

# WHO – Technical Presentation

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**WHO health budget for cancer has been increasing 10% yearly but cancer patients are also increasing yearly 5% these results are unfavourable for humanity, requiring to invest in effective vaccine strategy and improve health condition to reduce this impact in both short and long term.**

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Increasing population across the world and less specialised doctors for treatment.

Cancer treatment budget holds 25% of the WHO total health budget.

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Identify cancer types that correlate the life expectancy

Analyse the given data using statistics to improve life expectancy

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Formation of linear equation for life expectancy can be used for other cancer types?

When we identify the life expectancy variables we can scale this to other types.

## Hypothesis formation(SMART problem)

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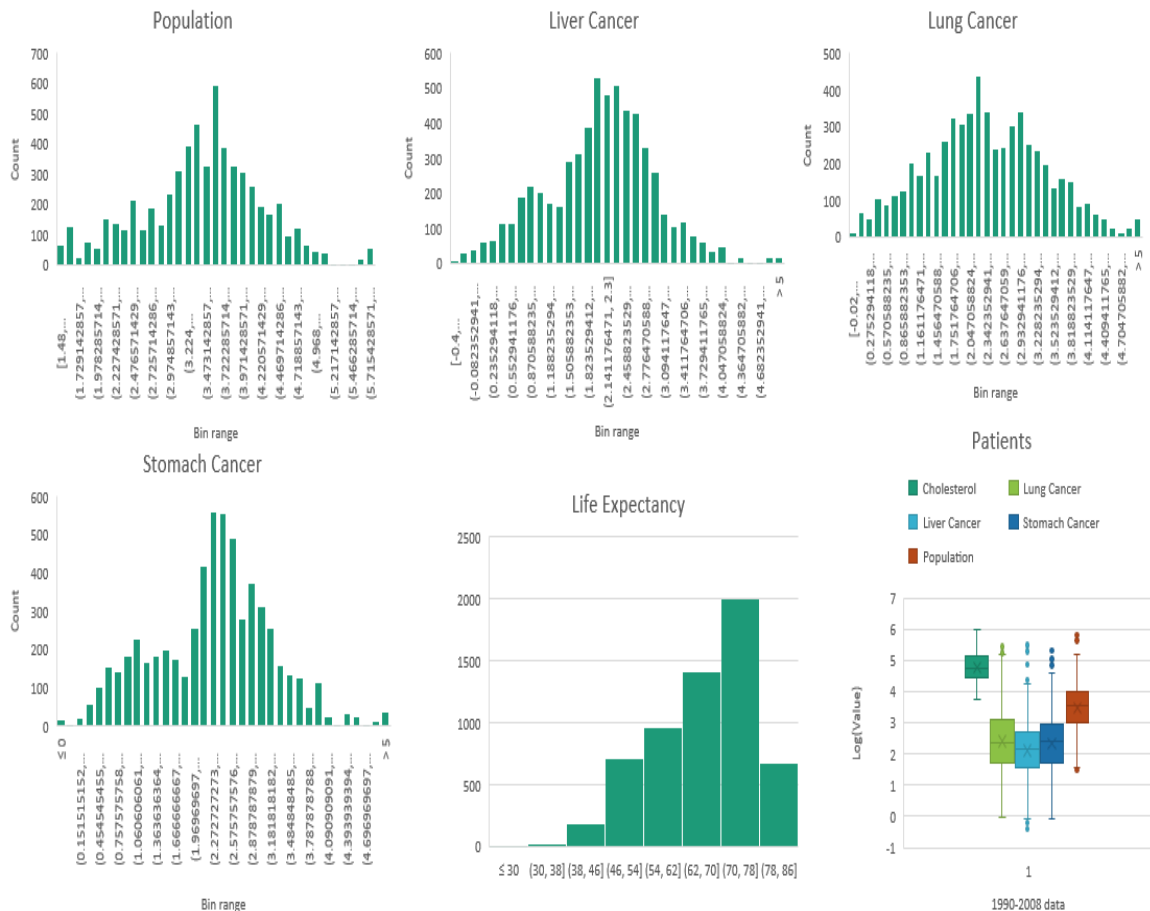
**What opportunities exist for WHO health experts to reduce cancer patients to 0% by the end of 2012 to spend WHO annual budget of 25% through increasing organ surgery or starting radiotherapy trials?**

Statistics(Descriptive and Inferential)

Time Series Modelling

# While plotting data variables distribution life expectancy ,liver and lung cancer showed intriguing results.

## Gap minder health data distribution



## Key Insights

- Abnormal skew distribution of lung cancer.
- High life expectancy followed by tremendous decrease.
- Outlier(Value:0) in Liver cancer states countries with no liver cancer.
- Distorted right skew distribution of stomach cancer.

## Demographic data exploration for cancer types using population, life expectancy and gender.

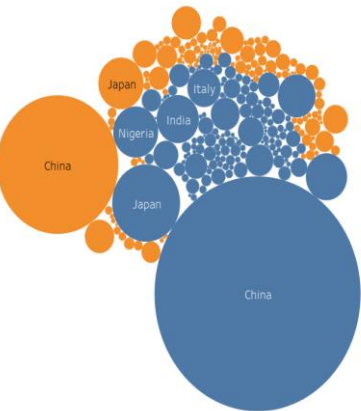


Gender

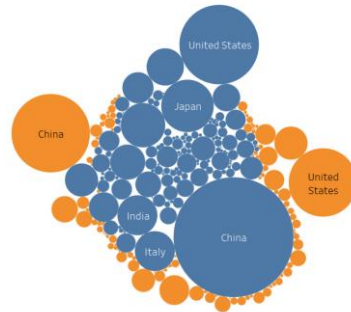
men

women

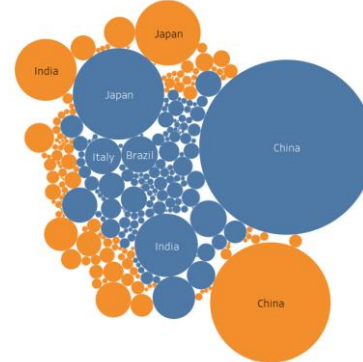
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Lung Cancer



## Stomach Cancer



Gender

■ men  
■ women

## Key Insights

- China and Europe has high life expectancy and India median(2<sup>nd</sup> high population).
- Men tends to have an average 3-5 life expectancy difference with women.
- High life expectancy countries are having higher cancer patients.
- A through analysis for advanced statistics cause.

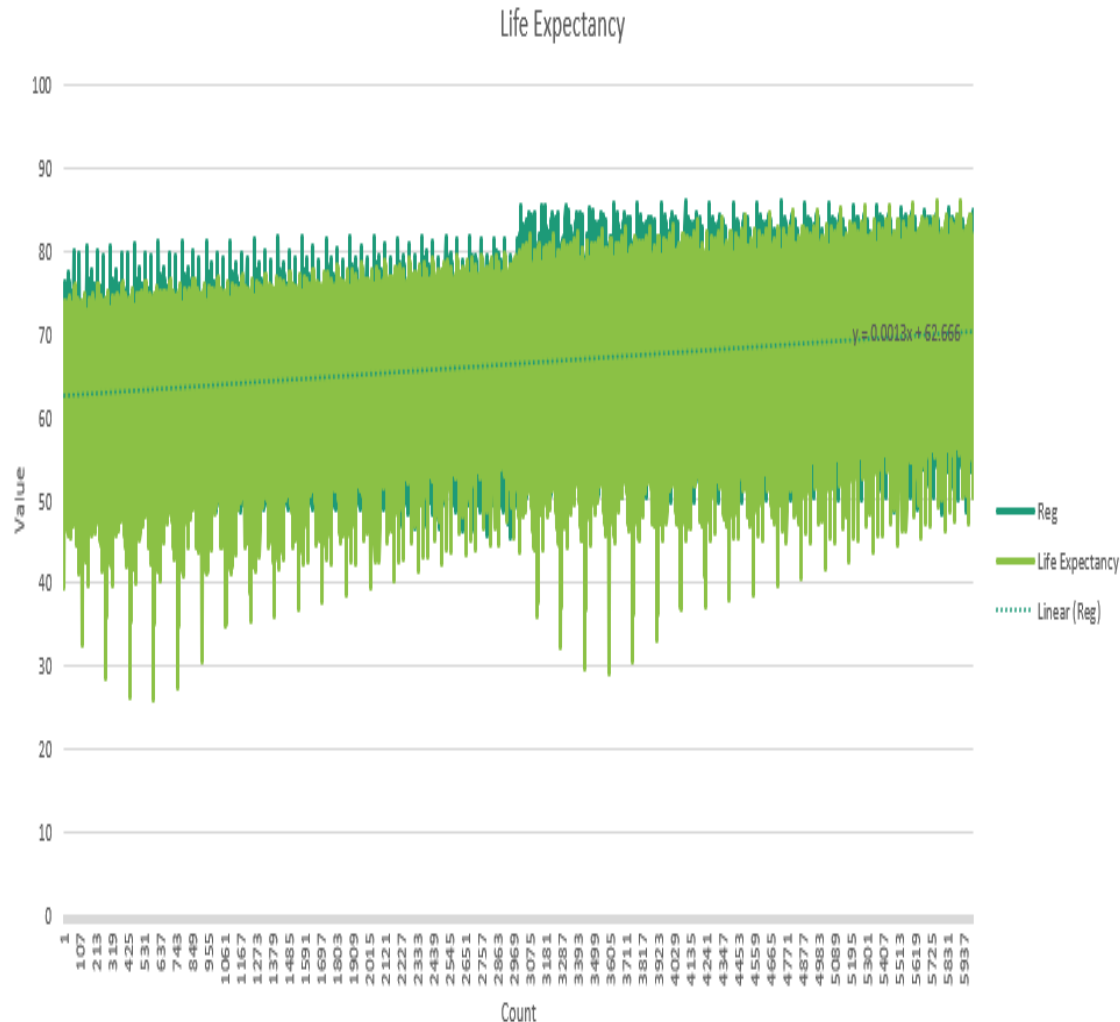
## Developed cancer leading to develop other types of cancers affecting population.

Variable	Life Expectancy	Gender	BMI	Blood Pressure	Cholesterol	Lung Cancer	Liver Cancer	Stomach Cancer	Population	Population Growth
Life Expectancy	1									
Gender	-0.233010018	1								
BMI	0.620628552	0.142460335	1							
Blood Pressure	0.024503794	-0.393459168	-0.000393982	1						
Cholesterol	0.738229857	0.125150699	0.635764588	0.084623053	1					
Lung Cancer	0.382015527	-0.214439054	-0.014874263	0.015277412	0.305100393	1				
Liver Cancer	0.013961665	-0.120146109	-0.250221278	-0.037934742	-0.053942683	0.860561375	1			
Stomach Cancer	0.200355763	-0.086417682	-0.138984943	-0.034926739	0.156083214	0.943287747	0.921096511	1		
Population	-0.02362795	0.000452366	-0.263090189	-0.148146504	-0.055265167	0.838380456	0.93271384	0.916170773	1	
Population Growth	-0.324194589	-0.014469599	-0.230860401	-0.157661943	-0.340001216	-0.28940803	-0.098551507	-0.237643877	-0.01888823	1

### Key Insights

- Cholesterol has moderate effect on life expectancy but not on BMI.
- Cancer types are having high correlation among themselves rising a common question damaging of tissues spreading widely across the whole human body.

# Framing linear regression equation for life expectancy to use predictive modelling.

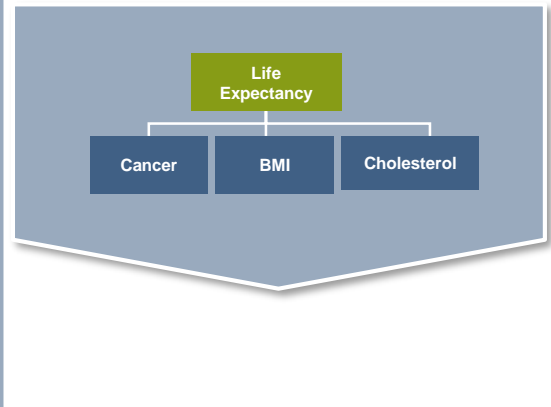


## Key Insights

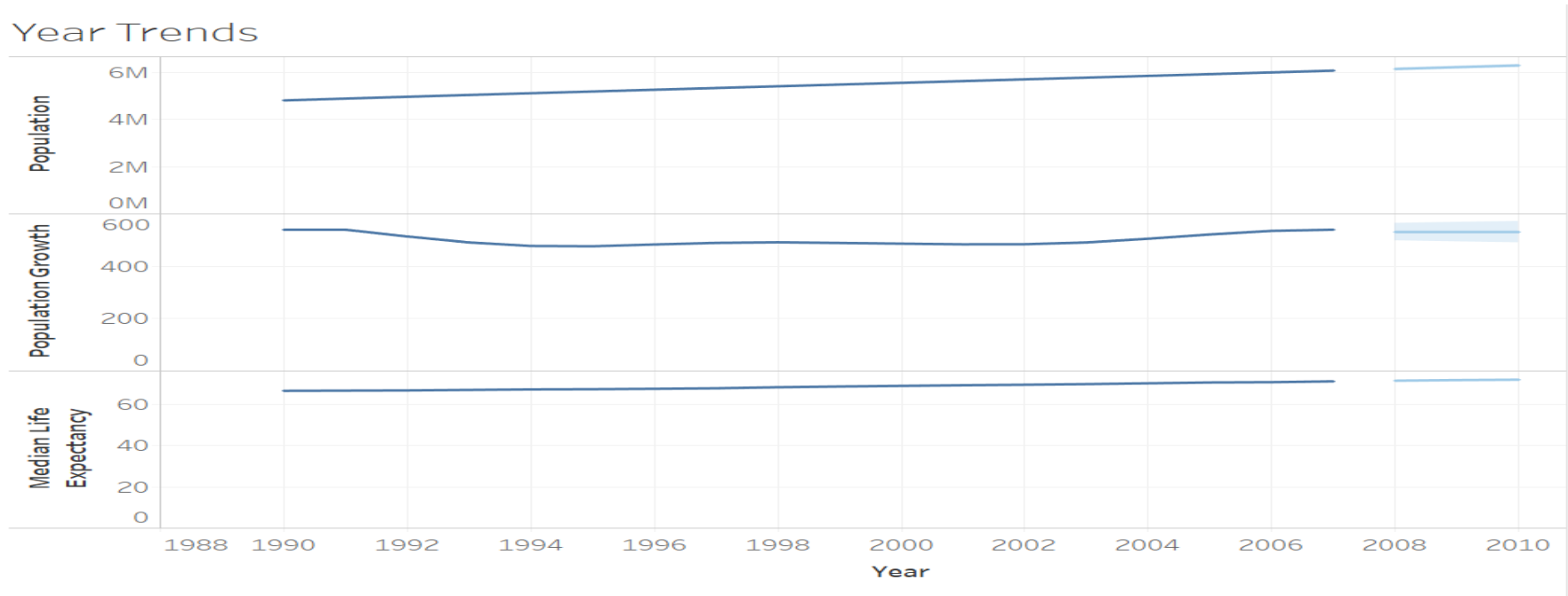
### Overarching Insights:

- $Y = m \cdot X + c$  equation is used to frame linear regression.
- Mean expected life expectancy value ~63 closer the population data.

Support points: Cancer, Cholesterol and BMI



## Time Series for gap minder data of median life expectancy forecast increasing 0.05%.



### Key Insights

- The increasing population neutralising the cancer effect on increasing life expectancy because of constant population growth.
- This leads to further investigation to find missing variables or causality for the case study.