ESMI KENYA

DATABASE SUMMARY

- Overall database content

Total No. of Areas	12
Total No. of Sites	51
Total No. of Income Groups	4

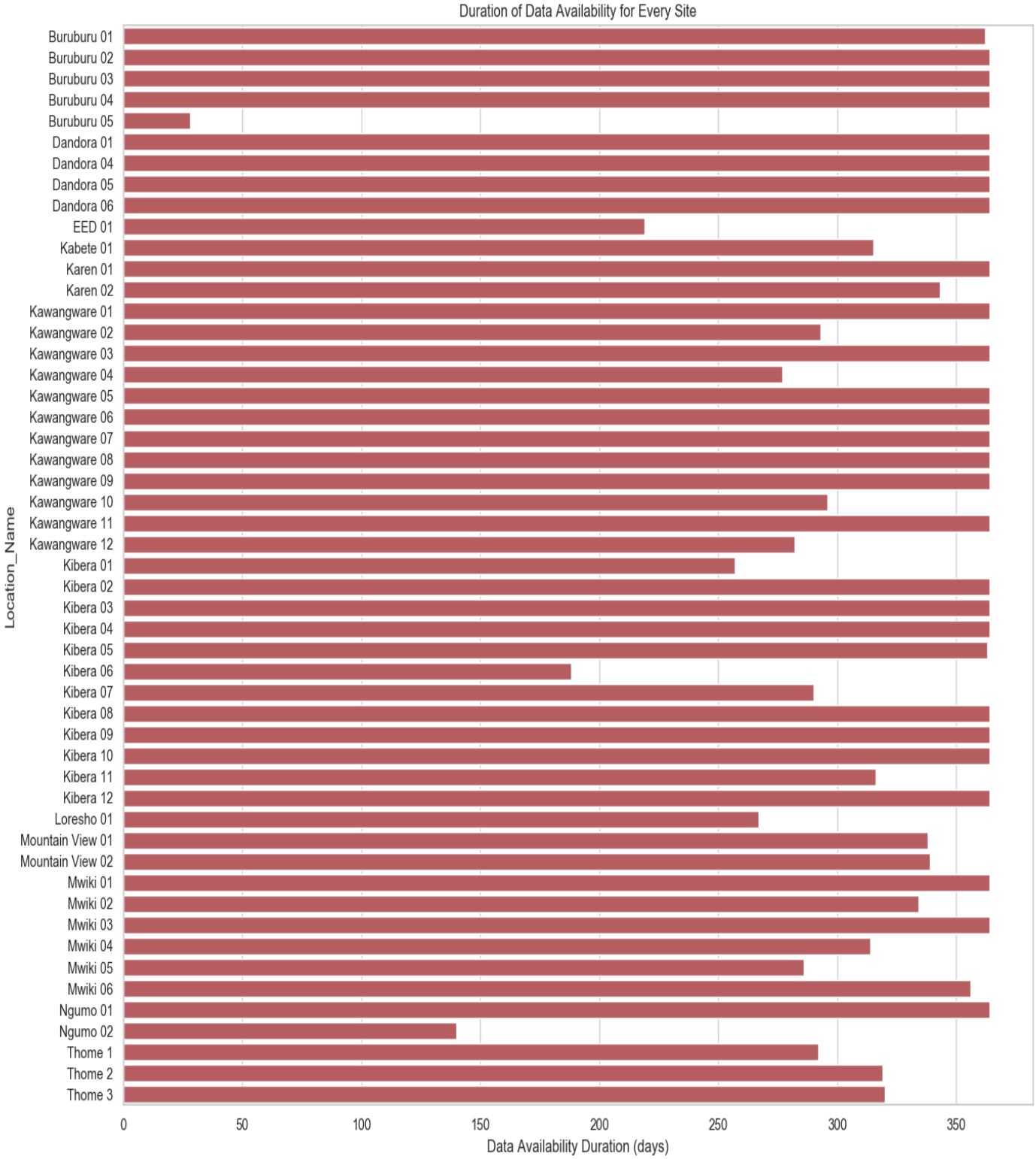
- Number of sites per income level

Income_Level	Total No. of Sites
High Income	6
Low Income	24
Lower Middle Income	10
Upper Middle Income	11

- Number of sites per Area

Area	Total No. of Sites
Buruburu	5
Dandora	4
EED	1
Kabete	1
Karen	2
Kawangware	12
Kibera	12
Loresho	1
Mountain View	2
Mwiki	6
Ngumo	2
Thome	3

SUMMARY OF DATA AVAILABILITY



EXECUTIVE SUMMARY

Daily Supply Availability

- 27% of customers receive more than 23 hours of electricity supply a day, 55% receive electricity for 16-23 hours a day, and the remaining 18% receive 8-16 hours of supply. 0 customers receive less than 8 hours of daily supply.
- Group receiving >= 23 hours of daily electricity supply consists of 22% high income customers, 22% upper middle-income customers, 22% lower middle-income customers, and 36% low-income customers. No high-income customer experiences as availability of less than 16 hours.
- 82% of customers receive more than 4 hours of evening electricity supply every day, 12% receive between 3 to 4 hours, and 6% receive 2 to 3 hours of evening electricity supply. 0 customers receive less than 2 hours of evening supply availability. NOTE: Evening hours for Nairobi – 6pm to 11pm.
- 100% of the high-income customers and 80% of low-income customers receive more than 4 hours of evening electricity supply. Lower evening availability of 2-3 hours is faced only by the lower middle income and low-income groups.

Weekly Outages

- 4% customers experience on an average less than 4 weekly outages, 70% faced 4-14 weekly outages, 22% faced 14-30 weekly outages, and the remaining 4% customers faced more than 30 outages per week.
- High income customers experience less than 14 outages per week. 81% of upper middle-income customers, and 75% of low-income customers experience 4-14 outages per week. 50% of lower middle-income customers experience 14-30 outages a week and 10% of them experience more than 30 weekly outages.
- Group experiencing more than 30 weekly outages consists of 50% low-income and 50% lower middle-income customers. Group experiencing less than 4 weekly outages consists of 50% high-income and 50% low-income customers.
- 6% of the total customers experience less than 2 hours of weekly outages, 33% customers experience 2-5 hours of outages per week, 41% experience 5-12 hours of weekly outages, and the remaining 20% customers experience more than 12 hours of outages per week.
- High-income customers experience less than 5 hours of outages per week, while 71% of low-income customers experience more 5 hours of weekly disruptions. 21% of low-income, 40% of lower-middle income, and 9.1% of upper middle-income customers experience >=12 hours of outages per week.

Daily Power Quality

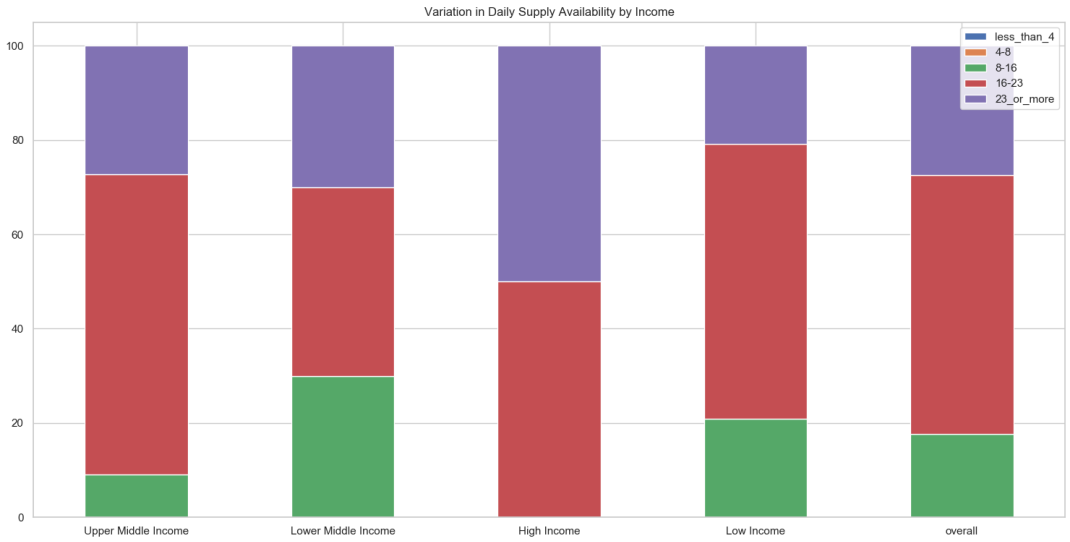
- In a day, high-income, low-income, lower-middle income, and upper-middle income customers on an average face no supply issues for 1.7%, 4.7%, 11.18%, and 4.3% of their daily time respectively.
- In a day, high-income, low-income, lower-middle income, and upper-middle income customers on an average face low voltage issues for 4.7%, 15.3%, 21.3%, and 2.6% of their daily time respectively. These numbers show that low income and lower-middle income customers encounter low voltage conditions for much more duration in comparison to their counterparts.
- For 86% of a day, the high-income customers face no voltage problems while the low-income customers experience good voltage for only 60% of their day.
- Over-voltage occurrence is very rare and its duration accounts for 1-3% of a customer's day.
- Top 3 areas that face the highest supply unavailability duration in a day – Dandora (unavailable for 15% of a day), Kabete (unavailable for 8% of a day), Mwiki (unavailable for 7% of a day). Top 3 areas with least supply unavailability duration in a day – EED (unavailable for 0.2% of a day), Mountain view (unavailable for 1.7% of a day), and Buruburu (unavailable for 2.17% of a day).
- Top 3 areas that face the highest low voltage duration in a day – Dandora (32% of a day), Kibera (25% of a day), Karen (15% of a day). Top 3 areas with least low voltage duration in a day – EED (0.0% of a day), Ngumo (0.014% of a day), and Mountain View (0.54% of a day).

TERMINOLOGY

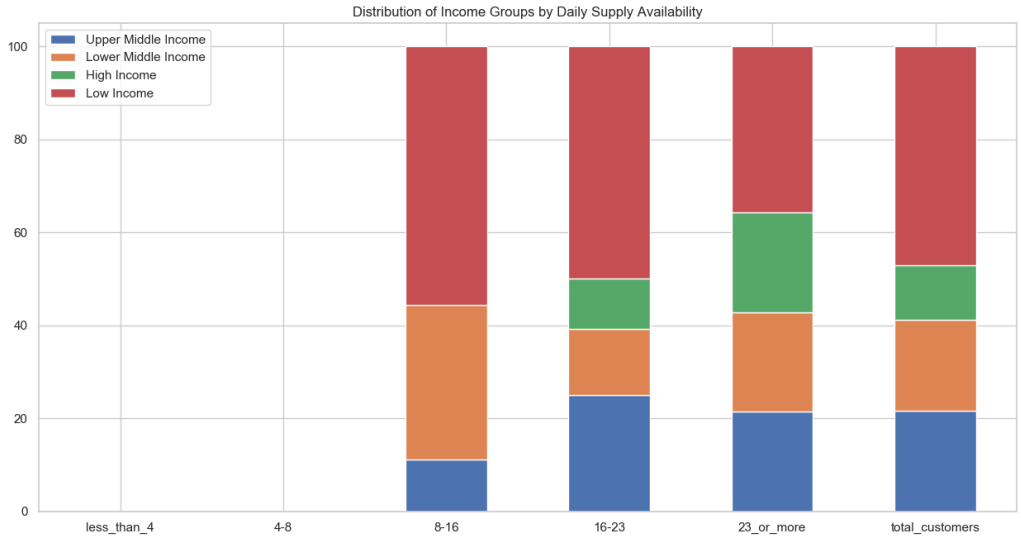
- No supply/ interruption: V<100
- Low voltage: 100<= V < 226
- Normal voltage: 226<= V < 254 *[(+/-) 6% of 240V set by Kenya Power Ltd.]*
- Over voltage: V >=254
- Evening supply hours: 6pm to 11pm

DAILY SUPPLY AVAILABILITY

- Daily supply availability by income:
  - Variation in the no. of customers experiencing different daily supply availability within each income group.
  - X: income groups
  - Y: % of customers
  - Legend: supply availability (hours)

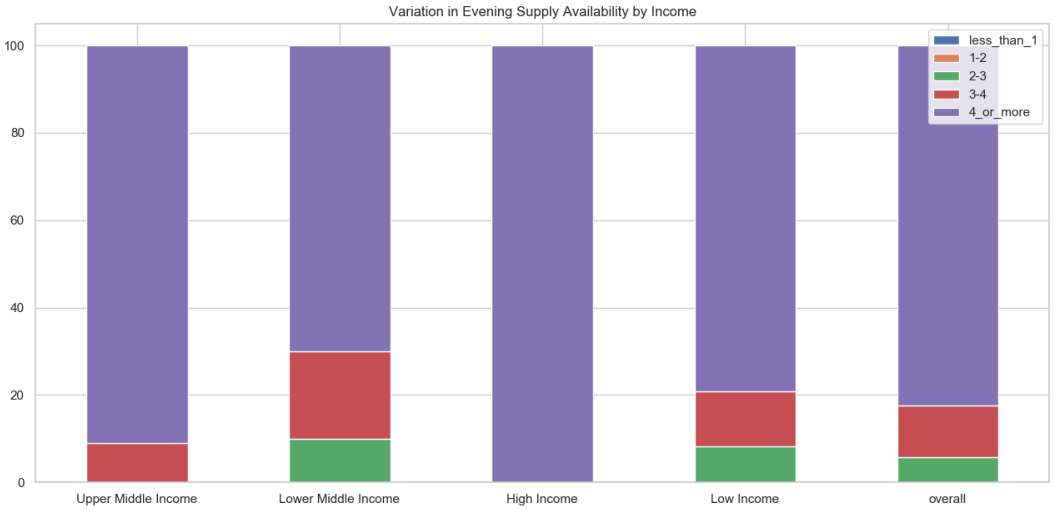


- Income divisions by daily supply availability:
  - Variation in the number of customers belonging to different income groups for given daily supply availability ranges.
  - X: supply availability (hours)
  - Y: % customers
  - Legend: income group of customers

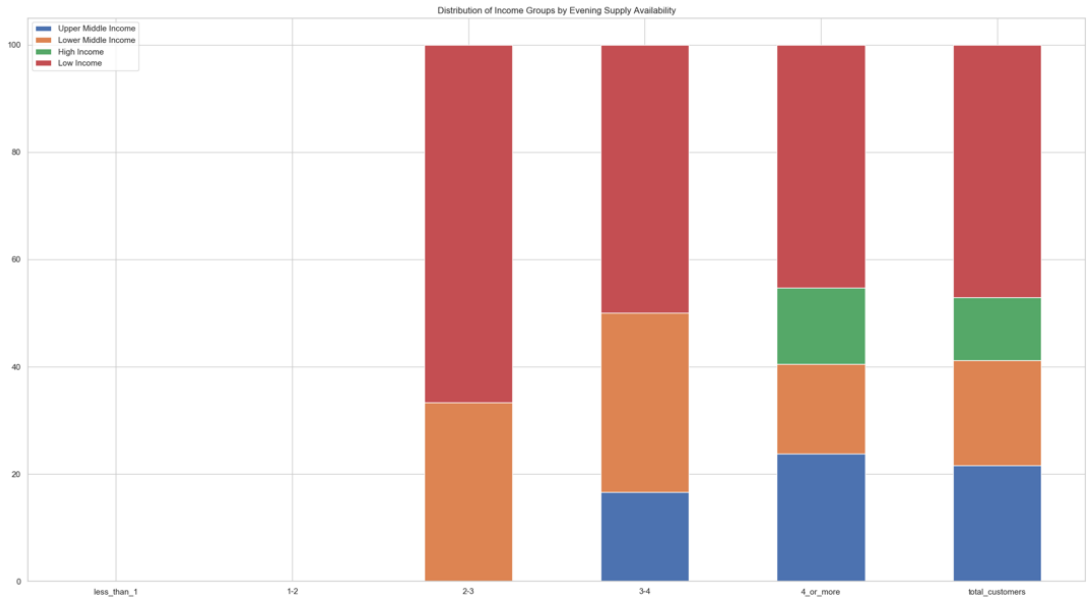


EVENING SUPPLY AVAILABILITY

- Evening supply availability by income:
  - Variation in the number of customers experiencing different evening supply availability within a given income group.
  - X: Income groups
  - Y: % customers
  - Legend: Evening supply availability (hours)



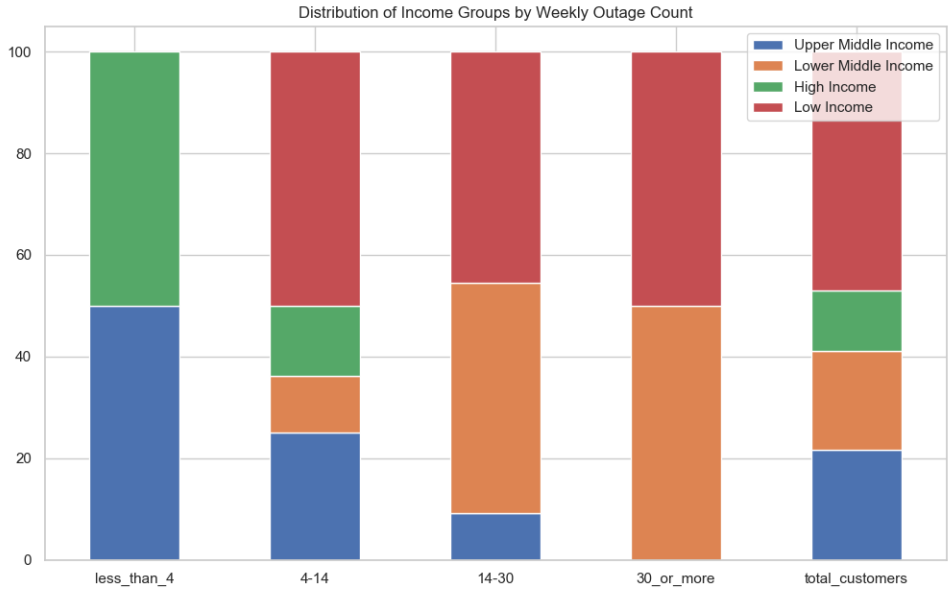
- Income divisions by evening supply availability:
  - Variation in the total number of customers from different income groups for a given evening availability group/range.
  - X: evening supply availability groups
  - Y: % customers
  - Legend: Income groups



RELIABILITY (NO. OF WEEKLY OUTAGES)

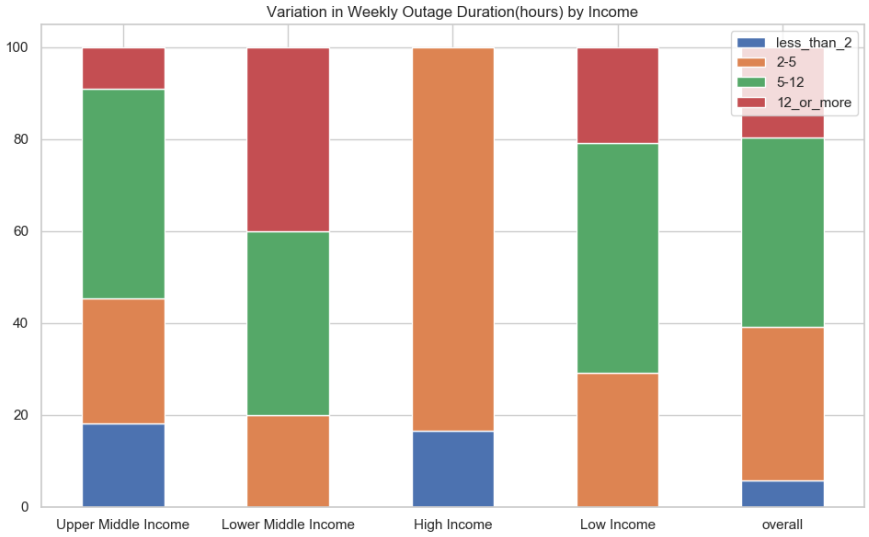
- Weekly outages count by income:
  - Variation in the number of customers experiencing different no. of outages within a given income group.
  - X: Income groups
  - Y: % customers
  - Legend: Number of weekly outages

- Income division for every outage count group:
  - Variation in the total number of customers belonging to different income groups for a given weekly outage count group/range.
  - X: weekly outages group
  - Y: % customers



RELIABILITY (DURATION OF WEEKLY OUTAGES)

- Variation in weekly outage duration by income groups:
  - Variation in the number of customers experiencing different outage durations within a given income group.
  - X: Income groups
  - Y: % customers
  - Legend: weekly outage duration groups

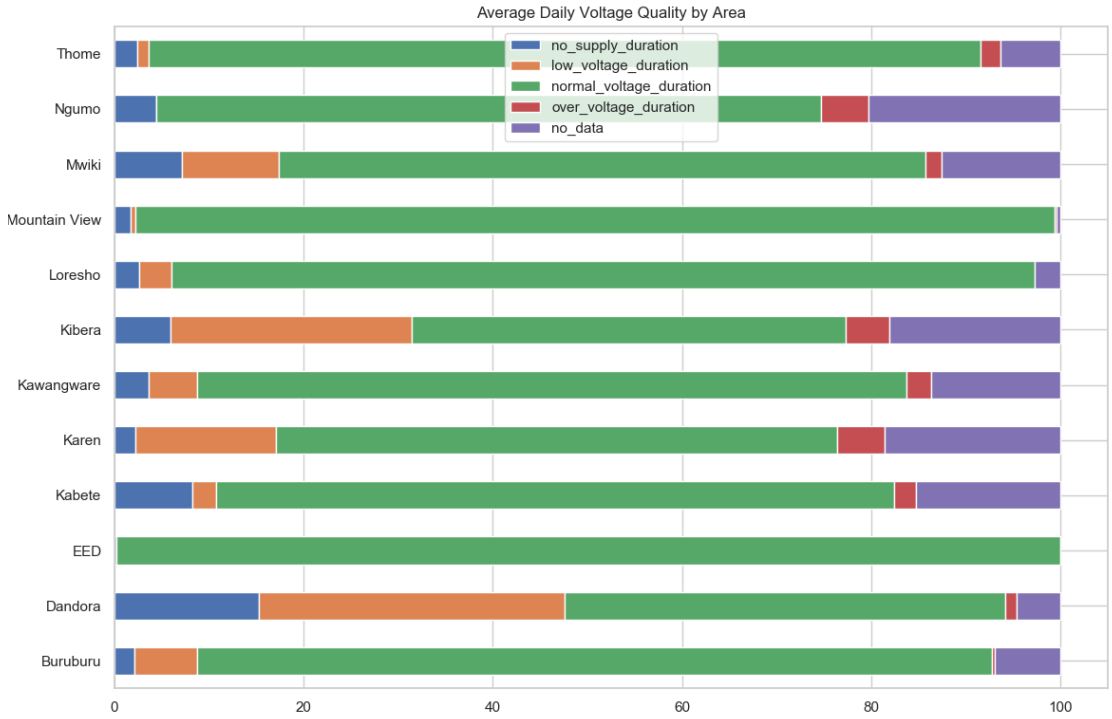


- Income division for every outage duration group:
  - Variation in the number of customers belonging to different income groups for a given outage duration group or range.
  - X: outage duration group/ range
  - Y: % customers
  - Legend: Income groups

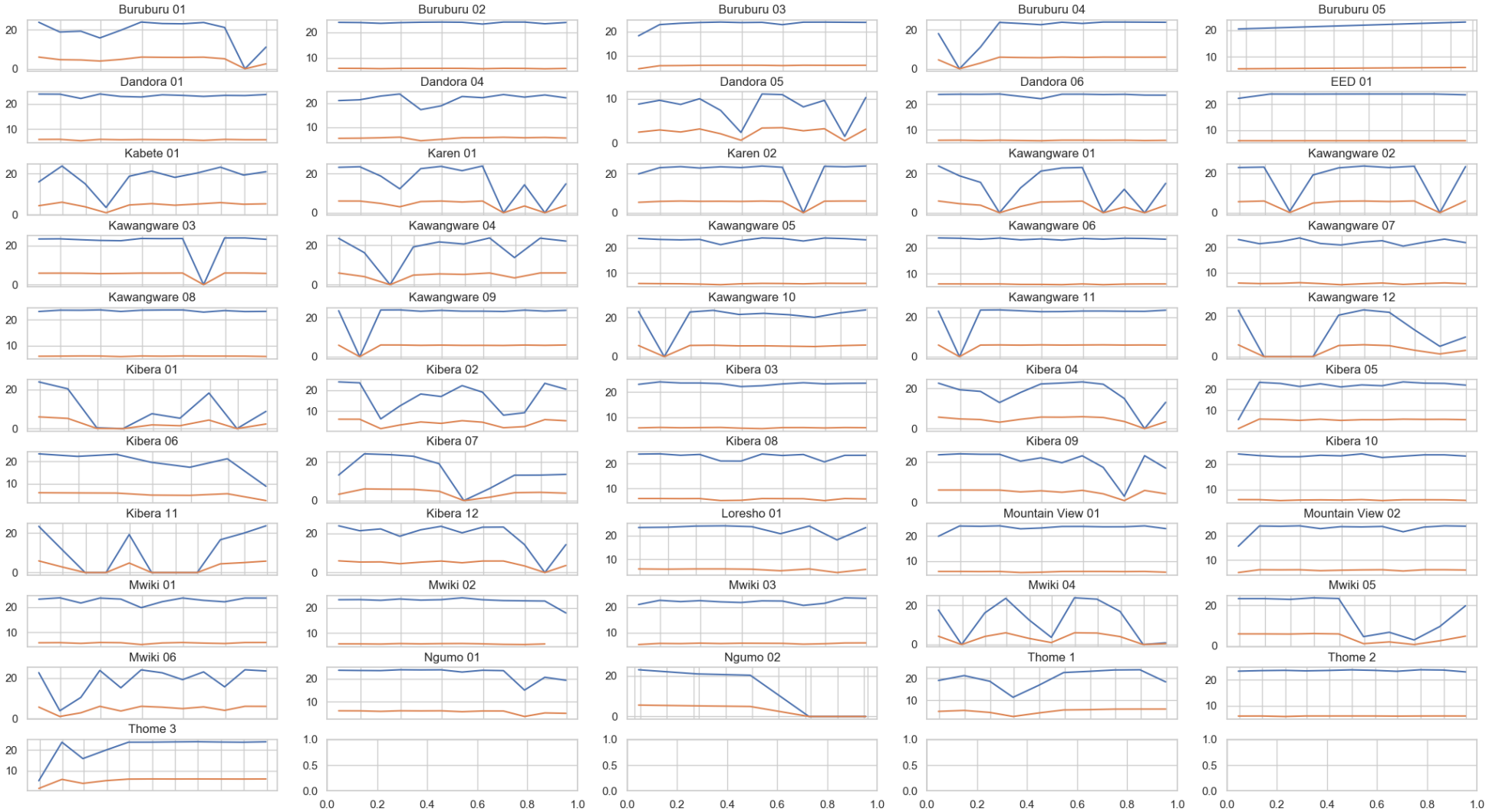
DAILY POWER QUALITY

- Variation in daily voltage quality by income:
  - Duration of different voltage levels experienced in a day by an income group.
  - X: % of 24 hours
  - Y: Income groups
  - Legend: voltage levels – no supply, low voltage, over voltage, normal voltage, and no data

- Variation in daily voltage quality by area:
  - Duration of different voltage levels experienced in a day by an area.
  - X: % of 24 hours
  - Y: Areas
  - Legend: Voltage levels



DAILY AVAILABILITY TRENDS (X: Months, Y: Hours, Blue: Daily Availability, Orange: Evening Availability)



LOW VOLTAGE DURATION TRENDS (X: Months, Y: Hours, Blue: Low Voltage Duration)