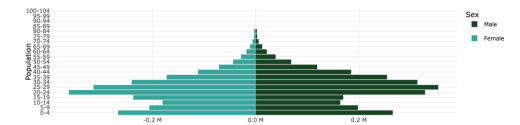
Nyandarua Demographics [A]



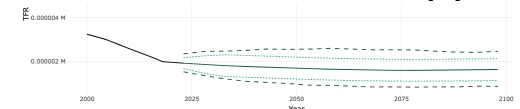
Nairobi Population Forecast [B]



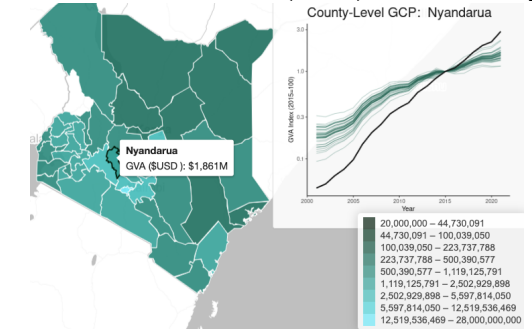
Nairobi Demographics [C]



Nairobi Total Fertility Rate [D]



Gross County Product (GCP) Forecasting [E]



References

1. Ševčíková, H., Raftery, A. E., Gerland, P. (2018). Probabilistic projection of subnational total fertility rates. *Demographic research*, 38, 1843.
2. “Home - Kenya National Bureau of Statistics, Nairobi, Kenya.” Kenya National Bureau of Statistics