

Práctica Storytelling

- Aplicar los principios y recomendaciones de visualización discutidas en este módulo con la finalidad de hacer una presentación efectiva de resultados.

**Paso a paso:

- Considera la información contenida en la siguiente página Web de Naciones Unidas (<http://data.un.org>):
- Desarrolla una historia sobre alguna de las áreas que ahí vienen enlistadas (Population, National Accounts, etc.).
- Usa las recomendaciones de visualización explicadas en este módulo para gráficos (como Gestalt, Tufte y Holmes).
- Sé claro en sus explicaciones, haciendo anotaciones finales en su notebook de trabajo que indiquen los principios utilizados.

```
In [121]: import pandas as pd
import plotly.graph_objects as go
from plotly.subplots import make_subplots
import warnings
warnings.filterwarnings('ignore')
```

TIP 1. Entiende a la Audiencia

```
In [141]: # carga de datos
df = pd.read_csv('C:/Users/Isaac/Desktop/IHD/EBAC DT/CIENCIA DE DATOS/M57 DS/Indicators.csv', encoding = 'Latin1', skiprows = 1)
df
```

```
Out[141]:
```

	Region/Country/Area	Unnamed: 1	Year	Series	Value	Footnotes	Source
0	1	Total, all countries or areas	2010	Population annual rate of increase (percent)	1.3	NaN	United Nations Population Division, New York, ...
1	1	Total, all countries or areas	2010	Total fertility rate (children per women)	2.6	NaN	United Nations Population Division, New York, ...
2	1	Total, all countries or areas	2010	Infant mortality for both sexes (per 1,000 liv...	37.1	NaN	United Nations Statistics Division, New York, ...
3	1	Total, all countries or areas	2010	Maternal mortality ratio (deaths per 100,000 p...	254	NaN	World Health Organization (WHO), the United Na...
4	1	Total, all countries or areas	2010	Life expectancy at birth for both sexes (years)	70.1	NaN	United Nations Population Division, New York, ...
...

```
In [142]: valores = df['Series'].unique()
valores
```

```
Out[142]: array(['Population annual rate of increase (percent)',
'Total fertility rate (children per women)',
'Infant mortality for both sexes (per 1,000 live births)',
'Maternal mortality ratio (deaths per 100,000 population)',
'Life expectancy at birth for both sexes (years)',
'Life expectancy at birth for males (years)',
'Life expectancy at birth for females (years)'], dtype=object)
```

```
In [143]: # trabajaremos con 'Life expectancy at birth for males (years)' del año 2022
# creamos un nuevo df con la columna 'Series' filtrando por el campo 'Life expectancy at birth for males (years)'

df_exmales = df[df['Series'] == 'Life expectancy at birth for males (years)']
df_exmales.head()
```

```
Out[143]:
```

	Region/Country/Area	Unnamed: 1	Year	Series	Value	Footnotes	Source
5	1	Total, all countries or areas	2010	Life expectancy at birth for males (years)	67.6	NaN	United Nations Population Division, New York, ...
12	1	Total, all countries or areas	2015	Life expectancy at birth for males (years)	69.3	NaN	United Nations Population Division, New York, ...
19	1	Total, all countries or areas	2020	Life expectancy at birth for males (years)	69.4	NaN	United Nations Population Division, New York, ...
25	1	Total, all countries or areas	2022	Life expectancy at birth for males (years)	69.1	Projected estimate (medium fertility variant).	United Nations Population Division, New York, ...
32	2	Africa	2010	Life expectancy at birth for males (years)	57.0	NaN	United Nations Population Division, New York, ...

```
In [144]: # filtramos los valores que sean igual a 'Africa'
df_exmales = df[df['Series'] == 'Life expectancy at birth for males (years)']
df_exmales = df_exmales[df_exmales['Unnamed: 1'] == 'Africa']
df_exmales
```

Out[144]:

	Region/Country/Area	Unnamed: 1	Year	Series	Value	Footnotes	Source
32	2	Africa	2010	Life expectancy at birth for males (years)	57.0	NaN	United Nations Population Division, New York, ...
39	2	Africa	2015	Life expectancy at birth for males (years)	59.3	NaN	United Nations Population Division, New York, ...
46	2	Africa	2020	Life expectancy at birth for males (years)	60.3	NaN	United Nations Population Division, New York, ...
52	2	Africa	2022	Life expectancy at birth for males (years)	60.2	Projected estimate (medium fertility variant).	United Nations Population Division, New York, ...

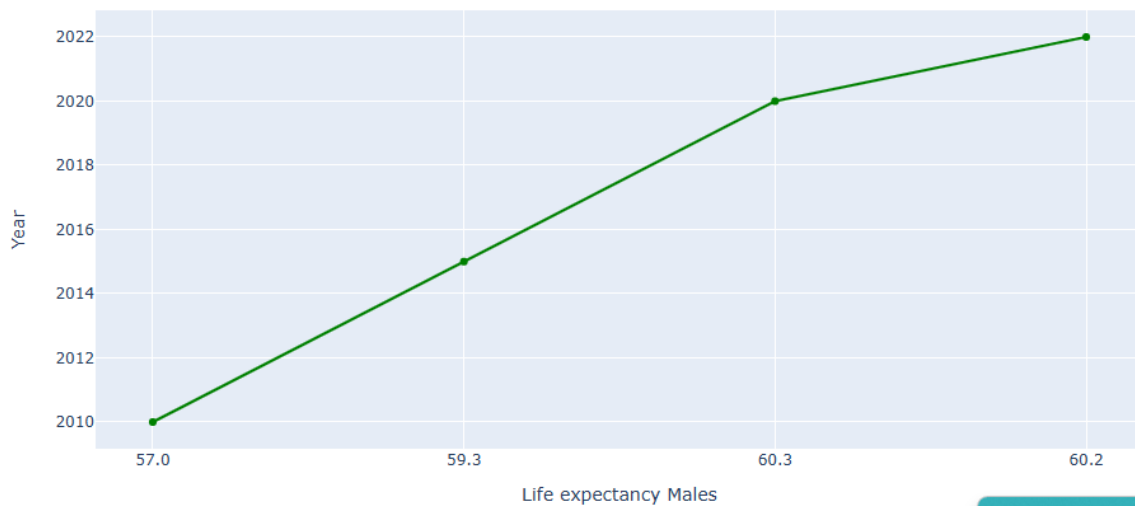
```
In [145]: df_exmales = df_exmales[['Unnamed: 1', 'Value', 'Year']]
df_exmales.rename({'Unnamed: 1': 'Country', 'Value': 'Life expectancy at birth for males'}, axis = 1, inplace = True)
df_exmales = df_exmales.set_index('Country')
df_exmales
```

Out[145]:

	Life expectancy at birth for males	Year
Country		
Africa	57.0	2010
Africa	59.3	2015
Africa	60.3	2020
Africa	60.2	2022

```
In [146]: # grafico de la espernza de vida al nacer de hombres
gf1 = go.Figure()
gf1.add_trace(go.Scatter(x = df_exmales['Life expectancy at birth for males'], y = df_exmales['Year'],
                        name = 'Life expectancy', line = dict(color = 'green')))
gf1.update_layout(title = 'Esperanza de vida de los Hombres al Nacer en Africa',
                  xaxis_title = 'Life expectancy Males',
                  yaxis_title = 'Year')
gf1.show()
```

Esperanza de vida de los Hombres al Nacer en Africa



La grafica nos indica que la esperanza de vida en los Hombres para Africa a aumentado 3.2 años del 2010 al 2020

Tip 2 Usar la Visualización correcta.

```
In [166]: # Grafico de dispersion para Population annual rate of increase (percent)
df_rateinc = df[df['Series'] == 'Population annual rate of increase (percent)']
df_rateinc = df_rateinc[df_rateinc['Unnamed: 1'] == 'Africa']
df_rateinc
```

```
Out[166]:
```

Region/Country/Area	Unnamed: 1	Year	Series	Value	Footnotes	Source
27	2	Africa 2010	Population annual rate of increase (percent)	2.6	NaN	United Nations Population Division, New York, ...
34	2	Africa 2015	Population annual rate of increase (percent)	2.6	NaN	United Nations Population Division, New York, ...
41	2	Africa 2020	Population annual rate of increase (percent)	2.4	NaN	United Nations Population Division, New York, ...
48	2	Africa 2022	Population annual rate of increase (percent)	2.3	Projected estimate (medium fertility variant).	United Nations Population Division, New York, ...

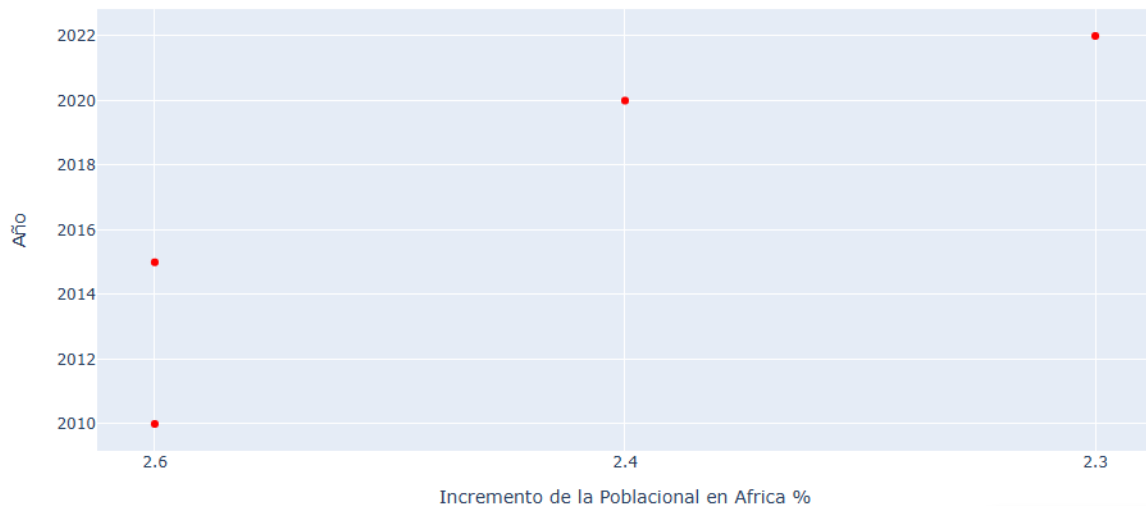
```
In [167]: df_rateinc = df_rateinc[['Unnamed: 1','Value','Year']]
df_rateinc.rename({'Unnamed: 1':'Country', 'Value':'Population annual rate of increase (percent)'}, axis = 1, inplace = True)
df_rateinc = df_rateinc.set_index('Country')
df_rateinc
```

```
Out[167]:
```

Country	Population annual rate of increase (percent)	Year
Africa	2.6	2010
Africa	2.6	2015
Africa	2.4	2020
Africa	2.3	2022

```
In [177]: gf2 = go.Figure()
gf2.add_trace(go.Scatter(x = df_rateinc['Population annual rate of increase (percent)'], y = df_rateinc['Year'],
                        mode = 'markers', name = 'rate annual',
                        line = dict(color = 'red'))))
gf2.update_layout(title = 'Incremento de la Población anual en Africa',
xaxis_title = 'Incremento de la Poblacional en Africa %',
yaxis_title = 'Año')
gf2.show()
```

Incremento de la Población anual en Africa



La gráfica nos muestra un incremento de la población en Africa del 2010 al 2022

Tip 3. Enfatiza puntos clave

```
In [183]: # Gráfico de barras para Maternal mortality ratio (deaths per 100,000 population)
df_ratiomor = df[df['Series'] == 'Maternal mortality ratio (deaths per 100,000 population)']
df_ratiomor = df_ratiomor[df_ratiomor['Unnamed: 1'] == 'Africa']
df_ratiomor
```

```
Out[183]:
```

	Region/Country/Area	Unnamed: 1	Year	Series	Value	Footnotes	Source
30	2	Africa	2010	Maternal mortality ratio (deaths per 100,000 p...	593	NaN	World Health Organization (WHO), the United Na...
37	2	Africa	2015	Maternal mortality ratio (deaths per 100,000 p...	526	NaN	World Health Organization (WHO), the United Na...
44	2	Africa	2020	Maternal mortality ratio (deaths per 100,000 p...	487	NaN	World Health Organization (WHO), the United Na...

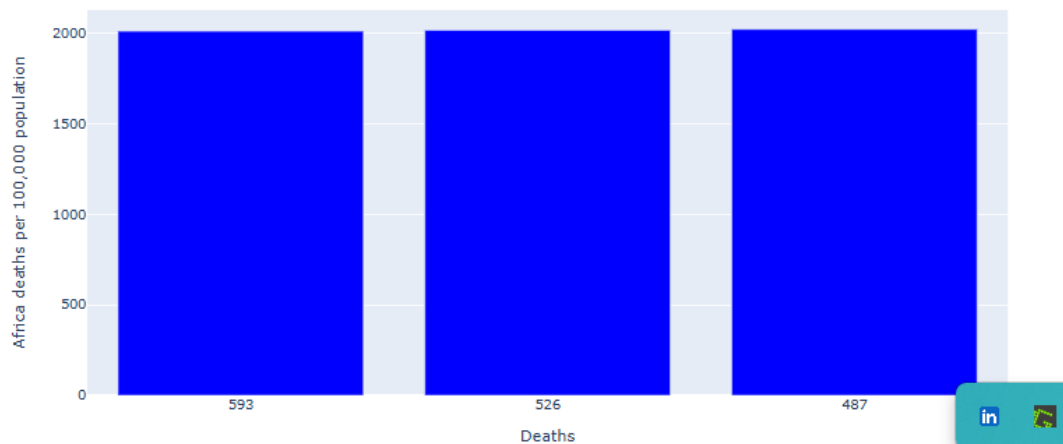
```
In [184]: df_ratiomor = df_ratiomor[['Unnamed: 1', 'Value', 'Year']]
df_ratiomor.rename({'Unnamed: 1': 'Country', 'Value': 'Maternal mortality ratio (deaths per 100,000 population)'},
                    axis = 1, inplace = True)
df_ratiomor = df_ratiomor.set_index('Country')
df_ratiomor
```

```
Out[184]:
```

	Maternal mortality ratio (deaths per 100,000 population)	Year
Country		
Africa	593	2010
Africa	526	2015
Africa	487	2020

```
In [189]: gf3 = go.Figure()
gf3.add_trace(go.Bar(x = df_ratiomor['Maternal mortality ratio (deaths per 100,000 population)'], y = df_ratiomor['Year'],
                    name = 'Ratio Mortality',
                    marker = dict(color = 'blue'))))
gf3.update_layout(title = 'Relación de Mortalidad Maternal en Africa',
                    xaxis_title = 'Deaths',
                    yaxis_title = 'Africa deaths per 100,000 population')
gf3.show()
```

Relación de Mortalidad Maternal en Africa



La gráfica nos indica que la mortalidad maternal ha disminuido en Africa, para el año 2015 se registraron 593 decesos, para el año 2020 se registraron 487 decesos.

Tip 4 Cuenta una historia con tus datos

```
In [220]: # Filtrar los datos para 'Life expectancy at birth for males' y 'females' en África
df_morinf = df[(df['Series'] == 'Life expectancy at birth for males (years)' |
               (df['Series'] == 'Life expectancy at birth for females (years)'))
               ]
df_morinf = df_morinf[df_morinf['Unnamed: 1'] == 'Africa']

# Ajustar las columnas y renombrar
df_morinf = df_morinf[['Series', 'Value', 'Year']]
df_morinf.rename({'Value': 'Life Expectancy'}, axis=1, inplace=True)

# Pivotar la tabla para obtener columnas separadas para hombres y mujeres
df_pivot = df_morinf.pivot_table(values='Life Expectancy', index='Year', columns='Series')

# Crear La gráfica apilada
gf4 = go.Figure()

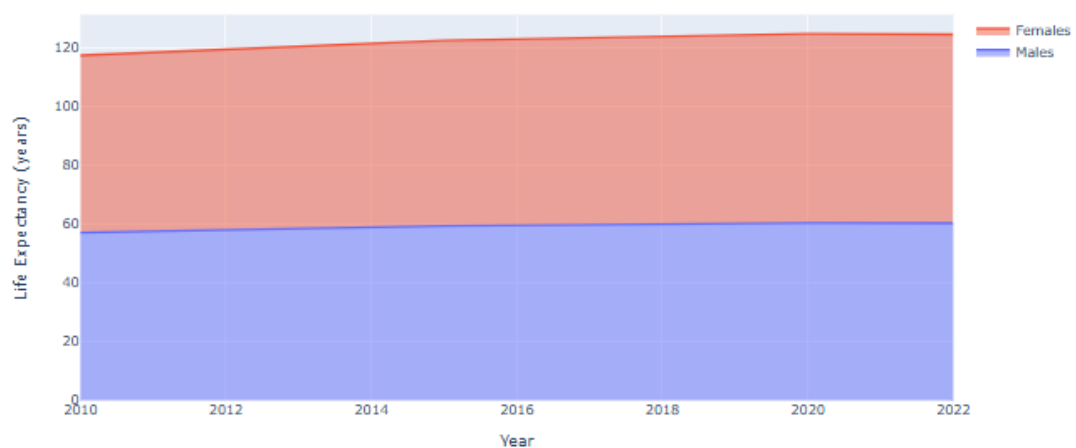
# Agregar traza para hombres
gf4.add_trace(go.Scatter(
    x=df_pivot.index,
    y=df_pivot['Life expectancy at birth for males (years)'],
    mode='lines',
    name='Males',
    stackgroup='one'
)))

# Agregar traza para mujeres
gf4.add_trace(go.Scatter(
    x=df_pivot.index,
    y=df_pivot['Life expectancy at birth for females (years)'],
    mode='lines',
    name='Females',
    stackgroup='one'
)))

# Configurar el Layout del gráfico
gf4.update_layout(
    title='Life Expectancy in Africa (Males vs Females)',
    xaxis_title='Year',
    yaxis_title='Life Expectancy (years)',
    showlegend=True
)

# Mostrar La gráfica
gf4.show()
```

Life Expectancy in Africa (Males vs Females)



Gráfica apilada que muestra la expectativa de vida tanto para hombres como para mujeres a lo largo de los años en África.

Tip 5 Creación de Cuadro de Control (Dashboard) para los gráficos previos.

```
In [222]: import dash
from dash import dcc
from dash import html

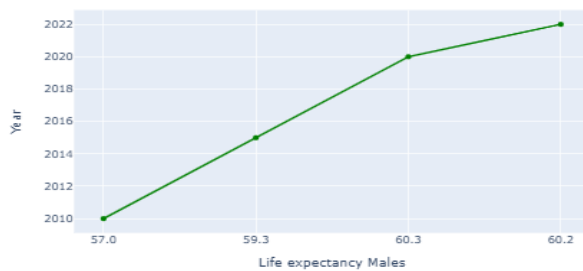
# consolidación de graficos
app = dash.Dash(__name__)
app.layout = html.Div([
    html.H1('Cuadro de Control de Mando(Dashboard)'),

    html.Div([
        dcc.Graph(figure = gf1),
        dcc.Graph(figure = gf2),
    ], style = {'display':'flex'}),

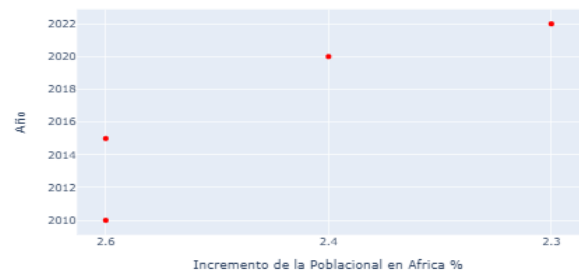
    html.Div([
        dcc.Graph(figure = gf3),
        dcc.Graph(figure = gf4),
    ], style = {'display':'flex'}),
])
if __name__ == '__main__':
    app.run_server(debug = True, port = 8051)
```

Cuadro de Control de Mando(Dashboard)

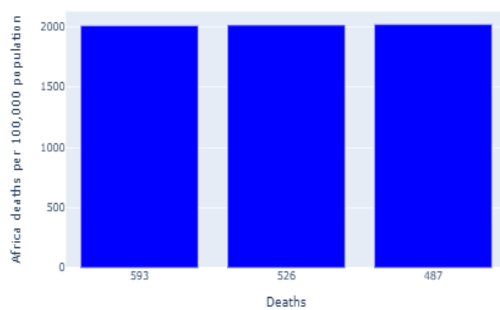
Esperanza de vida de los Hombres al Nacer en Africa



Incremento de la Población anual en Africa



Relación de Mortalidad Maternal en Africa



Life Expectancy in Africa (Males vs Females)

