

# World Development Indicators Data Analysis

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```
import pandas as pd

# Load dataset
wdi = pd.read_csv("wdi.csv")

# Display first few rows
wdi.head()
```

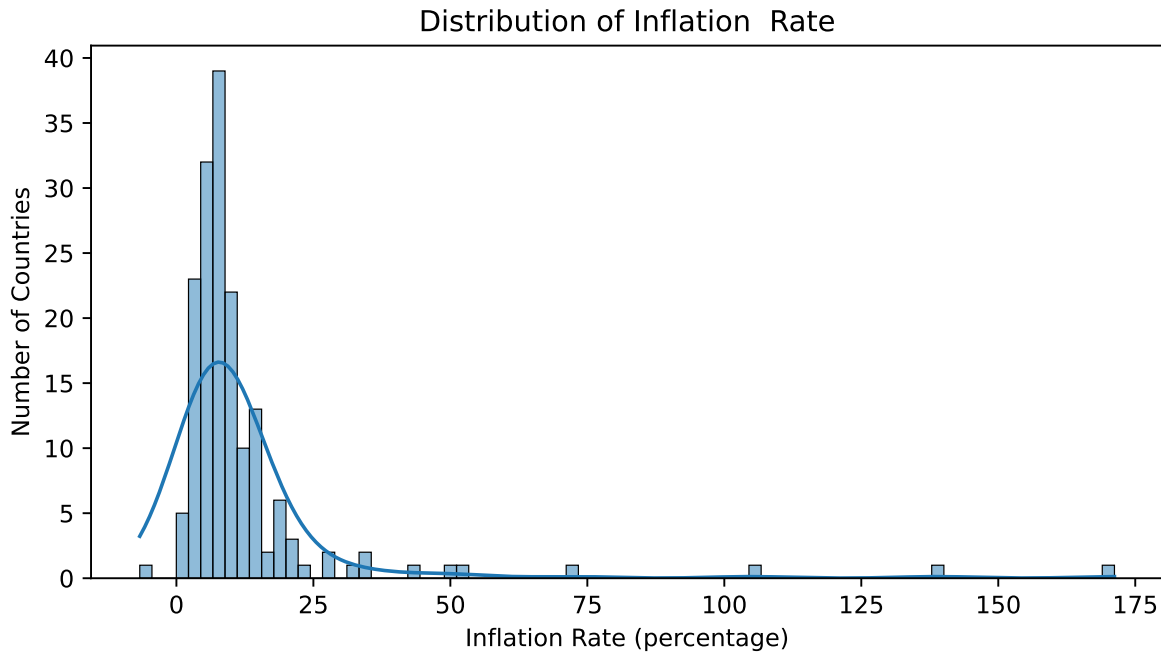
	country	inflation_rate	exports_gdp_share	gdp_growth_rate	gdp_per_capita	adult_literacy_rate
0	Afghanistan	NaN	18.380042	-6.240172	352.603733	NaN
1	Albania	6.725203	37.395422	4.856402	6810.114041	98.5
2	Algeria	9.265516	31.446856	3.600000	5023.252932	NaN
3	American Samoa	NaN	46.957520	1.735016	19673.390102	NaN
4	Andorra	NaN	NaN	9.563798	42350.697069	NaN

```
import matplotlib.pyplot as plt
import seaborn as sns

# 1. inflation_rate
wdi["inflation_rate"].describe()

plt.figure(figsize=(8, 4))
sns.histplot(wdi["inflation_rate"], kde=True)
plt.title("Distribution of Inflation Rate")
plt.xlabel("Inflation Rate (percentage)")
plt.ylabel("Number of Countries")
plt.show()

wdi["inflation_rate"].mean()
```



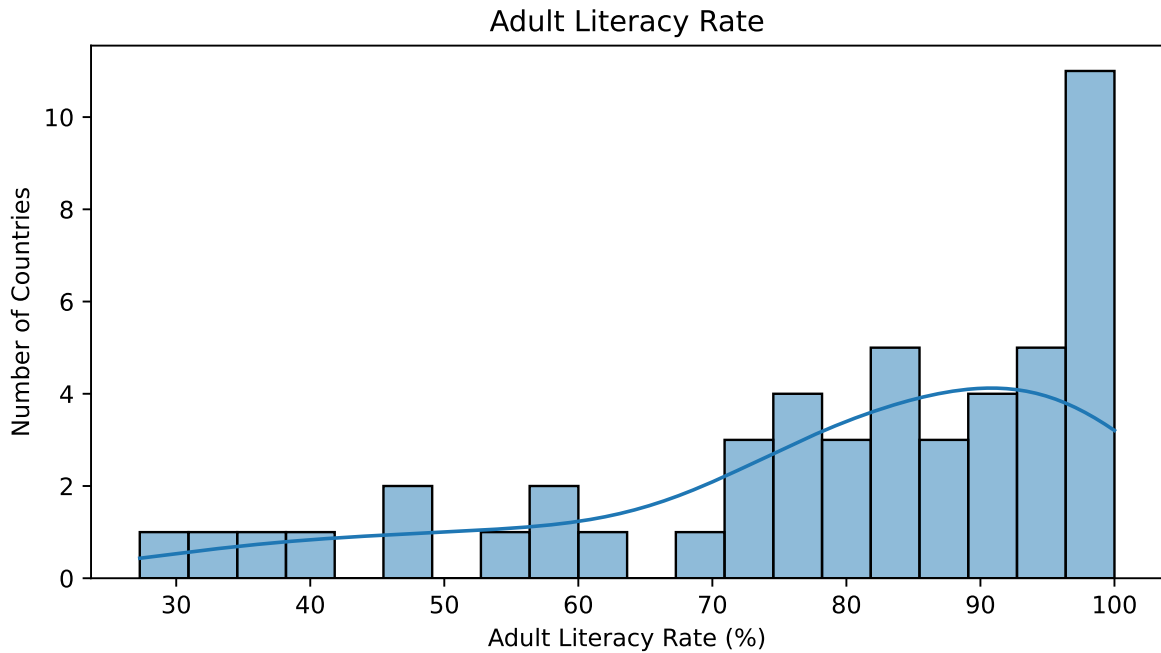
12.49393593294422

The inflation rate for the majority of countries falls within the 0–15% range, with an average inflation rate of 12.49%. The distribution is right-skewed, with a long tail of countries experiencing significantly higher inflation rates (e.g., 50% or more).

```
# 2. adult_literacy_rate
wdi["adult_literacy_rate"].describe()

plt.figure(figsize=(8, 4))
sns.histplot(wdi["adult_literacy_rate"], bins=20, kde=True)
plt.title("Adult Literacy Rate")
plt.xlabel("Adult Literacy Rate (%)")
plt.ylabel("Number of Countries")
plt.show()

wdi["adult_literacy_rate"].mean()
```



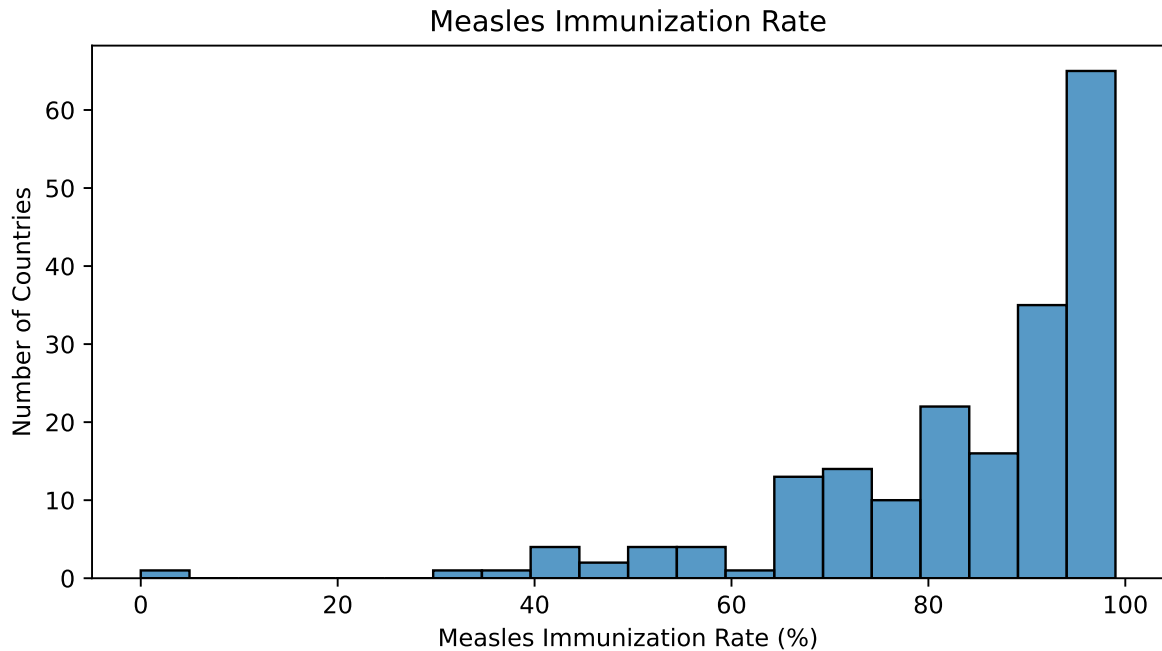
79.5748011919917

While many countries have high adult literacy, with an average rate of 79.57%, several still fall below 70%.

```
# 3. measles_immunisation_rate
wdi["measles_immunisation_rate"].describe()

plt.figure(figsize=(8, 4))
sns.histplot(wdi["measles_immunisation_rate"], bins=20)
plt.title("Measles Immunization Rate")
plt.xlabel("Measles Immunization Rate (%)")
plt.ylabel("Number of Countries")
plt.show()

wdi["measles_immunisation_rate"].mean()
```



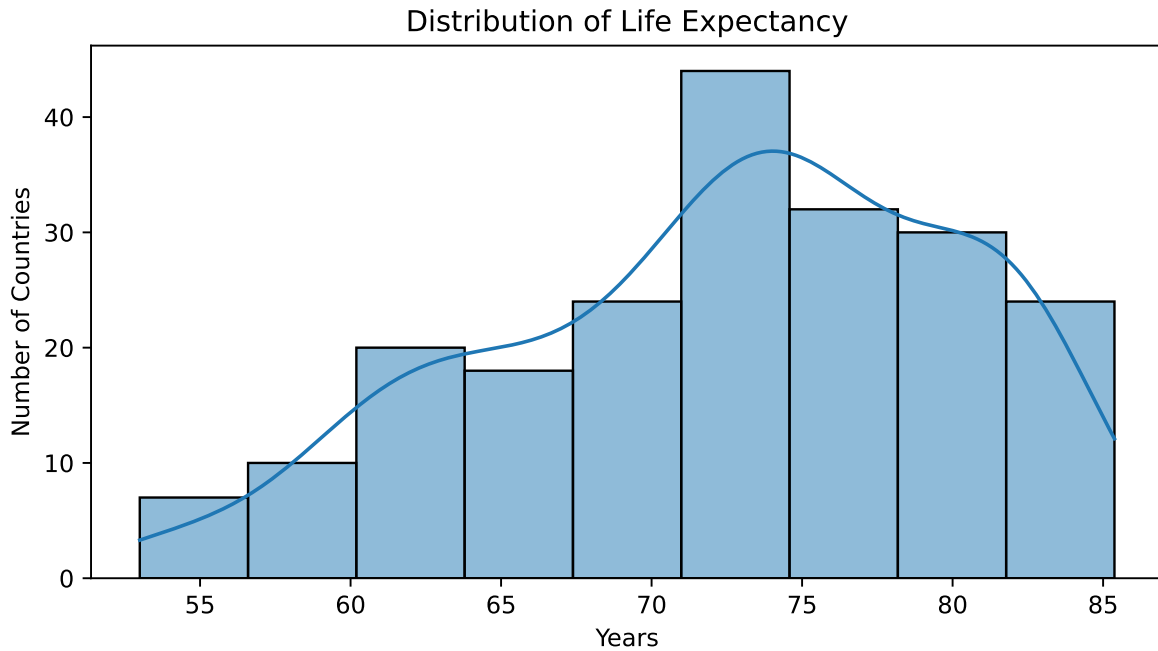
83.85492227979275

Most countries have high measles immunization coverage, with an average rate of 93%.

```
# 4. life_expectancy
wdi["life_expectancy"].describe()

plt.figure(figsize=(8, 4))
sns.histplot(wdi["life_expectancy"], kde=True)
plt.title("Distribution of Life Expectancy")
plt.xlabel("Years")
plt.ylabel("Number of Countries")
plt.show()

wdi["life_expectancy"].mean()
```



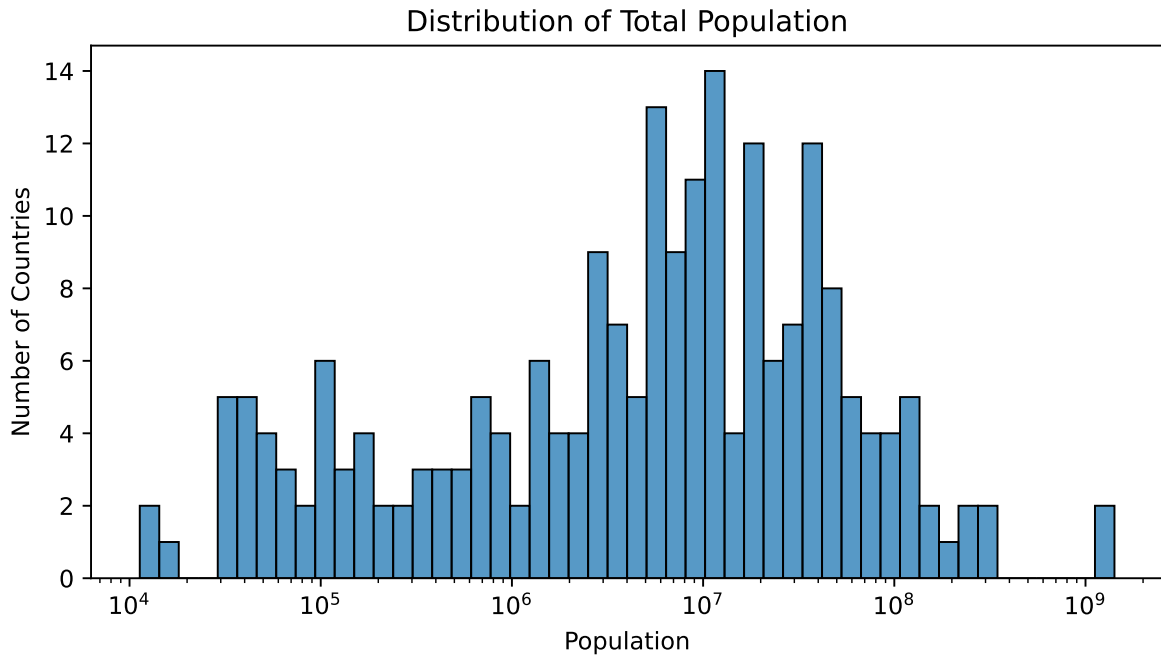
72.41651861360718

Life expectancy generally ranges from 60–85 years, with most countries clustering in the 70s. The average life expectancy is 72.4 years.

```
# 5. total_population
wdi["total_population"].describe()

plt.figure(figsize=(8, 4))
sns.histplot(wdi["total_population"], bins=50, log_scale=(True, False))
plt.title("Distribution of Total Population")
plt.xlabel("Population")
plt.ylabel("Number of Countries")
plt.show()

wdi["total_population"].mean()
```



36536447.71889401

The average population size across countries is approximately 36.54 million people.

```
# Identify top 10 countries by Adult Literacy Rate
top10_lit = wdi.nlargest(10, "adult_literacy_rate")["country", "adult_literacy_rate"]

plt.figure(figsize=(10,6))
ax = sns.barplot(x="adult_literacy_rate", y="country", data=top10_lit, palette="pastel")

# Add labels to bars
for i, v in enumerate(top10_lit["adult_literacy_rate"]):
    ax.text(v + 0.5, i, f"{v:.2f}%", color='black', va='center')

plt.title("Top 10 Adult Literacy Rates Among Countries in 2022")
plt.xlabel("Adult Literacy Rate (%)")
plt.ylabel("Country")
plt.tight_layout()
plt.show()
```

/var/folders/4f/84m0zxqx1hv5s2h9qdnk2wh0000gp/T/ipykernel\_12751/2537462310.py:5: FutureWarn

Passing `palette` without assigning `hue` is deprecated and will be removed in v0.14.0. Assign

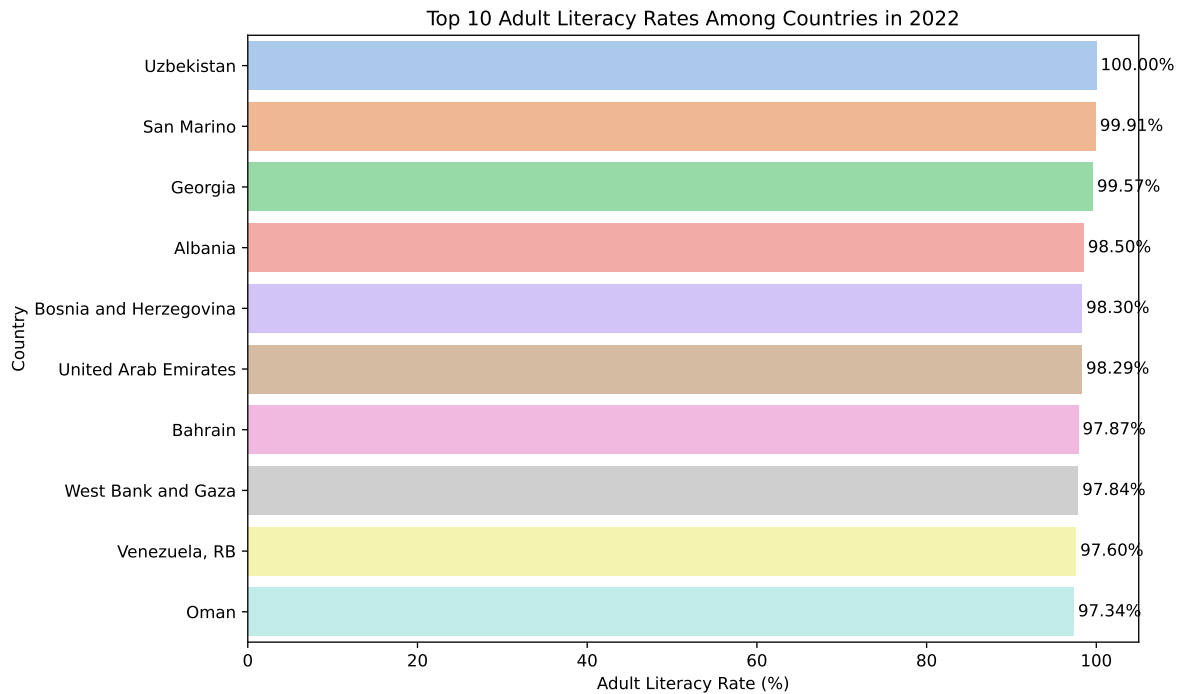


Figure 1: Top 10 adult literacy rates among countries in 2022.

Data source: World Development Indicators (WDI) 2022.

```
plt.figure(figsize=(8,5))
sns.scatterplot(data=wdi, x="measles_immunisation_rate", y="life_expectancy", alpha=0.7)

plt.title("Measles Immunization Rate vs. Life Expectancy (2022)")
plt.xlabel("Measles Immunization Rate (%)")
plt.ylabel("Life Expectancy (years)")
plt.tight_layout()
plt.show()
```

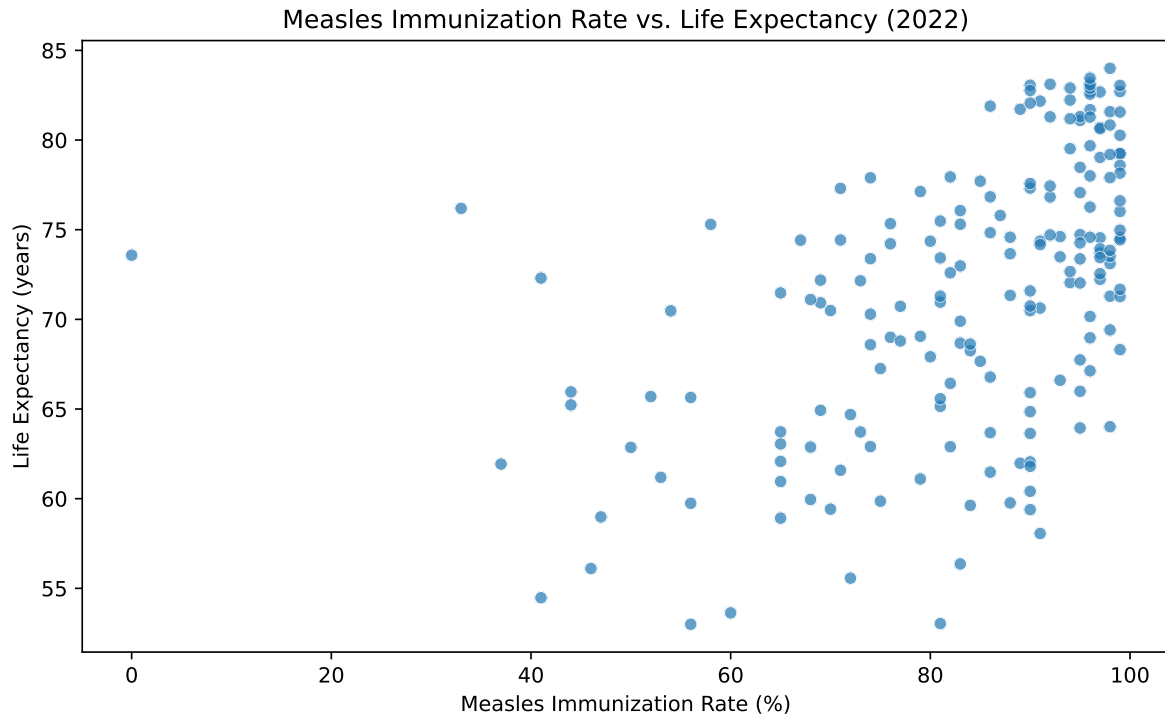


Figure 2: Relationship between measles immunization rate and life expectancy across countries in 2022.

Data source: World Development Indicators (WDI) 2022.

```
# Indicators for summary
indicators = ["inflation_rate", "adult_literacy_rate", "measles_immunisation_rate", "life_exp"]

# Calculate summary statistics
summary_stats = wdi[indicators].agg(["mean", "median", "min", "max"]).T

# Rename index
summary_stats.index = ["Inflation Rate (%)", "Adult Literacy Rate (%)", "Measles Immunization Rate (%)", "Life Expectancy (years)"]

summary_stats = summary_stats.round(2)

summary_stats
```



Table 2: Summary statistics of selected indicators in 2022.

	mean	median	min	max
Inflation Rate (%)	12.49	7.97	-6.69	1.712100e+02
Adult Literacy Rate (%)	79.57	83.78	27.28	1.000000e+02
Measles Immunization Rate (%)	83.85	90.00	0.00	9.900000e+01
Life Expectancy (years)	72.42	73.51	53.00	8.538000e+01
Total Population	36536447.72	6465097.00	11312.00	1.417173e+09

Data source: World Development Indicators (WDI) 2022.

As shown in Figure 1, the top 10 countries had adult literacy rates above 97% in 2022 (Reference:).<sup>1</sup>

As shown in Figure 2, higher measles immunization rates generally correspond with longer life expectancy (Reference:).<sup>2</sup>

Table 2 summarizes key statistics for the main indicators analysed in this report, including inflation rate, adult literacy rate, measles immunization rate, life expectancy, and total population size.

## References

- Bloch, Alan B, Walter A Orenstein, Harrison C Stetler, Steven G Wassilak, Robert W Am-  
ler, Kenneth J Bart, Cecil D Kirby, and Alan R Hinman. “Health Impact of Measles  
Vaccination in the United States.” *Pediatrics* 76, no. 4 (1985): 524–32.
- Swargiary, Khritish. “Literacy and Development: A Global Perspective,” n.d.

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<sup>1</sup>“Literacy and Development.”

<sup>2</sup>“Health Impact of Measles Vaccination in the United States.”