

Life Expectancy by Age, Gender and Counties in Kenya

2019 Kenya Population and Housing Census - KPHC Census Analytical Report on Population Dynamics Volume VIII

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Table of Contents

Plots and Insights	16
Life Expectancy at birth (age 0)	20
Plot - birth (age 0)	20
Analysis of Life Expectancy at birth (age 0)	21
Top 5 counties with greatest and least life expectancy - birth (age 0)	21
Top 5 counties above and below National life expectancy - birth (age 0)	22
Top 5 counties above and below Rural life expectancy - birth (age 0)	22
Top 5 counties above and below Urban life expectancy - birth (age 0)	22
Top 5 counties where men have higher life expectancy than women - birth (age 0)	22
Other Statistics - birth (age 0)	22
Life Expectancy at age 20	23
Plot - age 20	23
Analysis of Life Expectancy at age 20	24
Top 5 counties with greatest and least life expectancy - age 20	24
Top 5 counties above and below National life expectancy - age 20	25
Top 5 counties above and below Rural life expectancy - age 20	25
Top 5 counties above and below Urban life expectancy - age 20	25
Top 5 counties where men have higher life expectancy than women - age 20	25

Other Statistics - age 20	25
Life Expectancy at age 60	26
Plot - age 60	26
Analysis of Life Expectancy at age 60	27
Top 5 counties with greatest and least life expectancy - age 60 .	27
Top 5 counties above and below National life expectancy - age 60	28
Top 5 counties above and below Rural life expectancy - age 60 .	28
Top 5 counties above and below Urban life expectancy - age 60 .	28
Top 5 counties where men have higher life expectancy than women	
- age 60	28
Other Statistics - age 60	28
Life Expectancy at age 80	29
Plot - age 80	29
Analysis of Life Expectancy at age 80	30
Top 5 counties with greatest and least life expectancy - age 80 .	30
Top 5 counties above and below National life expectancy - age 80	31
Top 5 counties above and below Rural life expectancy - age 80 .	31
Top 5 counties above and below Urban life expectancy - age 80 .	31
Other Statistics - age 80	31
Insights	32

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We plot and analyze the life expectancy in Kenya by age, gender and counties. The data is from the 2019 Kenya Population and Housing Census. The data is available in the [Kenya National Bureau of Statistics website](#) ¹. We will extract the data from Table 5.7, page 70 of the [KPHC Census Analytical Report on Population Dynamics Volume VIII](#) ²

The following is an image of the table we will be using:

¹Kenya National Bureau of Statistics website

²KPHC Census Analytical Report on Population Dynamics Volume VIII

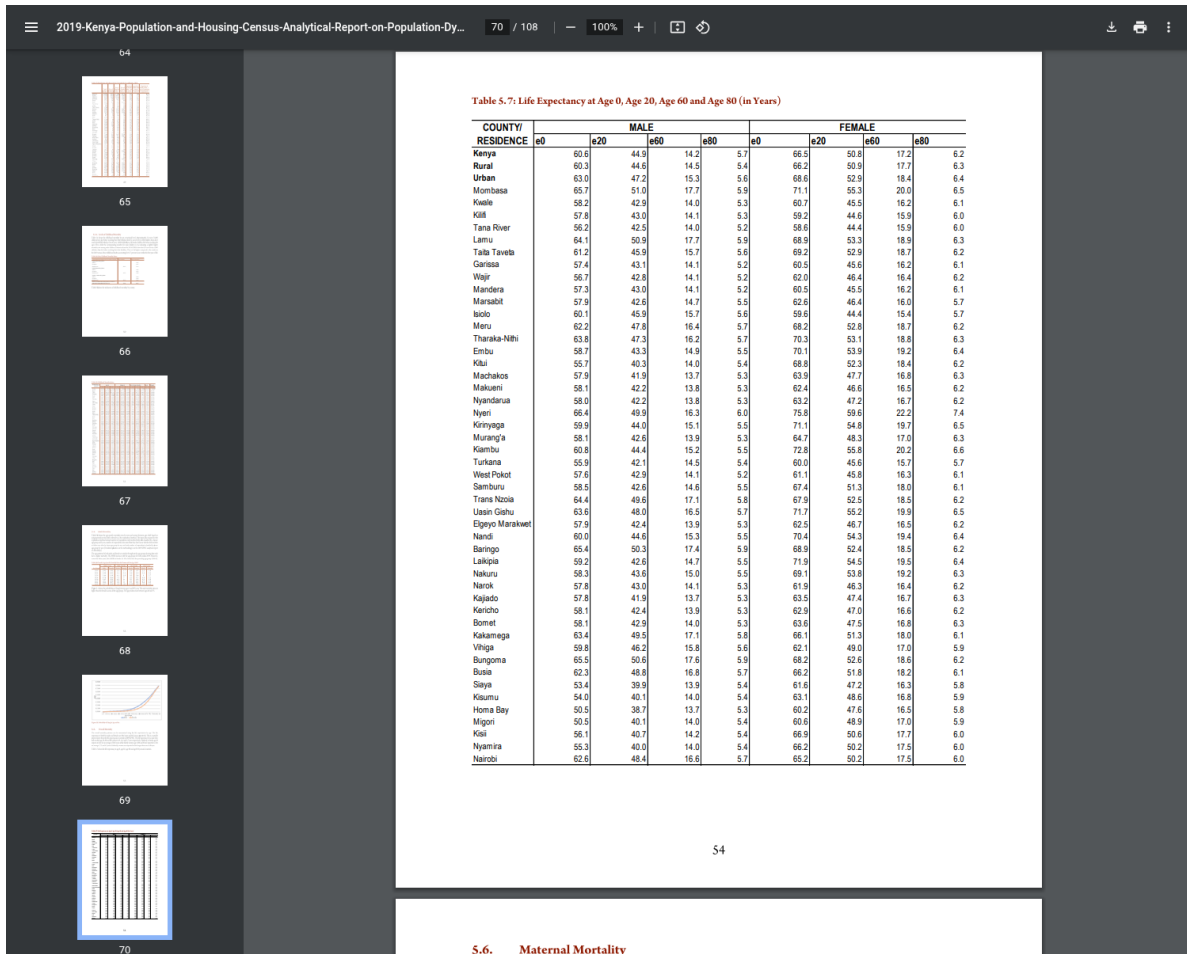


Figure 1: Table 5.7, page 70 of the 2019 Kenya Population and Housing Census Analytical Report on Population Dynamics Vol VIII.

```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from adjustText import adjust_text
from IPython.display import display, Markdown
```

```
data_dict = {
    ('', 'COUNTY/RESIDENCE'): [
        "Kenya",
        "Rural",
        "Urban",
        "Mombasa",
```

"Kwale",
"Kilifi",
"Tana River",
"Lamu",
"Taita Taveta",
"Garissa",
"Wajir",
"Mandera",
"Marsabit",
"Isiolo",
"Meru",
"Tharaka-Nithi",
"Embu",
"Kitui",
"Machakos",
"Makueni",
"Nyandarua",
"Nyeri",
"Kirinyaga",
"Murang'a",
"Kiambu",
"Turkana",
"West Pokot",
"Samburu",
"Trans Nzoia",
"Uasin Gishu",
"Elgeyo Marakwet",
"Nandi",
"Baringo",
"Laikipia",
"Nakuru",
"Narok",
"Kajiado",
"Kericho",
"Bomet",
"Kakamega",
"Vihiga",
"Bungoma",
"Busia",
"Siaya",
"Kisumu",
"Homa Bay",

```
"Migori",
"Kisii",
"Nyamira",
"Nairobi"
],
("MALE", "birth (age 0)": [
60.6,
60.3,
63.0,
65.7,
58.2,
57.8,
56.2,
64.1,
61.2,
57.4,
56.7,
57.3,
57.9,
60.1,
62.2,
63.8,
58.7,
55.7,
57.9,
58.1,
58.0,
66.4,
59.9,
58.1,
60.8,
55.9,
57.6,
58.5,
64.4,
63.6,
57.9,
60.0,
65.4,
59.2,
58.3,
57.8,
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```
57.8,  
58.1,  
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63.4,  
59.8,  
65.5,  
62.3,  
53.4,  
54.0,  
50.5,  
50.5,  
56.1,  
55.3,  
62.6  
,  
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43.0,  
42.5,  
50.9,  
45.9,  
43.1,  
42.8,  
43.0,  
42.6,  
45.9,  
47.8,  
47.3,  
43.3,  
40.3,  
41.9,  
42.2,  
42.2,  
49.9,  
44.0,  
42.6,  
44.4,  
42.1,
```

```
42.9,  
42.6,  
49.6,  
48.0,  
42.4,  
44.6,  
50.3,  
42.6,  
43.6,  
43.0,  
41.9,  
42.4,  
42.9,  
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46.2,  
50.6,  
48.8,  
39.9,  
40.1,  
38.7,  
40.1,  
40.7,  
40.0,  
48.4  
,  
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14.0,  
17.7,  
15.7,  
14.1,  
14.1,  
14.1,  
14.1,  
14.7,  
15.7,  
16.4,  
16.2,
```

```
14.9,  
14.0,  
13.7,  
13.8,  
13.8,  
16.3,  
15.1,  
13.9,  
15.2,  
14.5,  
14.1,  
14.6,  
17.1,  
16.5,  
13.9,  
15.3,  
17.4,  
14.7,  
15.0,  
14.1,  
13.7,  
13.9,  
14.0,  
17.1,  
15.8,  
17.6,  
16.8,  
13.9,  
14.0,  
13.7,  
14.0,  
14.2,  
14.0,  
16.6  
],  
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5.4,  
5.6,  
5.9,  
5.3,  
5.3,
```


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5.9,
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5.5,
5.6,
5.7,
5.7,
5.5,
5.4,
5.3,
5.3,
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5.5,
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5.5,
5.4,
5.2,
5.5,
5.8,
5.7,
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5.8,
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5.7,
5.4,
5.4,
5.3,
5.4,
5.4,

```
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5.7  
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66.2,  
68.6,  
71.1,  
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58.6,  
68.9,  
69.2,  
60.5,  
62.0,  
60.5,  
62.6,  
59.6,  
68.2,  
70.3,  
70.1,  
68.8,  
63.9,  
62.4,  
63.2,  
75.8,  
71.1,  
64.7,  
72.8,  
60.0,  
61.1,  
67.4,  
67.9,  
71.7,  
62.5,  
70.4,  
68.9,  
71.9,  
69.1,  
61.9,  
63.5,  
62.9,
```

```
63.6,  
66.1,  
62.1,  
68.2,  
66.2,  
61.6,  
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60.2,  
60.6,  
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66.2,  
65.2  
,  
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50.8,  
50.9,  
52.9,  
55.3,  
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44.4,  
53.3,  
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46.6,  
47.2,  
59.6,  
54.8,  
48.3,  
55.8,  
45.6,  
45.8,  
51.3,
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```
52.5,  
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46.7,  
54.3,  
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46.3,  
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18.9,  
18.7,  
16.2,  
16.4,  
16.2,  
16.0,  
15.4,  
18.7,  
18.8,  
19.2,  
18.4,
```

```
16.8,  
16.5,  
16.7,  
22.2,  
19.7,  
17.0,  
20.2,  
15.7,  
16.3,  
18.0,  
18.5,  
19.9,  
16.5,  
19.4,  
18.5,  
19.5,  
19.2,  
16.4,  
16.7,  
16.6,  
16.8,  
18.0,  
17.0,  
18.6,  
18.2,  
16.3,  
16.8,  
16.5,  
17.0,  
17.7,  
17.5,  
17.5  
],  
("FEMALE", "age 80"): [  
6.2,  
6.3,  
6.4,  
6.5,  
6.1,  
6.0,  
6.0,  
6.3,
```

6.2,
6.1,
6.2,
6.1,
5.7,
5.7,
6.2,
6.3,
6.4,
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5.9,
6.2,
6.1,
5.8,
5.9,
5.8,
5.9,
6.0,
6.0,
6.0

```

    ]
}
df = pd.DataFrame(data_dict)
df.set_index(df.columns[0], inplace=True)
df

```

Table 1: Life Expectancy by Age, Gender and Region at Age 0, Age 20, Age 60 and Age 80 (in Years)

(, COUNTY/RESIDENCE)	MALE				FEMALE			
	birth (age 0)	age 20	age 60	age 80	birth (age 0)	age 20	age 60	age 80
Kenya	60.6	44.9	14.2	5.7	66.5	50.8	17.2	6.2
Rural	60.3	44.6	14.5	5.4	66.2	50.9	17.7	6.3
Urban	63.0	47.2	15.3	5.6	68.6	52.9	18.4	6.4
Mombasa	65.7	51.0	17.7	5.9	71.1	55.3	20.0	6.5
Kwale	58.2	42.9	14.0	5.3	60.7	45.5	16.2	6.1
Kilifi	57.8	43.0	14.1	5.3	59.2	44.6	15.9	6.0
Tana River	56.2	42.5	14.0	5.2	58.6	44.4	15.9	6.0
Lamu	64.1	50.9	17.7	5.9	68.9	53.3	18.9	6.3
Taita Taveta	61.2	45.9	15.7	5.6	69.2	52.9	18.7	6.2
Garissa	57.4	43.1	14.1	5.2	60.5	45.6	16.2	6.1
Wajir	56.7	42.8	14.1	5.2	62.0	46.4	16.4	6.2
Mandera	57.3	43.0	14.1	5.2	60.5	45.5	16.2	6.1
Marsabit	57.9	42.6	14.7	5.5	62.6	46.4	16.0	5.7
Isiolo	60.1	45.9	15.7	5.6	59.6	44.4	15.4	5.7
Meru	62.2	47.8	16.4	5.7	68.2	52.8	18.7	6.2
Tharaka-Nithi	63.8	47.3	16.2	5.7	70.3	53.1	18.8	6.3
Embu	58.7	43.3	14.9	5.5	70.1	53.9	19.2	6.4
Kitui	55.7	40.3	14.0	5.4	68.8	52.3	18.4	6.2
Machakos	57.9	41.9	13.7	5.3	63.9	47.7	16.8	6.3
Makueni	58.1	42.2	13.8	5.3	62.4	46.6	16.5	6.2
Nyandarua	58.0	42.2	13.8	5.3	63.2	47.2	16.7	6.2
Nyeri	66.4	49.9	16.3	6.0	75.8	59.6	22.2	7.4
Kirinyaga	59.9	44.0	15.1	5.5	71.1	54.8	19.7	6.5
Murang'a	58.1	42.6	13.9	5.3	64.7	48.3	17.0	6.3
Kiambu	60.8	44.4	15.2	5.5	72.8	55.8	20.2	6.6
Turkana	55.9	42.1	14.5	5.4	60.0	45.6	15.7	5.7
West Pokot	57.6	42.9	14.1	5.2	61.1	45.8	16.3	6.1
Samburu	58.5	42.6	14.6	5.5	67.4	51.3	18.0	6.1
Trans Nzoia	64.4	49.6	17.1	5.8	67.9	52.5	18.5	6.2

(, COUNTY/RESIDENCE)	MALE				FEMALE			
	birth (age 0)	age 20	age 60	age 80	birth (age 0)	age 20	age 60	age 80
Uasin Gishu	63.6	48.0	16.5	5.7	71.7	55.2	19.9	6.5
Elgeyo Marakwet	57.9	42.4	13.9	5.3	62.5	46.7	16.5	6.2
Nandi	60.0	44.6	15.3	5.5	70.4	54.3	19.4	6.4
Baringo	65.4	50.3	17.4	5.9	68.9	52.4	18.5	6.2
Laikipia	59.2	42.6	14.7	5.5	71.9	54.5	19.5	6.4
Nakuru	58.3	43.6	15.0	5.5	69.1	53.8	19.2	6.3
Narok	57.8	43.0	14.1	5.3	61.9	46.3	16.4	6.2
Kajiado	57.8	41.9	13.7	5.3	63.5	47.4	16.7	6.3
Kericho	58.1	42.4	13.9	5.3	62.9	47.0	16.6	6.2
Bomet	58.1	42.9	14.0	5.3	63.6	47.5	16.8	6.3
Kakamega	63.4	49.5	17.1	5.8	66.1	51.3	18.0	6.1
Vihiga	59.8	46.2	15.8	5.6	62.1	49.0	17.0	5.9
Bungoma	65.5	50.6	17.6	5.9	68.2	52.6	18.6	6.2
Busia	62.3	48.8	16.8	5.7	66.2	51.8	18.2	6.1
Siaya	53.4	39.9	13.9	5.4	61.6	47.2	16.3	5.8
Kisumu	54.0	40.1	14.0	5.4	63.1	48.6	16.8	5.9
Homa Bay	50.5	38.7	13.7	5.3	60.2	47.6	16.5	5.8
Migori	50.5	40.1	14.0	5.4	60.6	48.9	17.0	5.9
Kisii	56.1	40.7	14.2	5.4	66.9	50.6	17.7	6.0
Nyamira	55.3	40.0	14.0	5.4	66.2	50.2	17.5	6.0
Nairobi	62.6	48.4	16.6	5.7	65.2	50.2	17.5	6.0

Plots and Insights

```
def life_expectancy_analysis(age_column: str, axis_margin: float = 1.2):
    """ Life Expectancy
    display(Markdown(
        "\n"
        f"### Life Expectancy at {age_column}"
        "\n"))
    kenya = df.loc["Kenya"]
    rural = df.loc["Rural"]
    urban = df.loc["Urban"]
    drop_columns = [kenya.name, rural.name, urban.name]
    males = df[('MALE', age_column)].drop(drop_columns).tolist()
    females = df[('FEMALE', age_column)].drop(drop_columns).tolist()
    counties = df.index.drop(drop_columns).tolist()
```



```

#### Plotting
display(Markdown(
    "\n"
    f"#### Plot - {age_column}"
    "\n"))
plt.figure(figsize=(12, 10))
# Plot the counties
sns.scatterplot(
    x=males, y=females, s=60, alpha=0.9, label='Counties Life Expectancy')
# Plot reference lines for Kenya, Rural, Urban
plt.axvline(
    x=kenya[('MALE', age_column)], color='r', linestyle='dashdot', alpha=0.3)
plt.axhline(
    y=kenya[('FEMALE', age_column)], color='r', linestyle='dashdot', alpha=0.3,
    label='National Life Expectancy')
plt.axvline(
    x=rural[('MALE', age_column)], color='g', linestyle='dashdot', alpha=0.3)
plt.axhline(
    y=rural[('FEMALE', age_column)], color='g', linestyle='dashdot', alpha=0.3,
    label='Rural Life Expectancy')
plt.axvline(
    x=urban[('MALE', age_column)], color='b', linestyle='dashdot', alpha=0.3)
plt.axhline(
    y=urban[('FEMALE', age_column)], color='b', linestyle='dashdot', alpha=0.3,
    label='Urban Life Expectancy')
# Add diagonal line representing equal life expectancy
min_val = min(min(males), min(females))
max_val = max(max(males), max(females))
plt.plot(
    [min_val, max_val], [min_val, max_val], color='gray', linestyle='solid',
    alpha=0.3, label='Equal Life Expectancy')
# Add labels for reference points
texts = [
    plt.text(males[i], females[i], counties[i], fontsize=10)
    for i
    in range(len(counties))]
adjust_text(texts, arrowprops=dict(arrowstyle='-', color='black', lw=0.5))
# Adjust limits based on scatter data
plt.xlim(min(males) - axis_margin, max(males) + axis_margin)
plt.ylim(min(females) - axis_margin, max(females) + axis_margin)
plt.grid(True, alpha=0.2)
plt.title(

```

```

    f'Life Expectancy at {age_column} by County in Kenya: Male vs Female',
    fontsize=16)
plt.xlabel('Male Life Expectancy (years)', fontsize=14)
plt.ylabel('Female Life Expectancy (years)', fontsize=14)
plt.legend(loc='upper left')
plt.tight_layout()
plt.show()
#### Analysis of Life Expectancy
display(Markdown(
    "\n"
    f"#### Analysis of Life Expectancy at {age_column}"
    "\n"))
kenya_males = kenya[('MALE', age_column)]
kenya_females = kenya[('FEMALE', age_column)]
rural_males = rural[('MALE', age_column)]
rural_females = rural[('FEMALE', age_column)]
urban_males = urban[('MALE', age_column)]
urban_females = urban[('FEMALE', age_column)]
county_analysis_df = pd.DataFrame({
    'COUNTY': counties,
    'MALE': males,
    'FEMALE': females
})
##### Top 5 counties greatest and least life expectancy
display(Markdown(
    "\n"
    f"##### Top 5 counties with greatest and least life expectancy - {age_column}"
    "\n"))
men_by_county_asc = county_analysis_df\
    .sort_values("MALE", ascending=True)\
    .head(5)\
    .apply(lambda x: f'{x["COUNTY"]} - {x["MALE"]}', axis=1)\
    .tolist()
men_by_county_desc = county_analysis_df\
    .sort_values("MALE", ascending=False)\
    .head(5)\
    .apply(lambda x: f'{x["COUNTY"]} - {x["MALE"]}', axis=1)\
    .tolist()
women_by_county_asc = county_analysis_df\
    .sort_values("FEMALE", ascending=True)\
    .head(5)\
    .apply(lambda x: f'{x["COUNTY"]} - {x["FEMALE"]}', axis=1)\

```

```

.tolist()
women_by_county_desc = county_analysis_df\
    .sort_values("FEMALE", ascending=False)\
    .head(5)\
    .apply(lambda x: f'{x["COUNTY"]} - {x["FEMALE"]}', axis=1)\
    .tolist()
display(pd.DataFrame({
    '[men] by_county_desc': men_by_county_desc,
    '[men] by_county_asc': men_by_county_asc,
    '[women] by_county_desc': women_by_county_desc,
    '[women] by_county_asc': women_by_county_asc,
}, index=range(1, 6)))
# Analysis
def above_or_below(reference: str, males: float, females: float):
    men_by_county_below = county_analysis_df\
        [county_analysis_df["MALE"] <= males]\
        .sort_values("MALE", ascending=True)\
        .apply(lambda x: f'{x["COUNTY"]} - {x["MALE"]}', axis=1)\
        .tolist()
    men_by_county_above = county_analysis_df\
        [county_analysis_df["MALE"] > males]\
        .sort_values("MALE", ascending=False)\
        .apply(lambda x: f'{x["COUNTY"]} - {x["MALE"]}', axis=1)\
        .tolist()
    women_by_county_below = county_analysis_df\
        [county_analysis_df["FEMALE"] <= females]\
        .sort_values("FEMALE", ascending=True)\
        .apply(lambda x: f'{x["COUNTY"]} - {x["FEMALE"]}', axis=1)\
        .tolist()
    women_by_county_above = county_analysis_df\
        [county_analysis_df["FEMALE"] > females]\
        .sort_values("FEMALE", ascending=False)\
        .apply(lambda x: f'{x["COUNTY"]} - {x["FEMALE"]}', axis=1)\
        .tolist()
    return pd.DataFrame.from_dict({
        f'({len(men_by_county_above)}) [men] above {reference}': men_by_county_above[:6]
        f'({len(men_by_county_below)}) [men] below {reference}': men_by_county_below[:6]
        f'({len(women_by_county_above)}) [women] above {reference}': women_by_county_abov
        f'({len(women_by_county_below)}) [women] below {reference}': women_by_county_bel
    }, orient='index').T.reindex(index=range(1, 6))
#### Top 5 counties above and below national life expectancy"
display(Markdown(

```

```

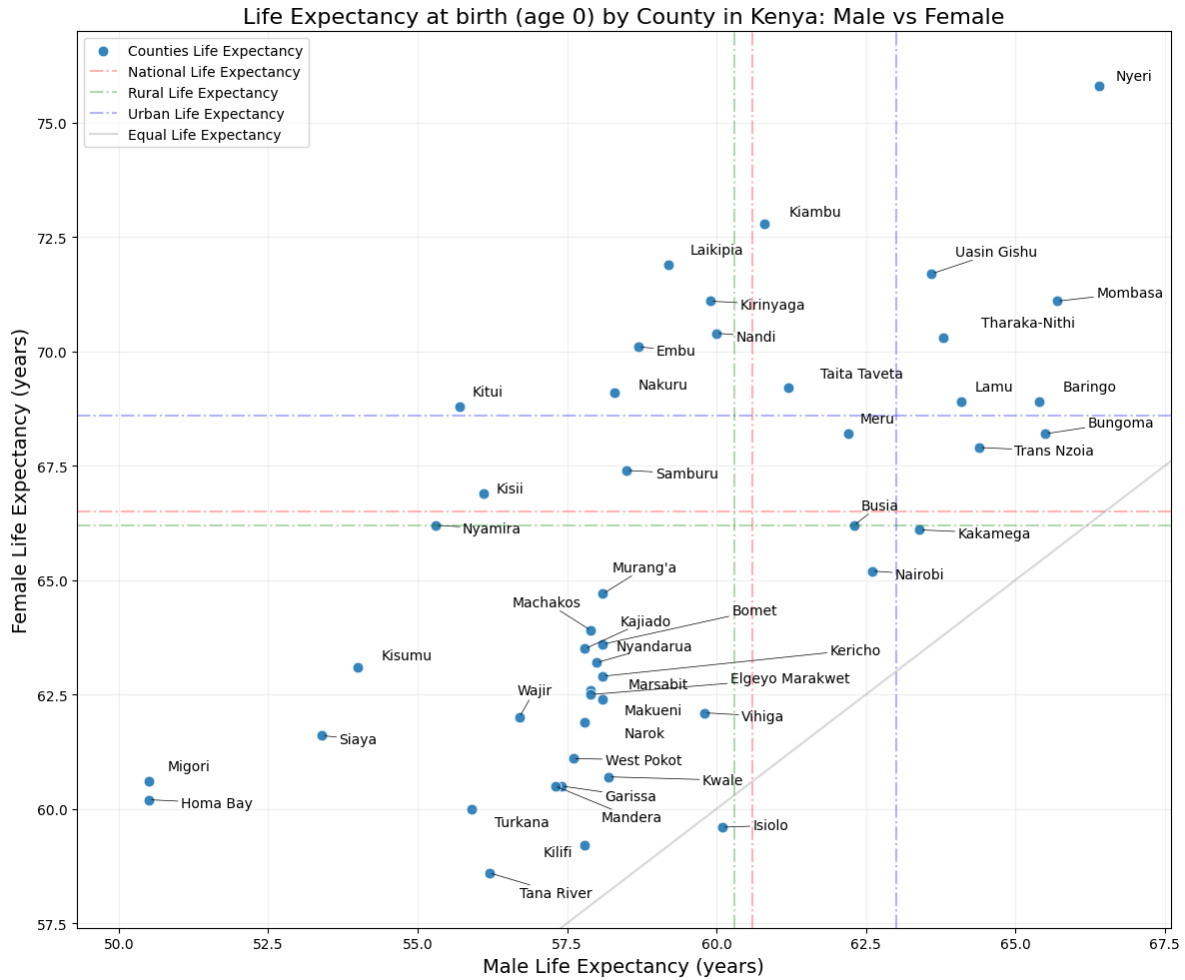
"\n"
f"##### Top 5 counties above and below National life expectancy - {age_column}"
"\n"))
display(above_or_below('national', kenya_males, kenya_females))
##### Top 5 counties above and below urban life expectancy
display(Markdown(
  "\n"
  f"##### Top 5 counties above and below Rural life expectancy - {age_column}"
  "\n"))
display(above_or_below('rural', rural_males, rural_females))
##### Top 5 counties above and below urban life expectancy
display(Markdown(
  "\n"
  f"##### Top 5 counties above and below Urban life expectancy - {age_column}"
  "\n"))
display(above_or_below('urban', urban_males, urban_females))
##### Top 5 counties where men have higher life expectancy than women
men_greater_than_women = county_analysis_df\
  [county_analysis_df["FEMALE"] < county_analysis_df["MALE"]]
if men_greater_than_women is not None and not men_greater_than_women.empty:
  display(Markdown(
    "\n"
    f"##### Top 5 counties where men have higher life expectancy than women - {age_c"
    "\n"))
    display(men_greater_than_women.sort_values("FEMALE", ascending=True))
display(Markdown(
  "\n"
  f"##### Other Statistics - {age_column}"
  "\n"))
display(county_analysis_df.describe())

```

```
life_expectancy_analysis('birth (age 0)')
```

Life Expectancy at birth (age 0)

Plot - birth (age 0)



Analysis of Life Expectancy at birth (age 0)

Top 5 counties with greatest and least life expectancy - birth (age 0)

	[men] by_county_desc	[men] by_county_asc	[women] by_county_desc	[women] by_county_asc
1	Nyeri - 66.4	Homa Bay - 50.5	Nyeri - 75.8	Tana River - 58.6
2	Mombasa - 65.7	Migori - 50.5	Kiambu - 72.8	Kilifi - 59.2
3	Bungoma - 65.5	Siaya - 53.4	Laikipia - 71.9	Isiolo - 59.6
4	Baringo - 65.4	Kisumu - 54.0	Uasin Gishu - 71.7	Turkana - 60.0
5	Trans Nzoia - 64.4	Nyamira - 55.3	Kirinyaga - 71.1	Homa Bay - 60.2

Top 5 counties above and below National life expectancy - birth (age 0)

	(14) [men] above national	(33) [men] below national	(19) [women] above national	(28) [women] below
1	Mombasa - 65.7	Homa Bay - 50.5	Kiambu - 72.8	Kilifi - 59.2
2	Bungoma - 65.5	Siaya - 53.4	Laikipia - 71.9	Isiolo - 59.6
3	Baringo - 65.4	Kisumu - 54.0	Uasin Gishu - 71.7	Turkana - 60.0
4	Trans Nzoia - 64.4	Nyamira - 55.3	Kirinyaga - 71.1	Homa Bay - 60.2
5	Lamu - 64.1	Kitui - 55.7	Mombasa - 71.1	Garissa - 60.5

Top 5 counties above and below Rural life expectancy - birth (age 0)

	(14) [men] above rural	(33) [men] below rural	(19) [women] above rural	(28) [women] below rural
1	Mombasa - 65.7	Homa Bay - 50.5	Kiambu - 72.8	Kilifi - 59.2
2	Bungoma - 65.5	Siaya - 53.4	Laikipia - 71.9	Isiolo - 59.6
3	Baringo - 65.4	Kisumu - 54.0	Uasin Gishu - 71.7	Turkana - 60.0
4	Trans Nzoia - 64.4	Nyamira - 55.3	Kirinyaga - 71.1	Homa Bay - 60.2
5	Lamu - 64.1	Kitui - 55.7	Mombasa - 71.1	Garissa - 60.5

Top 5 counties above and below Urban life expectancy - birth (age 0)

	(9) [men] above urban	(38) [men] below urban	(14) [women] above urban	(33) [women] below urban
1	Mombasa - 65.7	Migori - 50.5	Kiambu - 72.8	Kilifi - 59.2
2	Bungoma - 65.5	Siaya - 53.4	Laikipia - 71.9	Isiolo - 59.6
3	Baringo - 65.4	Kisumu - 54.0	Uasin Gishu - 71.7	Turkana - 60.0
4	Trans Nzoia - 64.4	Nyamira - 55.3	Mombasa - 71.1	Homa Bay - 60.2
5	Lamu - 64.1	Kitui - 55.7	Kirinyaga - 71.1	Garissa - 60.5

Top 5 counties where men have higher life expectancy than women - birth (age 0)

	COUNTY	MALE	FEMALE
10	Isiolo	60.1	59.6

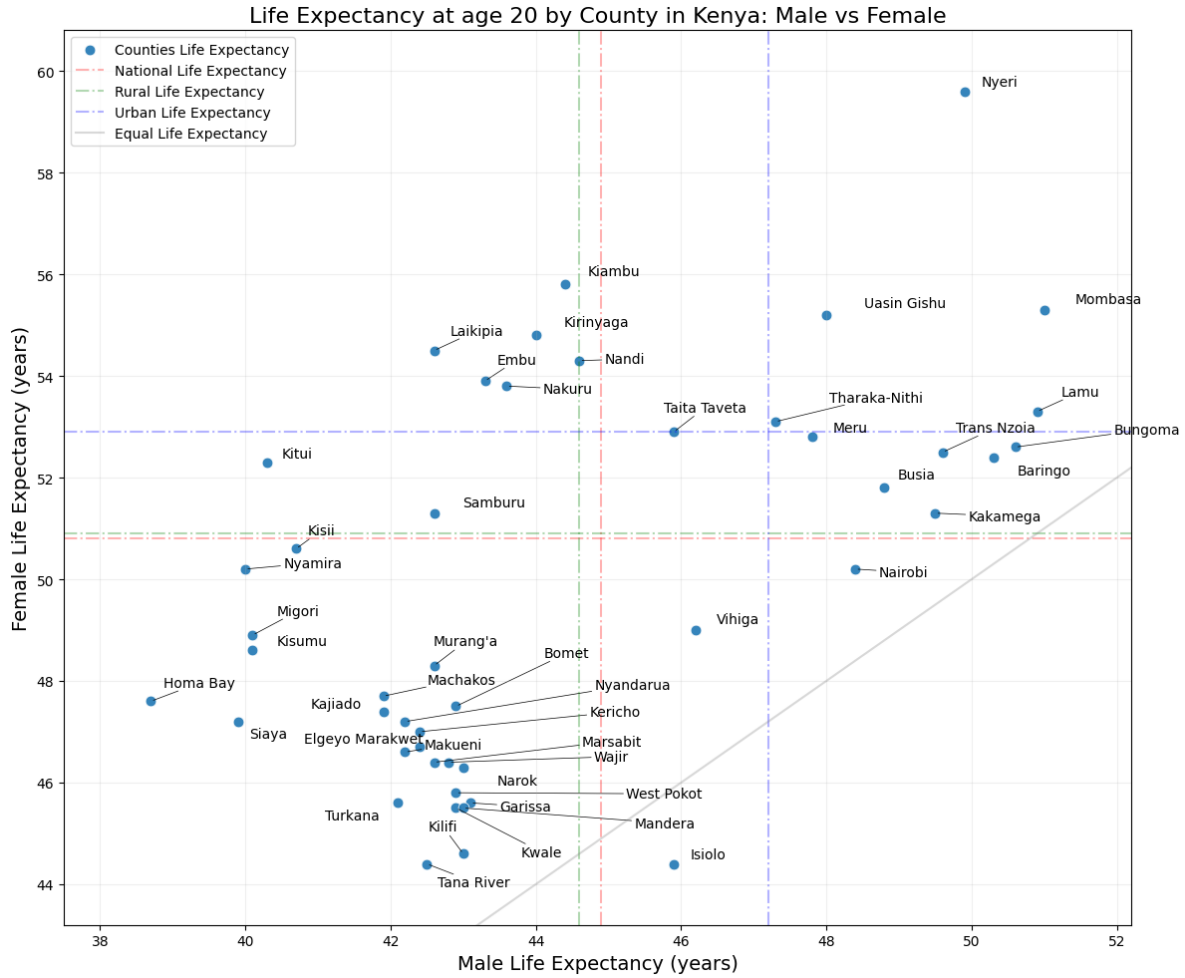
Other Statistics - birth (age 0)

	MALE	FEMALE
count	47.000000	47.000000
mean	59.110638	65.391489
std	3.684706	4.327959
min	50.500000	58.600000
25%	57.500000	61.950000
50%	58.100000	64.700000
75%	61.700000	68.900000
max	66.400000	75.800000

```
life_expectancy_analysis('age 20')
```

Life Expectancy at age 20

Plot - age 20



Analysis of Life Expectancy at age 20

Top 5 counties with greatest and least life expectancy - age 20

	[men] by_county_desc	[men] by_county_asc	[women] by_county_desc	[women] by_county_asc
1	Mombasa - 51.0	Homa Bay - 38.7	Nyeri - 59.6	Tana River - 44.4
2	Lamu - 50.9	Siaya - 39.9	Kiambu - 55.8	Isiolo - 44.4
3	Bungoma - 50.6	Nyamira - 40.0	Mombasa - 55.3	Kilifi - 44.6
4	Baringo - 50.3	Migori - 40.1	Uasin Gishu - 55.2	Kwale - 45.5
5	Nyeri - 49.9	Kisumu - 40.1	Kirinyaga - 54.8	Mandera - 45.5

Top 5 counties above and below National life expectancy - age 20

	(15) [men] above national	(32) [men] below national	(20) [women] above national	(27) [women] below
1	Lamu - 50.9	Siaya - 39.9	Kiambu - 55.8	Isiolo - 44.4
2	Bungoma - 50.6	Nyamira - 40.0	Mombasa - 55.3	Kilifi - 44.6
3	Baringo - 50.3	Migori - 40.1	Uasin Gishu - 55.2	Kwale - 45.5
4	Nyeri - 49.9	Kisumu - 40.1	Kirinyaga - 54.8	Mandera - 45.5
5	Trans Nzoia - 49.6	Kitui - 40.3	Laikipia - 54.5	Garissa - 45.6

Top 5 counties above and below Rural life expectancy - age 20

	(15) [men] above rural	(32) [men] below rural	(20) [women] above rural	(27) [women] below rural
1	Lamu - 50.9	Siaya - 39.9	Kiambu - 55.8	Isiolo - 44.4
2	Bungoma - 50.6	Nyamira - 40.0	Mombasa - 55.3	Kilifi - 44.6
3	Baringo - 50.3	Migori - 40.1	Uasin Gishu - 55.2	Kwale - 45.5
4	Nyeri - 49.9	Kisumu - 40.1	Kirinyaga - 54.8	Mandera - 45.5
5	Trans Nzoia - 49.6	Kitui - 40.3	Laikipia - 54.5	Garissa - 45.6

Top 5 counties above and below Urban life expectancy - age 20

	(12) [men] above urban	(35) [men] below urban	(11) [women] above urban	(36) [women] below urban
1	Lamu - 50.9	Siaya - 39.9	Kiambu - 55.8	Isiolo - 44.4
2	Bungoma - 50.6	Nyamira - 40.0	Mombasa - 55.3	Kilifi - 44.6
3	Baringo - 50.3	Migori - 40.1	Uasin Gishu - 55.2	Kwale - 45.5
4	Nyeri - 49.9	Kisumu - 40.1	Kirinyaga - 54.8	Mandera - 45.5
5	Trans Nzoia - 49.6	Kitui - 40.3	Laikipia - 54.5	Garissa - 45.6

Top 5 counties where men have higher life expectancy than women - age 20

	COUNTY	MALE	FEMALE
10	Isiolo	45.9	44.4

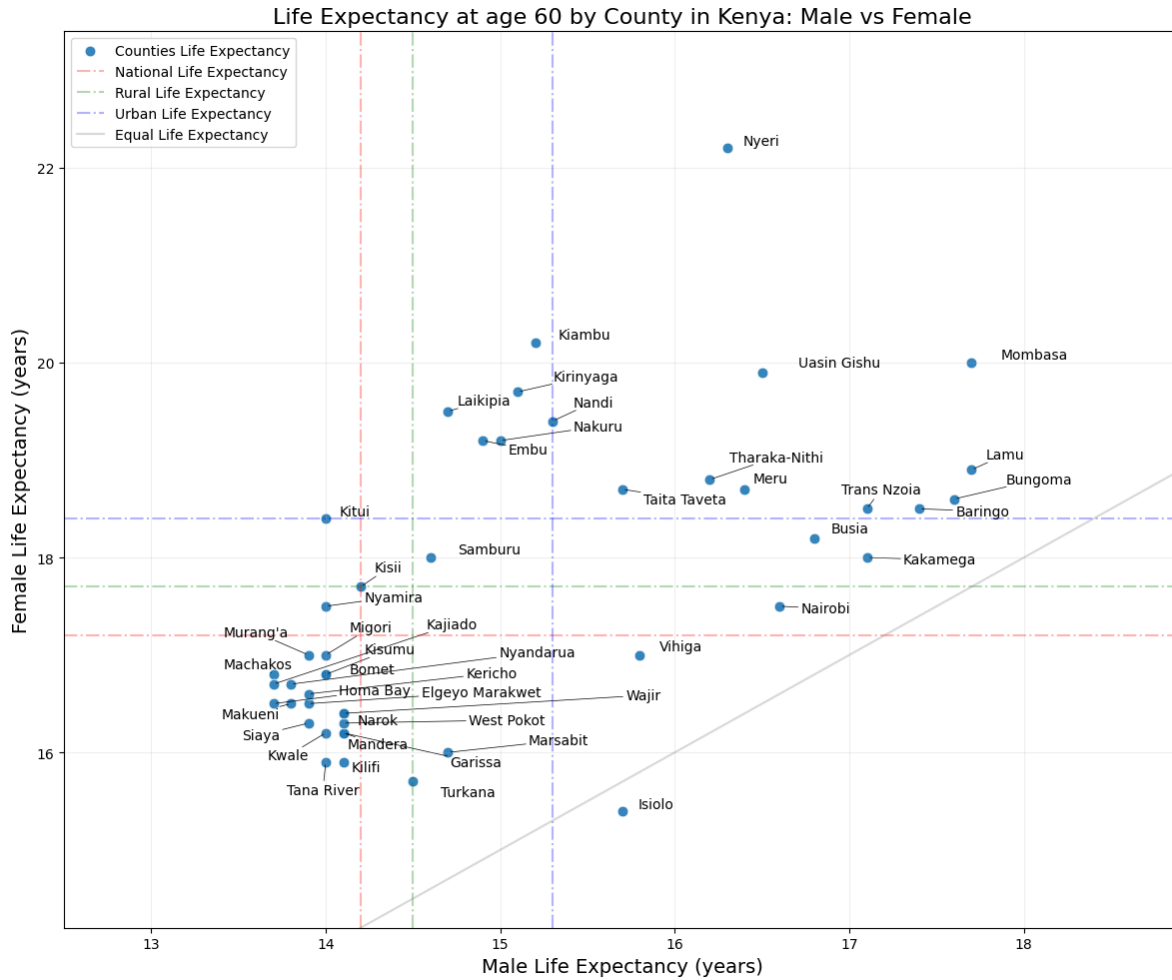
Other Statistics - age 20

	MALE	FEMALE
count	47.000000	47.000000
mean	44.285106	49.887234
std	3.388983	3.748137
min	38.700000	44.400000
25%	42.300000	46.650000
50%	43.000000	49.000000
75%	46.750000	52.850000
max	51.000000	59.600000

```
life_expectancy_analysis('age 60')
```

Life Expectancy at age 60

Plot - age 60



Analysis of Life Expectancy at age 60

Top 5 counties with greatest and least life expectancy - age 60

	[men] by_county_desc	[men] by_county_asc	[women] by_county_desc	[women] by_county_asc
1	Mombasa - 17.7	Homa Bay - 13.7	Nyeri - 22.2	Isiolo - 15.4
2	Lamu - 17.7	Machakos - 13.7	Kiambu - 20.2	Turkana - 15.7
3	Bungoma - 17.6	Kajiado - 13.7	Mombasa - 20.0	Kilifi - 15.9
4	Baringo - 17.4	Nyandarua - 13.8	Uasin Gishu - 19.9	Tana River - 15.9
5	Trans Nzoia - 17.1	Makueni - 13.8	Kirinyaga - 19.7	Marsabit - 16.0

Top 5 counties above and below National life expectancy - age 60

	(24) [men] above national	(23) [men] below national	(23) [women] above national	(24) [women] below
1	Lamu - 17.7	Machakos - 13.7	Kiambu - 20.2	Turkana - 15.7
2	Bungoma - 17.6	Kajiado - 13.7	Mombasa - 20.0	Kilifi - 15.9
3	Baringo - 17.4	Makueni - 13.8	Uasin Gishu - 19.9	Tana River - 15.9
4	Kakamega - 17.1	Nyandarua - 13.8	Kirinyaga - 19.7	Marsabit - 16.0
5	Trans Nzoia - 17.1	Siaya - 13.9	Laikipia - 19.5	Kwale - 16.2

Top 5 counties above and below Rural life expectancy - age 60

	(23) [men] above rural	(24) [men] below rural	(20) [women] above rural	(27) [women] below rural
1	Lamu - 17.7	Machakos - 13.7	Kiambu - 20.2	Turkana - 15.7
2	Bungoma - 17.6	Kajiado - 13.7	Mombasa - 20.0	Kilifi - 15.9
3	Baringo - 17.4	Makueni - 13.8	Uasin Gishu - 19.9	Tana River - 15.9
4	Kakamega - 17.1	Nyandarua - 13.8	Kirinyaga - 19.7	Marsabit - 16.0
5	Trans Nzoia - 17.1	Siaya - 13.9	Laikipia - 19.5	Kwale - 16.2

Top 5 counties above and below Urban life expectancy - age 60

	(15) [men] above urban	(32) [men] below urban	(16) [women] above urban	(31) [women] below urban
1	Lamu - 17.7	Kajiado - 13.7	Kiambu - 20.2	Turkana - 15.7
2	Bungoma - 17.6	Machakos - 13.7	Mombasa - 20.0	Kilifi - 15.9
3	Baringo - 17.4	Makueni - 13.8	Uasin Gishu - 19.9	Tana River - 15.9
4	Trans Nzoia - 17.1	Nyandarua - 13.8	Kirinyaga - 19.7	Marsabit - 16.0
5	Kakamega - 17.1	Siaya - 13.9	Laikipia - 19.5	Kwale - 16.2

Top 5 counties where men have higher life expectancy than women - age 60

	COUNTY	MALE	FEMALE
10	Isiolo	15.7	15.4

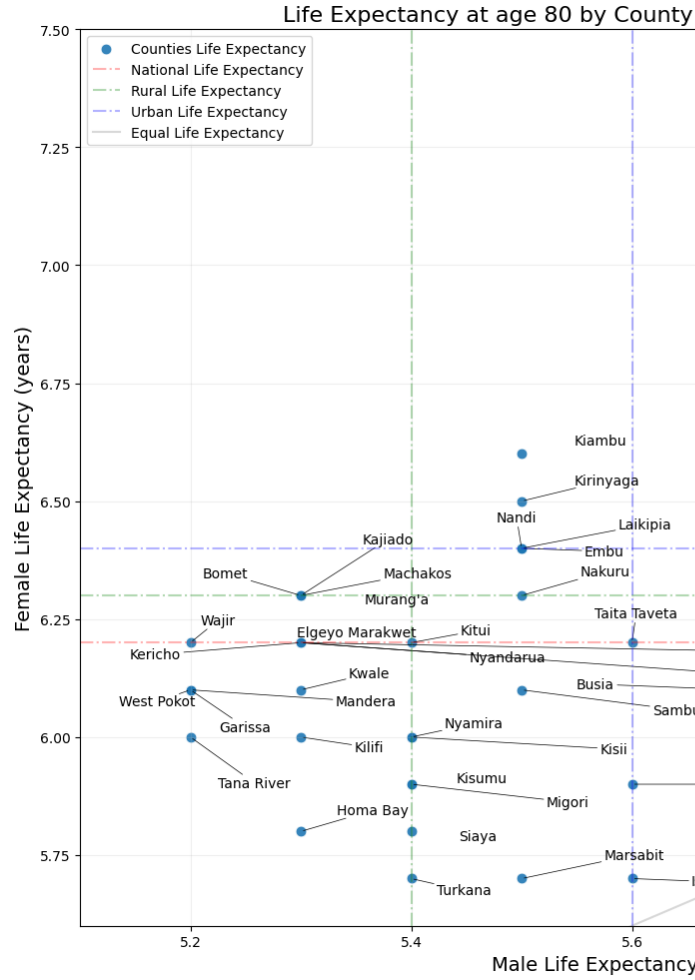
Other Statistics - age 60

	MALE	FEMALE
count	47.000000	47.000000
mean	15.014894	17.640426
std	1.291271	1.496178
min	13.700000	15.400000
25%	14.000000	16.450000
50%	14.500000	17.000000
75%	16.000000	18.700000
max	17.700000	22.200000

```
life_expectancy_analysis('age 80', axis_margin = 0.1)
```

Life Expectancy at age 80

Plot - age 80



20 [0.85928444 -0.45533174] 35 [-0.08290397 -0.92990256]

Analysis of Life Expectancy at age 80

Top 5 counties with greatest and least life expectancy - age 80

	[men] by_county_desc	[men] by_county_asc	[women] by_county_desc	[women] by_county_asc
1	Nyeri - 6.0	West Pokot - 5.2	Nyeri - 7.4	Marsabit - 5.7
2	Mombasa - 5.9	Tana River - 5.2	Kiambu - 6.6	Isiolo - 5.7
3	Bungoma - 5.9	Garissa - 5.2	Mombasa - 6.5	Turkana - 5.7
4	Lamu - 5.9	Wajir - 5.2	Uasin Gishu - 6.5	Homa Bay - 5.8
5	Baringo - 5.9	Mandera - 5.2	Kirinyaga - 6.5	Siaya - 5.8

Top 5 counties above and below National life expectancy - age 80

	(7) [men] above national	(40) [men] below national	(15) [women] above national	(32) [women] below national
1	Mombasa - 5.9	Tana River - 5.2	Kiambu - 6.6	Isiolo - 5.7
2	Lamu - 5.9	Garissa - 5.2	Mombasa - 6.5	Turkana - 5.7
3	Baringo - 5.9	Wajir - 5.2	Kirinyaga - 6.5	Homa Bay - 5.8
4	Bungoma - 5.9	Mandera - 5.2	Uasin Gishu - 6.5	Siaya - 5.8
5	Trans Nzoia - 5.8	Narok - 5.3	Embu - 6.4	Migori - 5.9

Top 5 counties above and below Rural life expectancy - age 80

	(23) [men] above rural	(24) [men] below rural	(8) [women] above rural	(39) [women] below rural
1	Mombasa - 5.9	Garissa - 5.2	Kiambu - 6.6	Isiolo - 5.7
2	Lamu - 5.9	Wajir - 5.2	Mombasa - 6.5	Turkana - 5.7
3	Bungoma - 5.9	Mandera - 5.2	Kirinyaga - 6.5	Homa Bay - 5.8
4	Baringo - 5.9	West Pokot - 5.2	Uasin Gishu - 6.5	Siaya - 5.8
5	Kakamega - 5.8	Kwale - 5.3	Embu - 6.4	Migori - 5.9

Top 5 counties above and below Urban life expectancy - age 80

	(12) [men] above urban	(35) [men] below urban	(5) [women] above urban	(42) [women] below urban
1	Mombasa - 5.9	Garissa - 5.2	Kiambu - 6.6	Isiolo - 5.7
2	Lamu - 5.9	Wajir - 5.2	Mombasa - 6.5	Turkana - 5.7
3	Baringo - 5.9	Mandera - 5.2	Kirinyaga - 6.5	Homa Bay - 5.8
4	Bungoma - 5.9	West Pokot - 5.2	Uasin Gishu - 6.5	Siaya - 5.8
5	Trans Nzoia - 5.8	Kwale - 5.3	None	Migori - 5.9

Other Statistics - age 80

	MALE	FEMALE
count	47.000000	47.000000
mean	5.487234	6.176596
std	0.223234	0.281466
min	5.200000	5.700000
25%	5.300000	6.000000
50%	5.400000	6.200000
75%	5.650000	6.300000

	MALE	FEMALE
max	6.000000	7.400000

Insights

- The rural and national life expectancy is are close, which confirms that majority of Kenyans lives in rural areas.
- Men and Women of Nyeri county Have the greatest overall life expectancy, in all ranges.
- Isiolo county is the only county men below 80 years live longer than women.

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