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Is it better for a country to be fair or prosperous in a pandemic?

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Agenda

- Hypothesis and Rationale
- Scope of work
- Results
  - Health
  - Economic
- Conclusions

Hypothesis and Rationale

“It is the level of fairness in a country rather than its level of prosperity that has led to better health and economic outcomes from the Covid 19 pandemic.”

Fairer countries might be expected to have:

- better population behaviours/compliance (‘all in it together’)
- a more nuanced balance between health and the economy
- more progressive leadership/risk mitigation strategies

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Scope of Work - Metrics

- Prosperity
  - GDP per capita
- Fairness
  - % of total income earned by top 10% of earners
- Health
  - COVID-19 deaths per million
- Economic
  - GDP change in 2020
  - Unemployment rate change in 2020
  - Debt to GDP Ratio change in 2020

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Scope of Work - Methodology

- Tested for relationship between prosperity and fairness with health and economic outcomes
- Spearman rank correlation testing used to test for monotonic relationship between variables
- Adjustments made for variables of interest; namely age distribution and obesity prevalence

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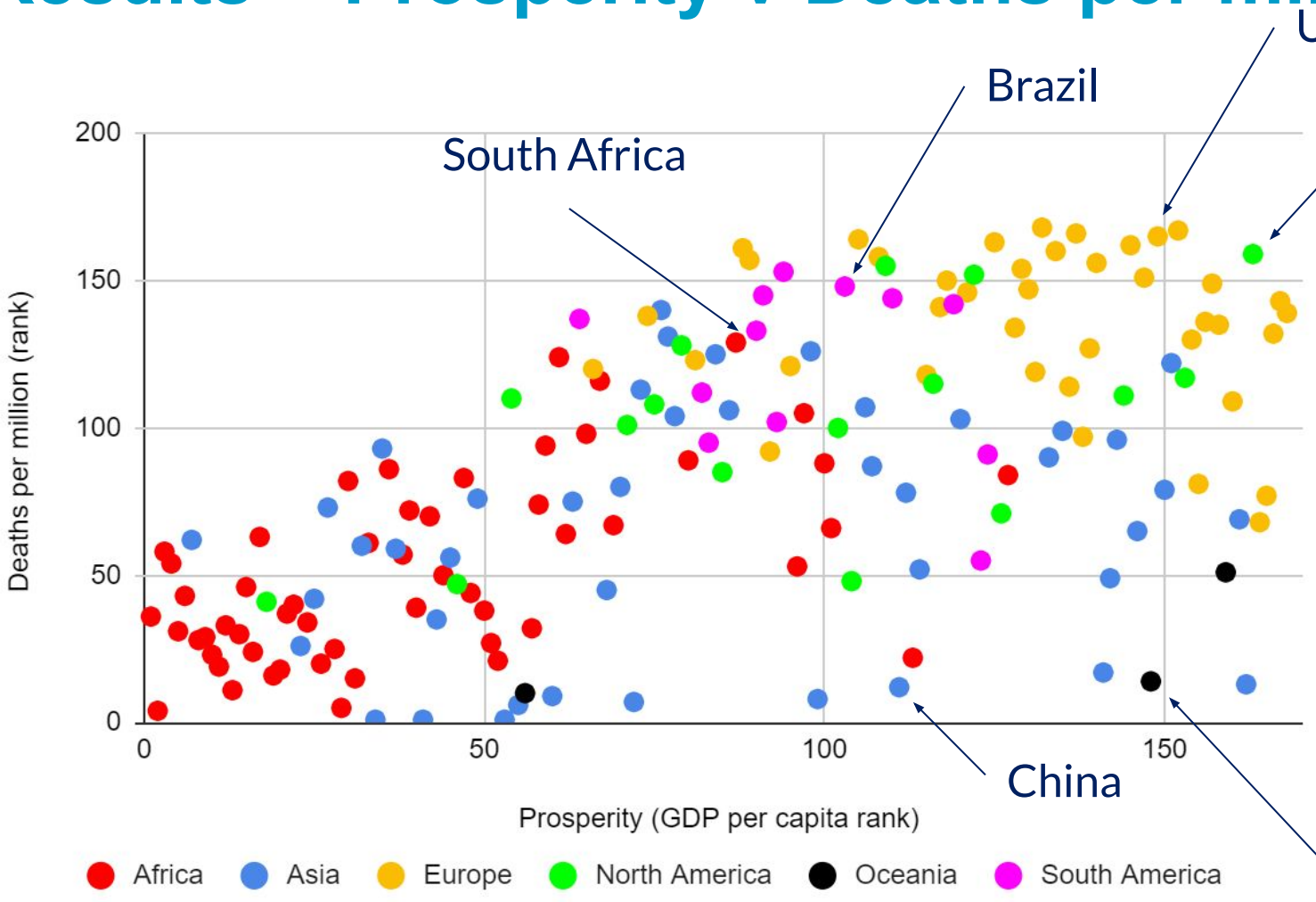
Results - Prosperity v Deaths per million



- Positive correlation (0.59), more prosperous countries experience higher death rate
- Higher GDP per capita, right hand side. More deaths per million upper half of chart
- First emergence of continental differences seen in contrasting results for Europe & Africa

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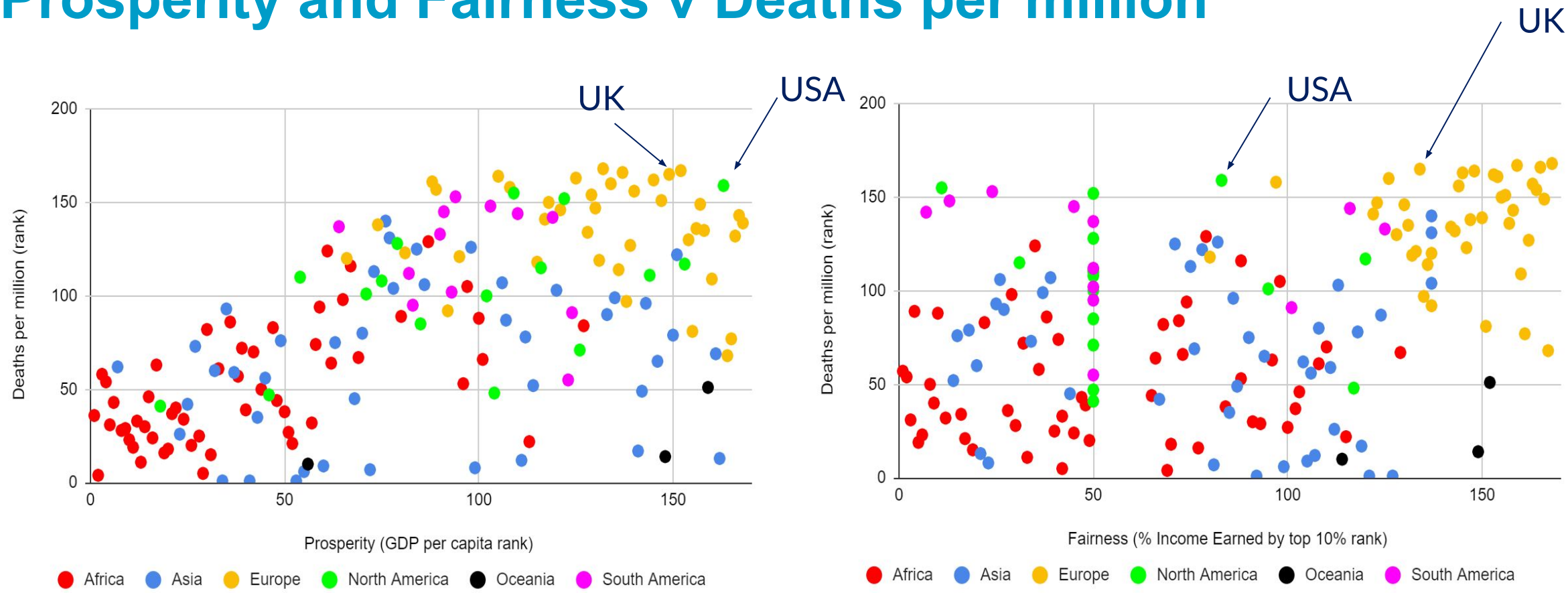
Prosperity and Fairness v Deaths per million



- Correlation of 0.59 for prosperity, 0.33 for fairness, when compared to deaths per million

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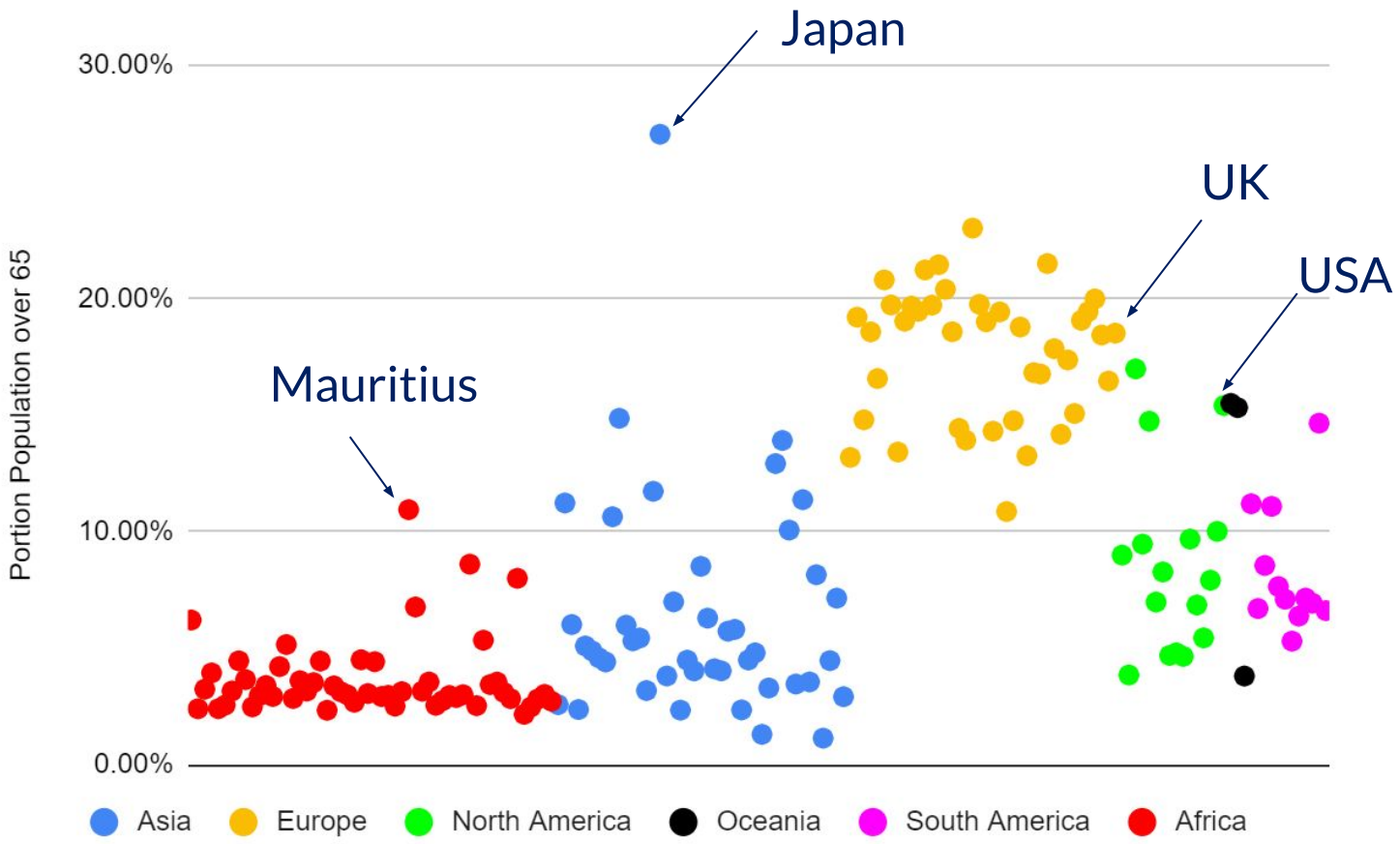
Effect of age distribution



- ONS data from early into pandemic suggests c90% of deaths and internationally c85-90% relate to population over age 65
- Clear differences by continent emerge
- Age adjustment made to reflect differences in populations

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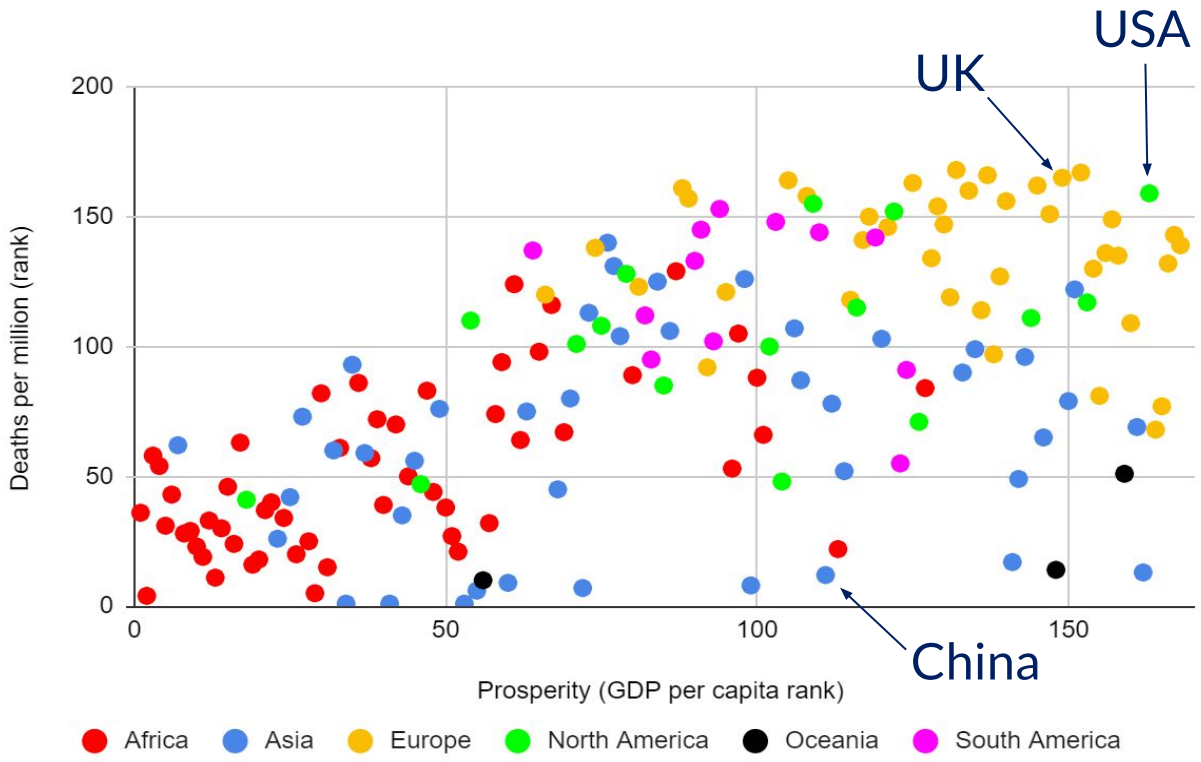
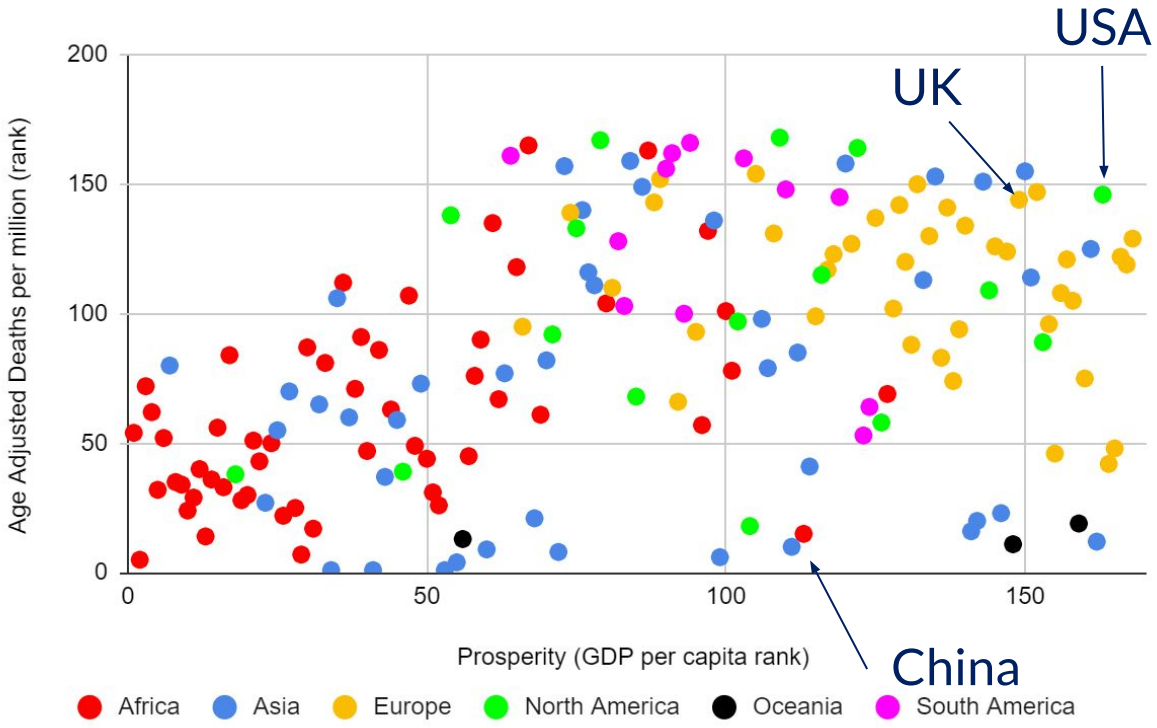
Prosperity v Deaths and Age adjusted deaths





- Countries with highest portion of population over 65 move down y axis
- Correlation falls from 0.59 to 0.41 with age adjustment

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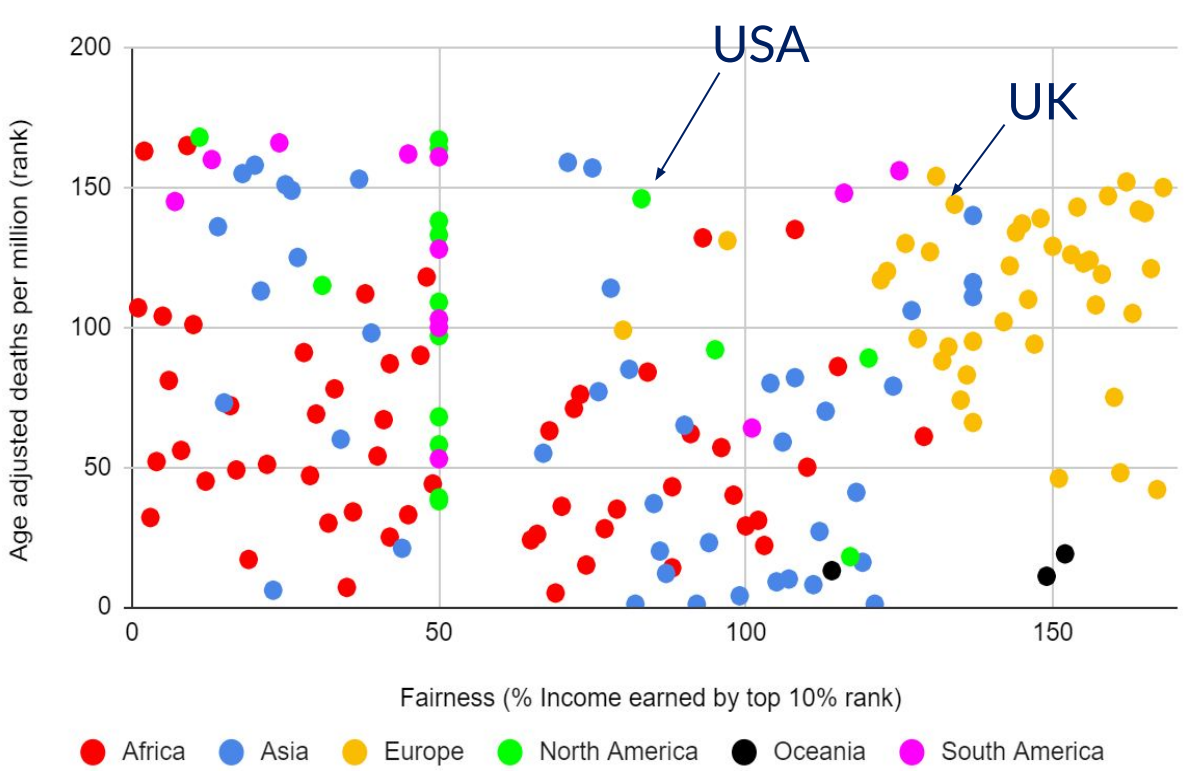
Fairness v Deaths and Age adjusted deaths



- Correlation is 0.33 for deaths per million but loses statistical significance with age adjustment
- Fairness has had no impact on COVID-19 age adjusted death rates, either positive or negative

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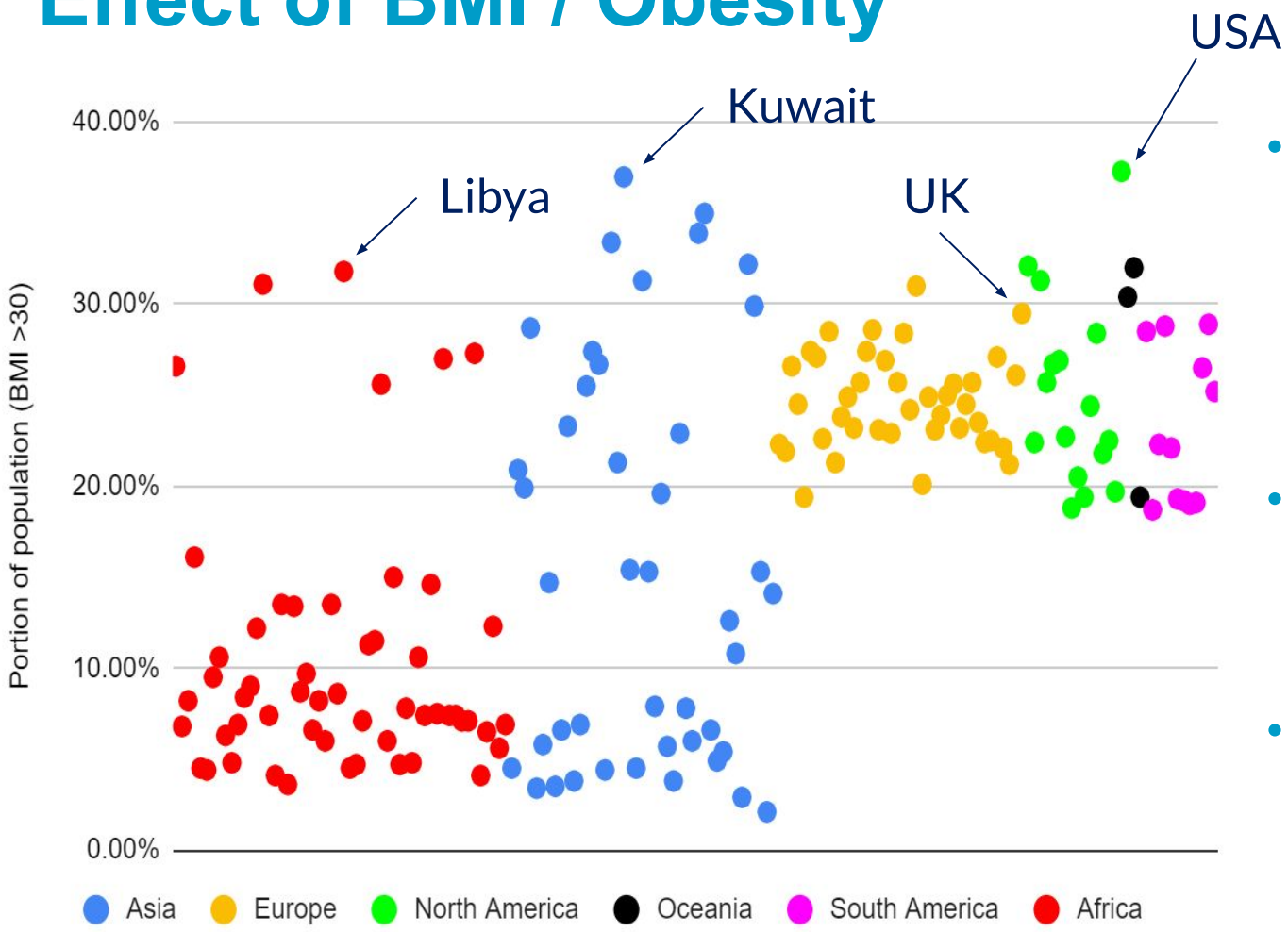
Effect of BMI / Obesity



- Mortality rate 10 times higher in countries where half the population overweight than where less than half the population overweight.
- Obesity increases risk of death from COVID-19 of 30% - 40%.
- Adjustment for higher mortality had very little impact on results (slightly more in prosperity test)

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Economic measures

- GDP Change

  Difference between 2020 GDP growth actual rates and corresponding ‘pre-pandemic’ estimates

- Debt/ GDP Ratio:

  Measures increase in debt that countries have taken on to support the pandemic-associated costs
  Two measures considered:

  (i) Debt/GDP Ratio increase over 2020 (i.e. ratio at end 2020 compared with ratio at end 2019)

  (ii) Debt increase relative to 2019 GDP (i.e. 2020 Debt /2019 GDP compared to 2019 Debt /2019 GDP)

- Unemployment change:

  Change in unemployment rates from 2019 to 2020

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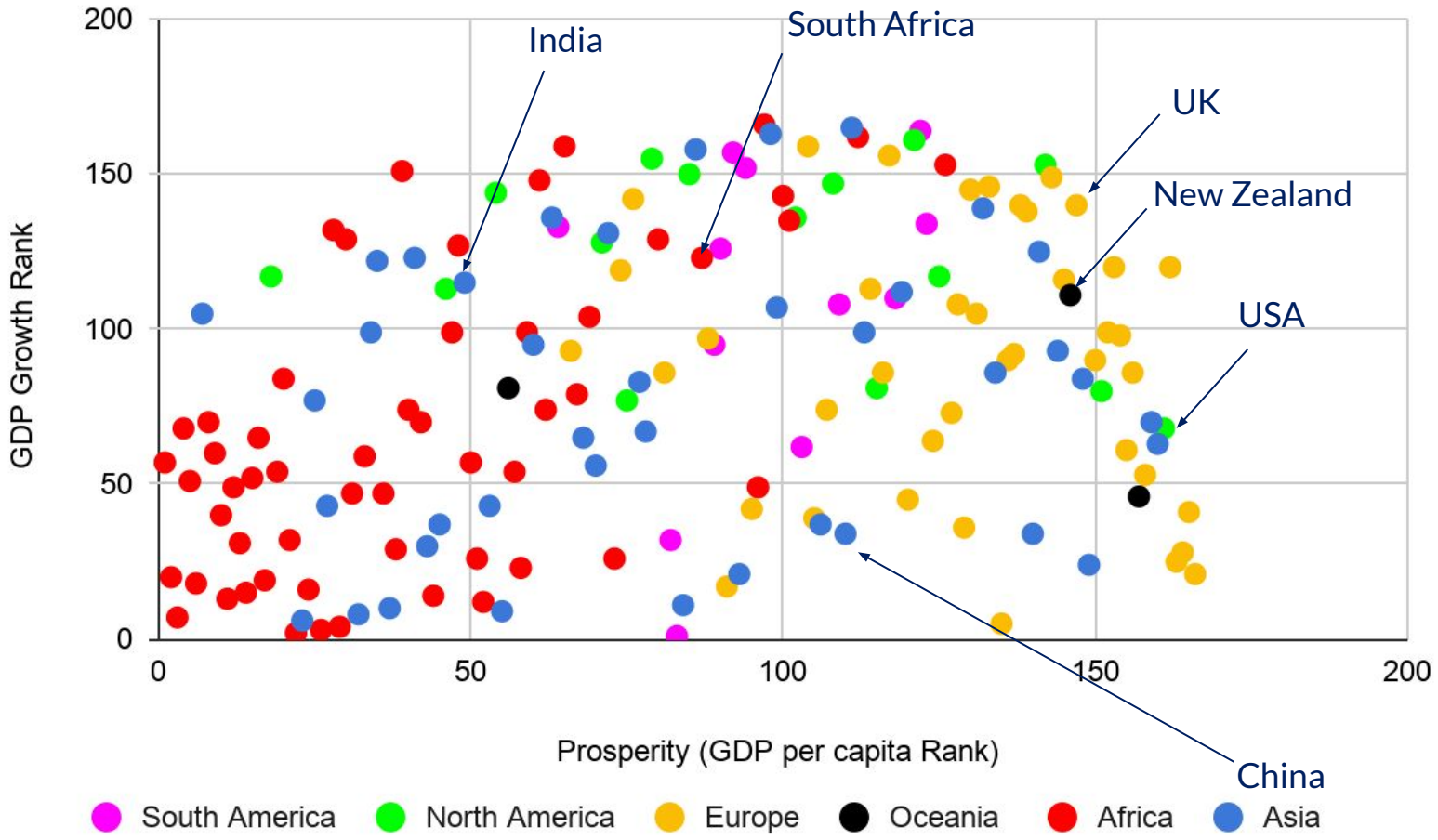
Results - Prosperity vs GDP growth



- Positive correlation (0.30), more prosperous countries experience higher GDP erosion
- Higher erosion in GDP growth upper half, higher GDP per capita right hand side
- Clear continental differences, similar to observations from health results

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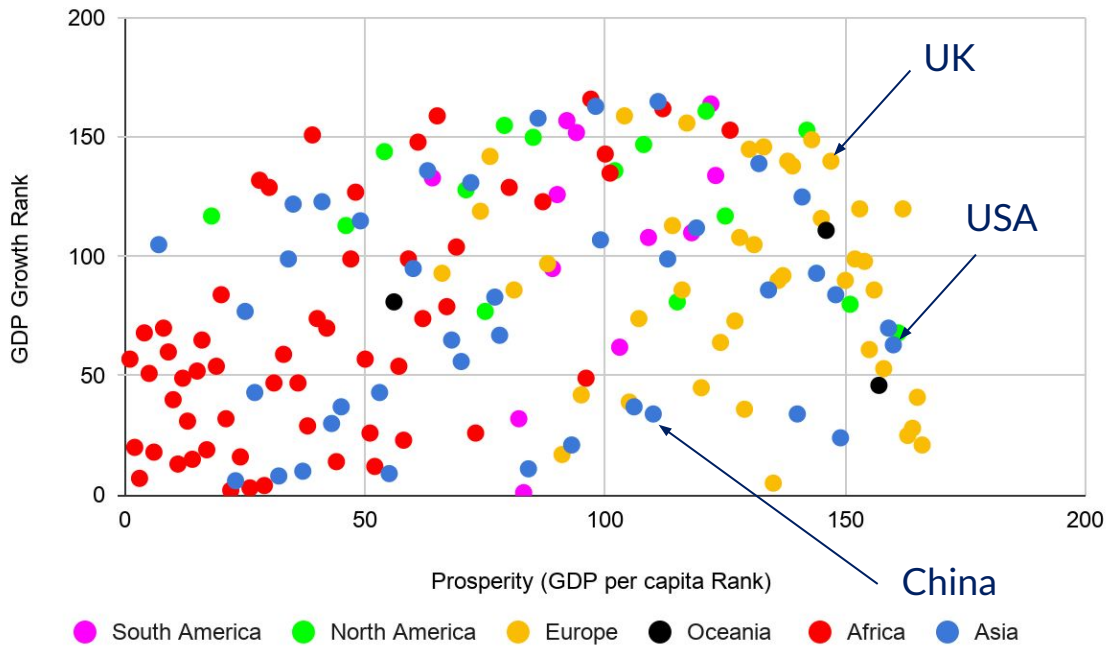
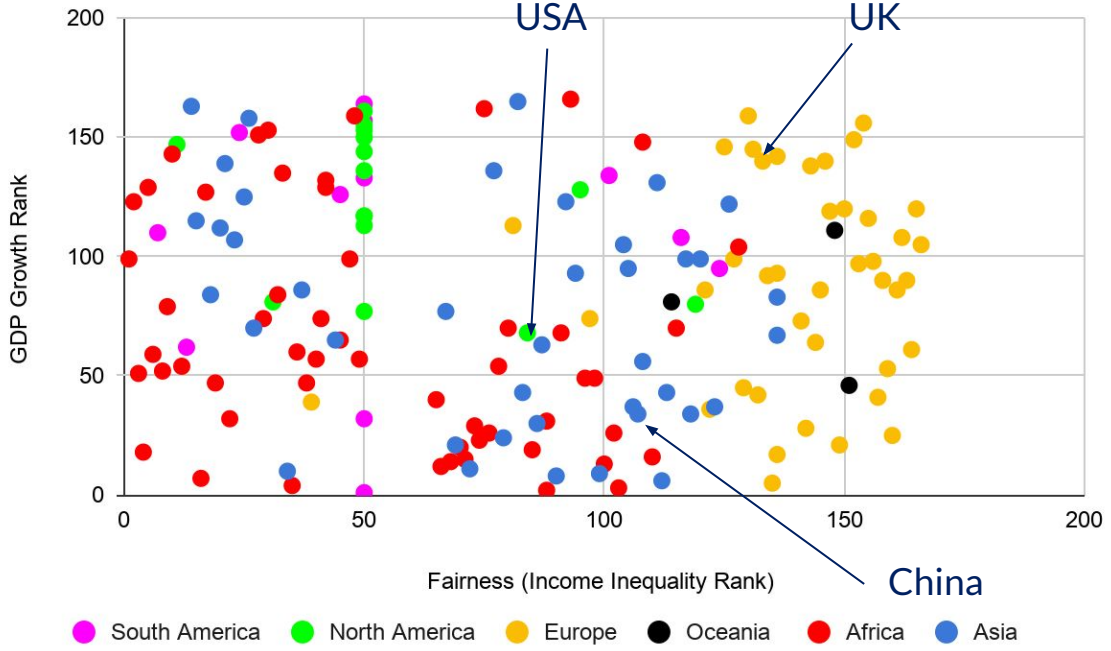
Prosperity and Fairness v GDP growth change





- Countries ranking higher on the prosperity measure were found to be the ones with the greater erosion in GDP growth - perhaps reflecting their capacity to ‘close economies down’ compared to the less prosperous counterparts
- Level of income equality had no bearing on the economic fall-out. So the theory that perhaps fairer countries would have a more nuanced approach to protecting their citizens from economic damage (or deaths) has not borne out

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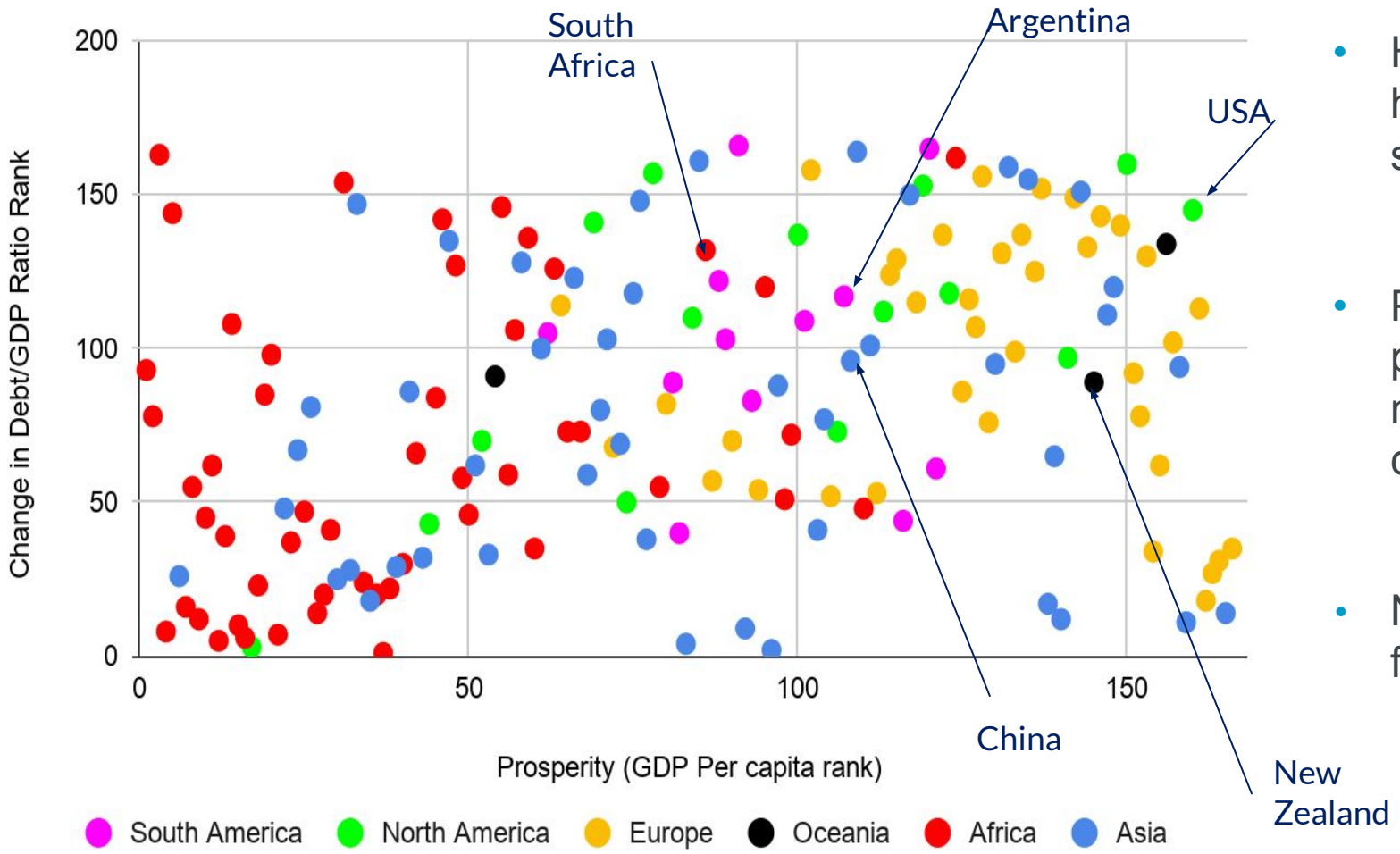
Prosperity vs Debt/GDP change over 2020



- Higher Debt/GDP upper half, higher GDP per capita right hand side
- Positive correlation (0.33), more prosperous countries borrowed more than their less prosperous counterparts for the year 2020
- No significant correlation between fairness and either measure

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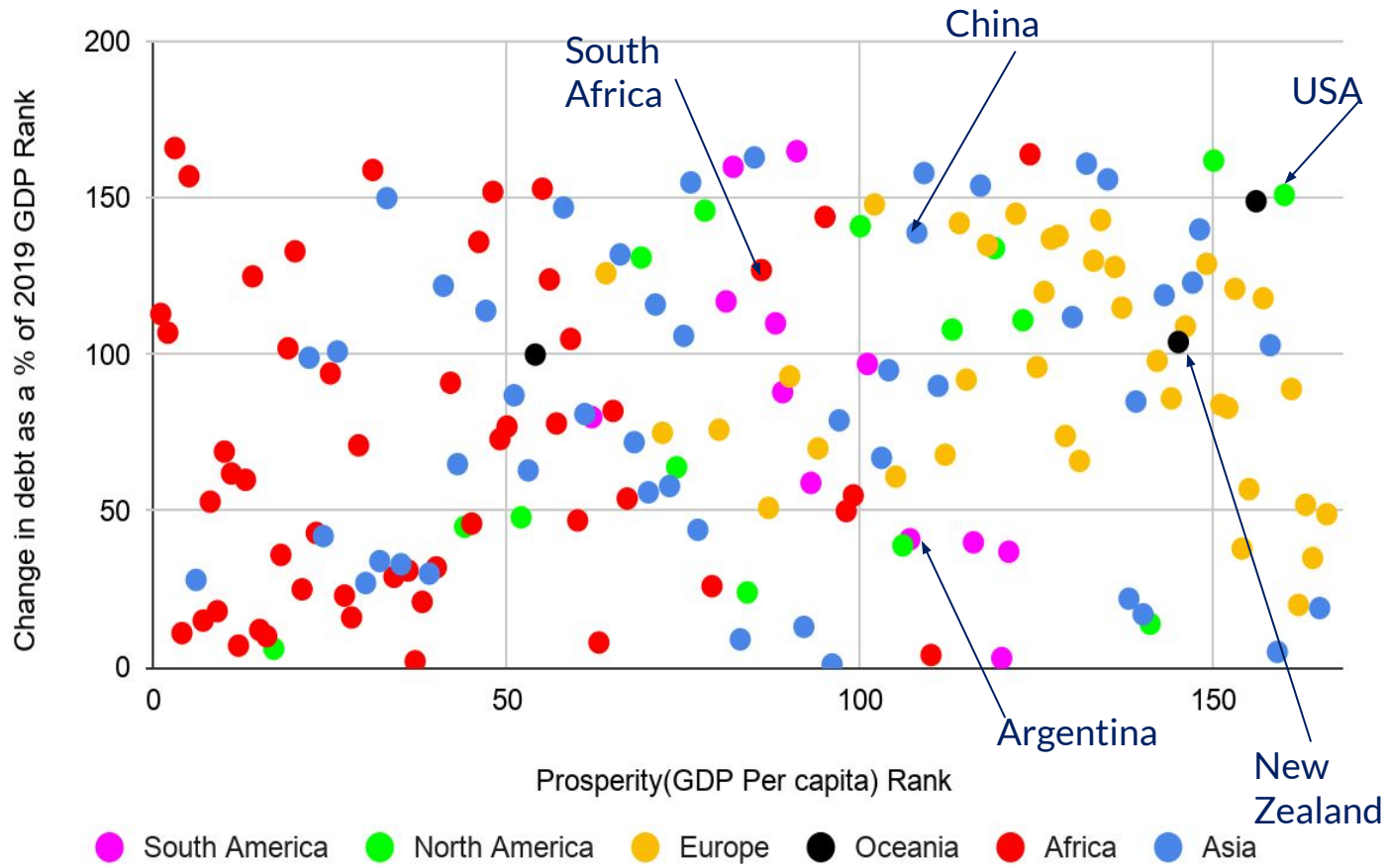
Prosperity vs Debt/GDP change over 2020



- Debt/GDP has now been rebased to 2019 GDP figures hence removing the GDP growth effect.
- We still have a positive correlation (0.21).The main difference came out in the tourism based economies who experienced a large drop in their GDP.
- The HIPC (Heavily Indebted Poor Countries) initiative by the world bank and IMF will come in handy for the less prosperous countries but highly indebted countries.

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Prosperity and Fairness v Unemployment change

- We tested correlation between prosperity and fairness with change in unemployment rates. Neither test provided statistically significant results.

- Conclusion: Neither prosperous nor fairer countries have protected their working populations against rising unemployment rates any more than their less prosperous or fair counterparts.

- Key things to note with unemployment data:
  - Reliability of data on unemployment rates largely depends on how countries choose to record those people laid off temporarily or furloughed by their employers.

  - The unemployment data used only included 8 African countries hence was dominated by the other continents.This is unlike the other tests where Africa contributed the largest number of countries.

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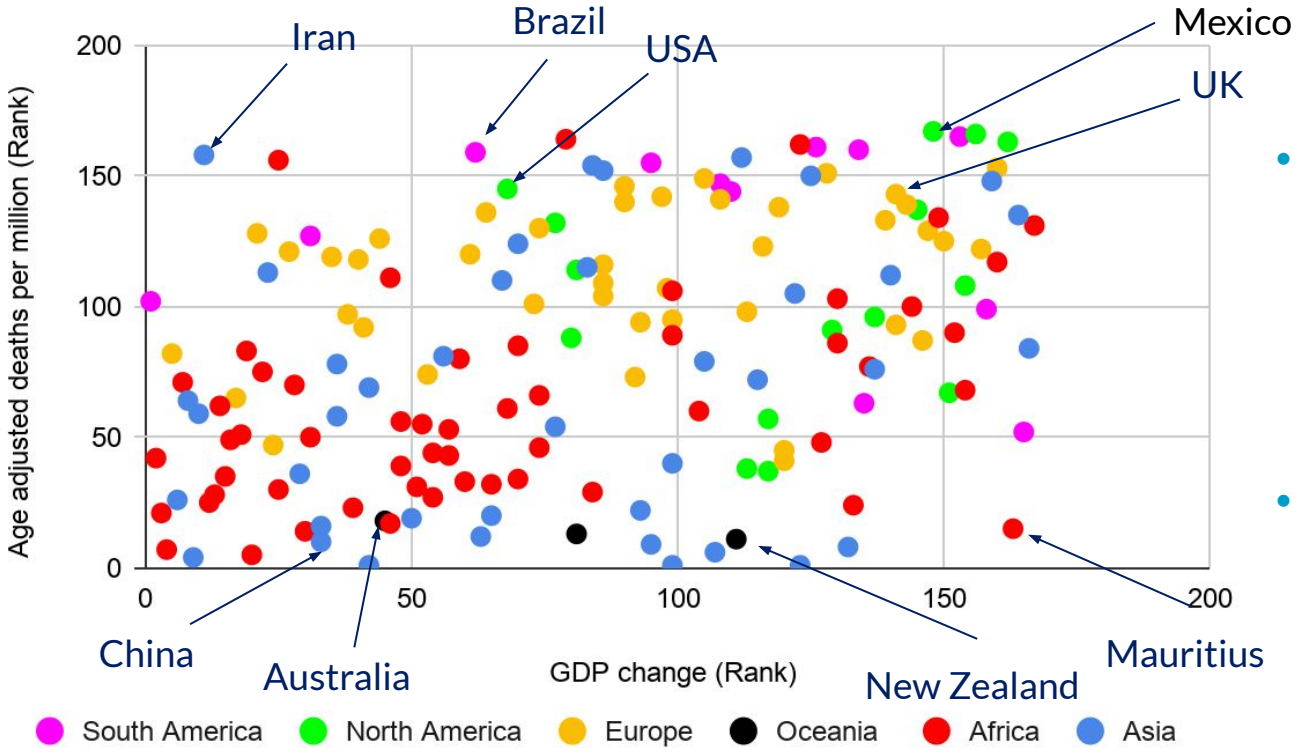
Is it really a trade-off between the ‘economy’ and ‘deaths’?



- 0.35 positive correlation, countries with bigger drops in 2020 GDP (Actual vs projections) also saw higher deaths per million on age adjusted basis
- Bad news has been experienced on both fronts simultaneously, indicating that countries have not been able to choose between impacting the economy to protect against death - these events are positively correlated

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Summary of Results

Health			
	Deaths per million	**Age adjusted Deaths**	**Obesity adjusted Deaths**
Prosperity	0.59	0.41	0.58
Fairness	0.33	Insignificant	0.33

More prosperous and fairer countries see higher death rates although the degree is significantly reduced when age and obesity adjustments are considered

Economic			
	GDP Change	**Debt /GDP Ratio**	**Unemployment**
Prosperity	0.30	0.33	Insignificant
Fairness	Insignificant	Insignificant	Insignificant

More prosperous countries experienced greater adverse impacts on economic metrics, while fairness seemed to not have a statistically significant impact

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Conclusions

More prosperous countries have:

- Higher deaths rates
- Relatively larger drop in GDP
- Taken on more debt per GDP to cope with pandemic
- No difference to less prosperous countries in ability to protect employment levels

Fairness has no bearing on:

- Death rates
- The drop in GDP.
- Increased debt relative to GDP.
- Unemployment increases.

- No evidence to suggest that one can choose between economic damage and deaths. They are positively correlated so in general, when one is good, so is the other and vice-versa.

- Fairer countries have seen less bad impacts than more prosperous countries. While this supports the original hypothesis, the results are strikingly different to what was expected and the hypothesis is not supported in the way it was initially believed.

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What does the future hold?

- Deaths are still rising at an alarming rate, mainly due to the current crisis in India
- Vaccine roll-out programs are at vastly different stages by country
- The virus is still at large and mutating
- Economic impacts will continue to be felt for years to come

Ultimately our results may be fundamentally different than the experience of 2020 when we look back on this pandemic

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Questions

Comments

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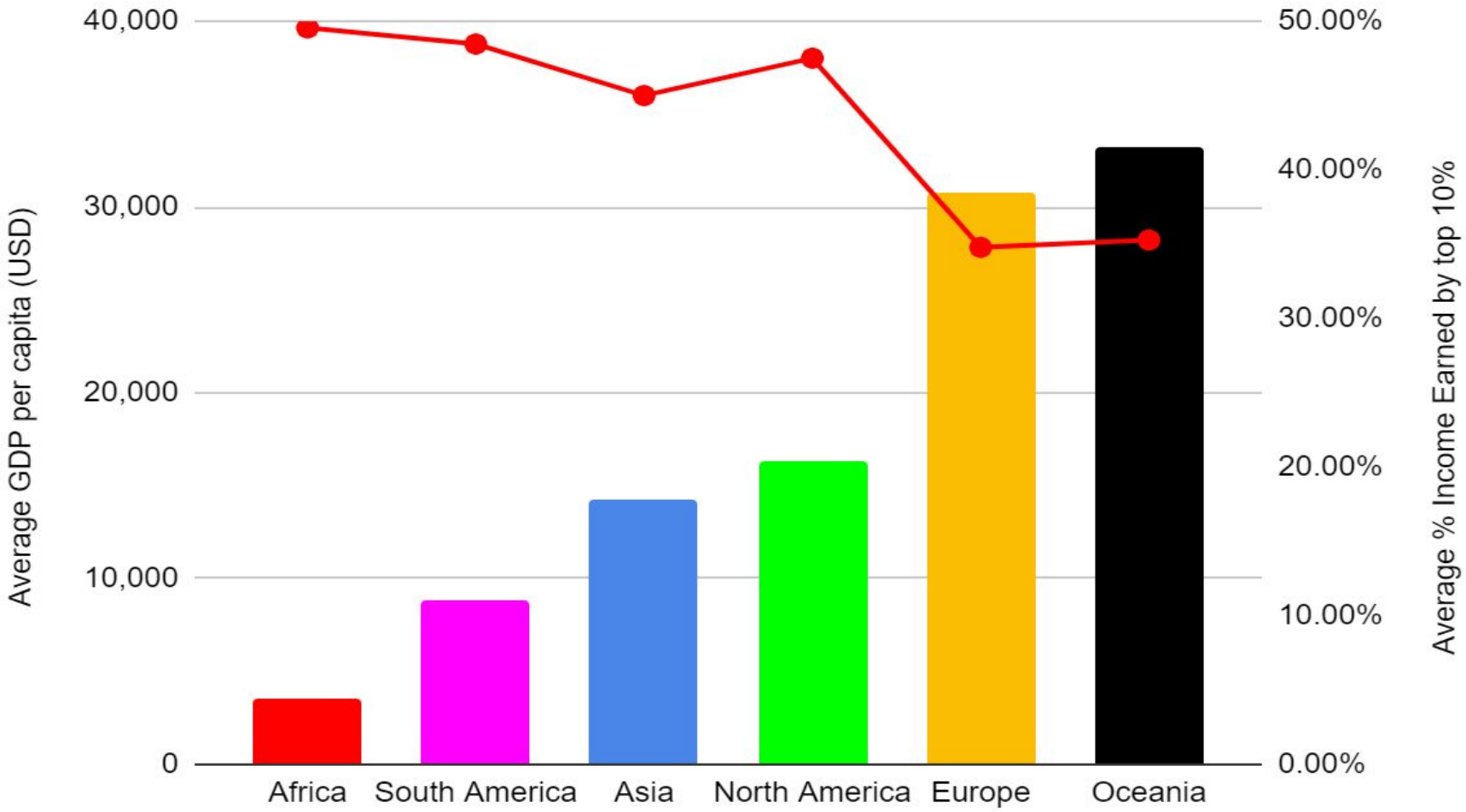
Appendix 1 - Data Sources

Inputs	Source	Link
GDP per capita	World Bank	https://data.worldbank.org/indicator/NY.GDP.PCAP.CD
Income share of top 10%	World Inequality Database	https://wid.world/data/

Outputs	Source	Link
Deaths per million	Our World In Data	https://ourworldindata.org/covid-deaths
Percentage of population aged 65 or over	Our World In Data	https://ourworldindata.org/covid-deaths
Obesity Prevalence	World Health Organization	https://apps.who.int/gho/data/node.main.BMI30C?lang=en
GDP 2020 growth projections	International Monetary Fund	https://www.imf.org/external/datamapper/NGDP_RPCH@WEO/OEMDC/ADVEC/WEOWORLD
2020 unemployment rate projections	International Monetary Fund	https://www.imf.org/external/datamapper/LUR@WEO/OEMDC/ADVEC/WEOWORLD
Debt / GDP Ratio	International Monetary Fund	https://www.imf.org/external/datamapper/GGXWDG_NGDP@WEO/OEMDC/ADVEC/WEOWORLD

Appendix 2 - Continental Differences



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