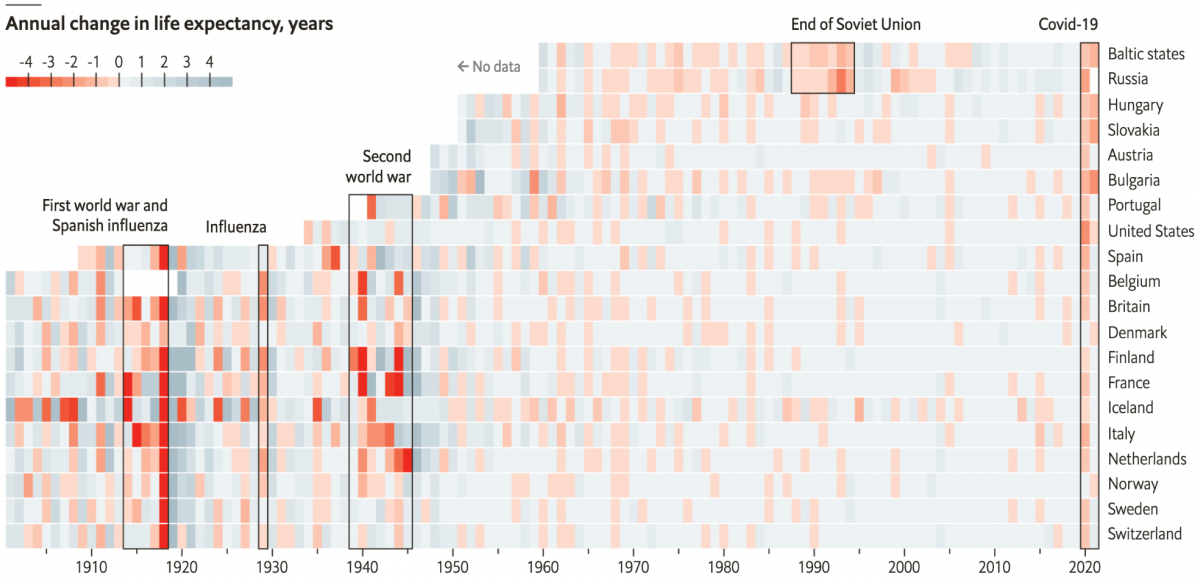
Introduction

For my analysis of existing data visualization, I decided to examine a trio of visualizations recently published by the same source; the Economist, a weekly news magazine with a reputation for well crafted data journalism. Analyzing visualizations from a single media organization, with a consistent design guide, allows us to narrow in on the fundamental features of narrative, visualization type and data, instead of getting bogged down by minor stylistic differences. All three are taken from the Graphic Detail section of the magazine, which centers articles on the visualizations themselves and supports them with text, an inversion of the typical relationship in the rest of publication where visualizations are subordinated to the written word. Each Graphic Detail article features a primary visualization, which is often given a double page spread, and a handful of supporting visualizations. This allows designers to create visualizations that are far more detailed than would be otherwise legible. It's a format particularly suited to complex data and narratives.

In America and eastern Europe, covid-19 got worse in 2021

Oct 20th 2022



https://www.economist.com/graphic-detail/2022/10/20/in-america-and-eastern-europe-covid-19-got-worse-in-2021

1. What data does it use?

This graphic detail is based on data taken from a recent study led by Jonas Schöley of the Max Planck Institute, and published in the scientific journal *Nature Human Behavior.* The paper compiles data on death rates by age group in 28 (mostly European) countries, and calculates the number of years a newborn would be expected to live.

2. What is the purpose of visualization?

The purpose of the visualization is to demonstrate the effects of the COVID-19 pandemic on life expectancies—primarily in developed or Western countries—with a special emphasis on the elderly.

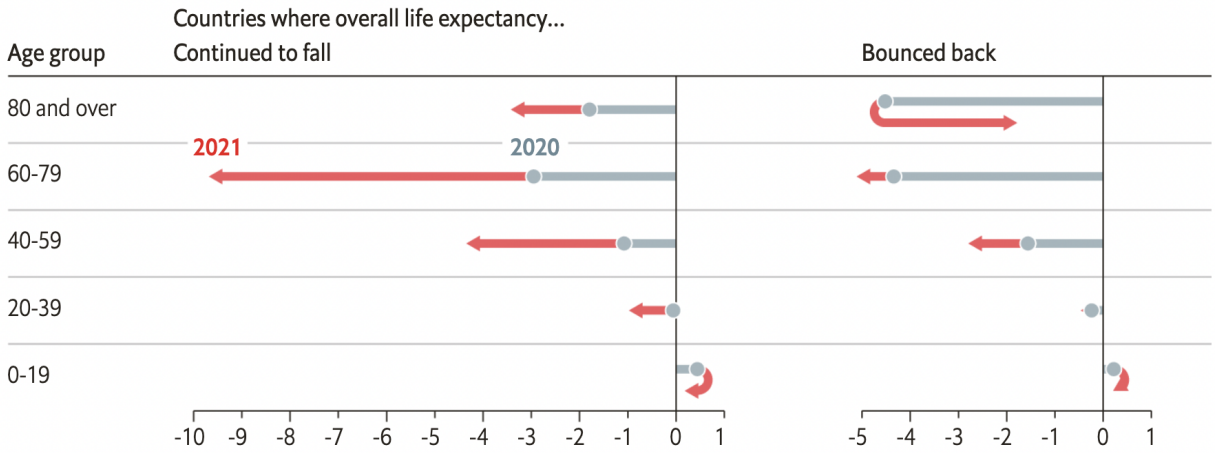
3. How is the visualization composed? What charts are used?

This Graphic Detail article contains three distinct visualizations. The primary visualization makes use of a chart type that I have not encountered. For want of its official name, I will dub it a "grid" chart. The chart consists of 20 horizontal bars, each corresponding to a country. The x-axis lists the years from 1900 to 2020. At each year position, the 20 country bars are given a color that corresponds to their annual change in life expectancy, in years. Periods of particular

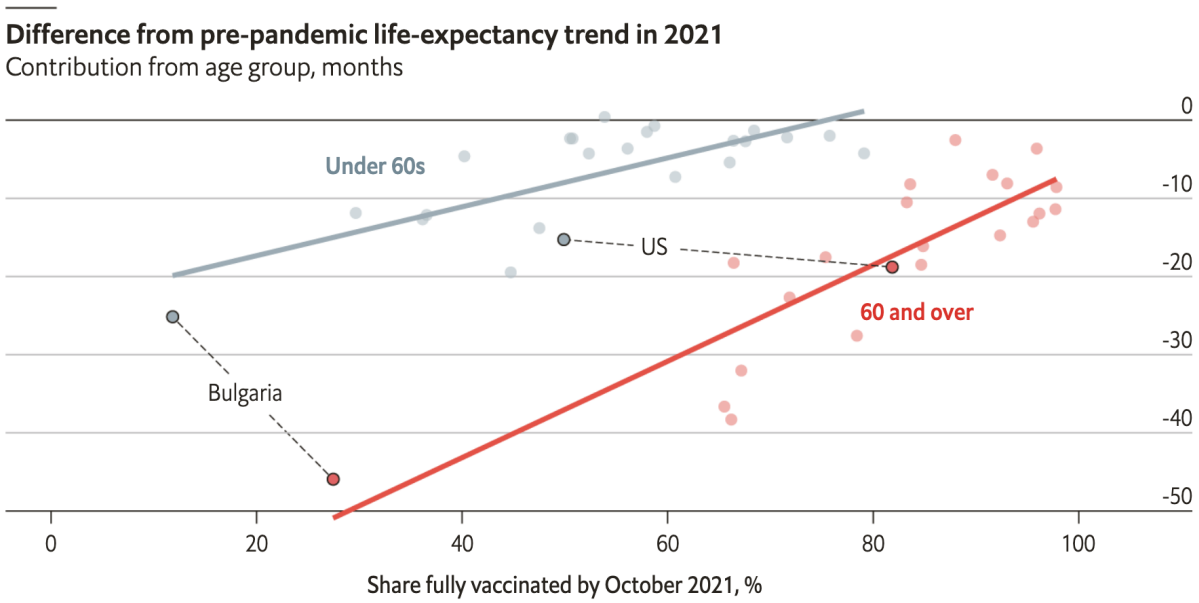
turmoil, buffeted with red grid squares, are picked out with boxes. The events responsible for the wide-ranging declines in life expectancy—wars, prior pandemics, political upheaval—are labeled.

The primary data visualization is supported by two additional charts. The first is a bar chart, which shows the average change in life expectancy among countries where life expectancy continued to decline after 2020, and among countries where it "bounced back." All countries experienced a life expectancy decline in 2020, but in 2021 they bifurcated, some partially recovering and other falling further still.

Change in life expectancy from 2019, contribution from age group, months



The second supporting chart is a scatter, which plots the share of the national population that is vaccinated against the overall decline in life expectancy since the beginning of the pandemic. However, instead of representing each country as a single point, the chart depicts each country twice, dividing national statistics into those for two grounds: the population under 60 and the population 60 and above.



4. Does the visualization have a clear message? Who is the intended audience?

Each visualization brings a distinct message. The primary grid chart makes a case for the historical significance of the COVID-19 pandemic. It argues that the death rates of the virus were so great that it caused a simultaneous decline in life expectancy across the Western world. And that this decline, while small compared to the drops that accompanied the world wars, is striking in a modern (and in particular post-1990s) context.

The supporting charts come with a more specific, and explicit narrative. Instead of just noting the magnitude and universality of the pandemic, both divide the population into more specific groups, and highlight the fact that the pandemic has not had an even identical effect across all countries and age groups. In particular, the designers tease out the relationship between declines in life expectancy and vaccination, and argue that countries that have been less effective at vaccinating their populations have suffered worse health outcomes.

The Economist is a liberal magazine, and has been since its founding. Liberal in the "classical" or "global" sense, instead of the American definition in which liberal is synonymous with left. Because of its opposition to heavy-handed government intervention, the Economist has shifted back and forth on pandemic response policies. While supporting lockdown and vaccine mandates, the paper has expressed skepticism at how governments have implemented them. This Graphic Detail can be read as part of this internal debate (among both the Economist and its readers), and an argument in favor of a stiff pandemic response, particularly with regards to widespread vaccination.

5. Is the visualization effective? Why/why not?

I find the use of red in the pair of supporting visualization an extremely effective means to visually divide it into two time periods.

Third visualization—which depicts the decline in life expectancy for people under and over 60 years of age, versus national vaccination rate—was a bit difficult for me to interpret at first.

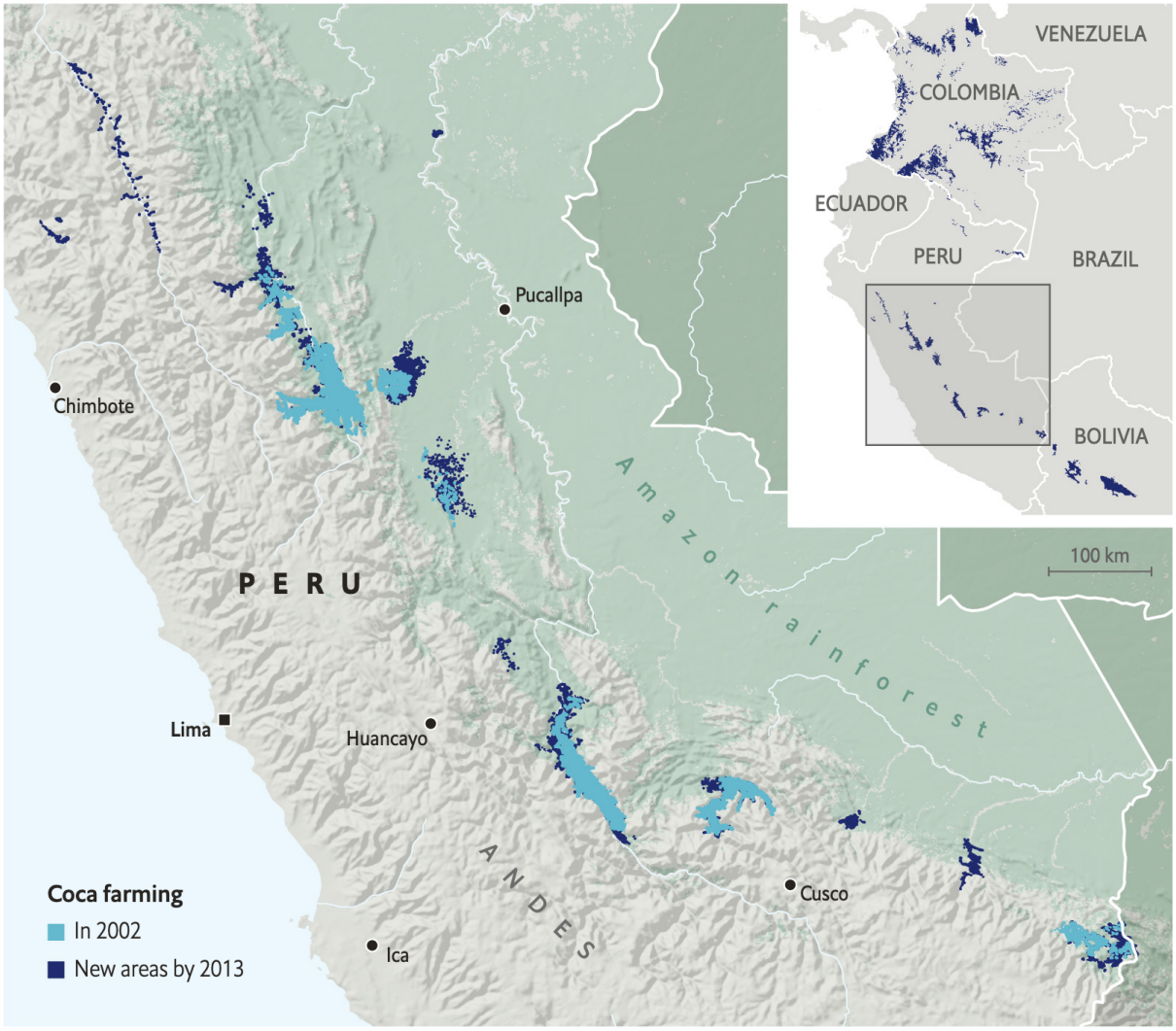
6. How would you change the visualization to strengthen the message?

I am personally not a fan of the grid chart, and believe that a normalized line chart of some kind may have been more effective. Though the clustering of life expectancies perhaps makes a line chart infeasible.

Article that accompanies the data visualizations details the regional disparities in life expectancy declines between northern and western European countries (with high vaccination rates) and the US and Eastern Europe (with low vaccination rates). However, this regional distinction does not appear on any chart.

Demand for drugs caused a surge in child labour in Peru

Oct 13th 2022



https://www.economist.com/graphic-detail/2022/10/13/demand-for-drugs-caused-a-surge-in-child-labour-in-peru

1. What data does it use?

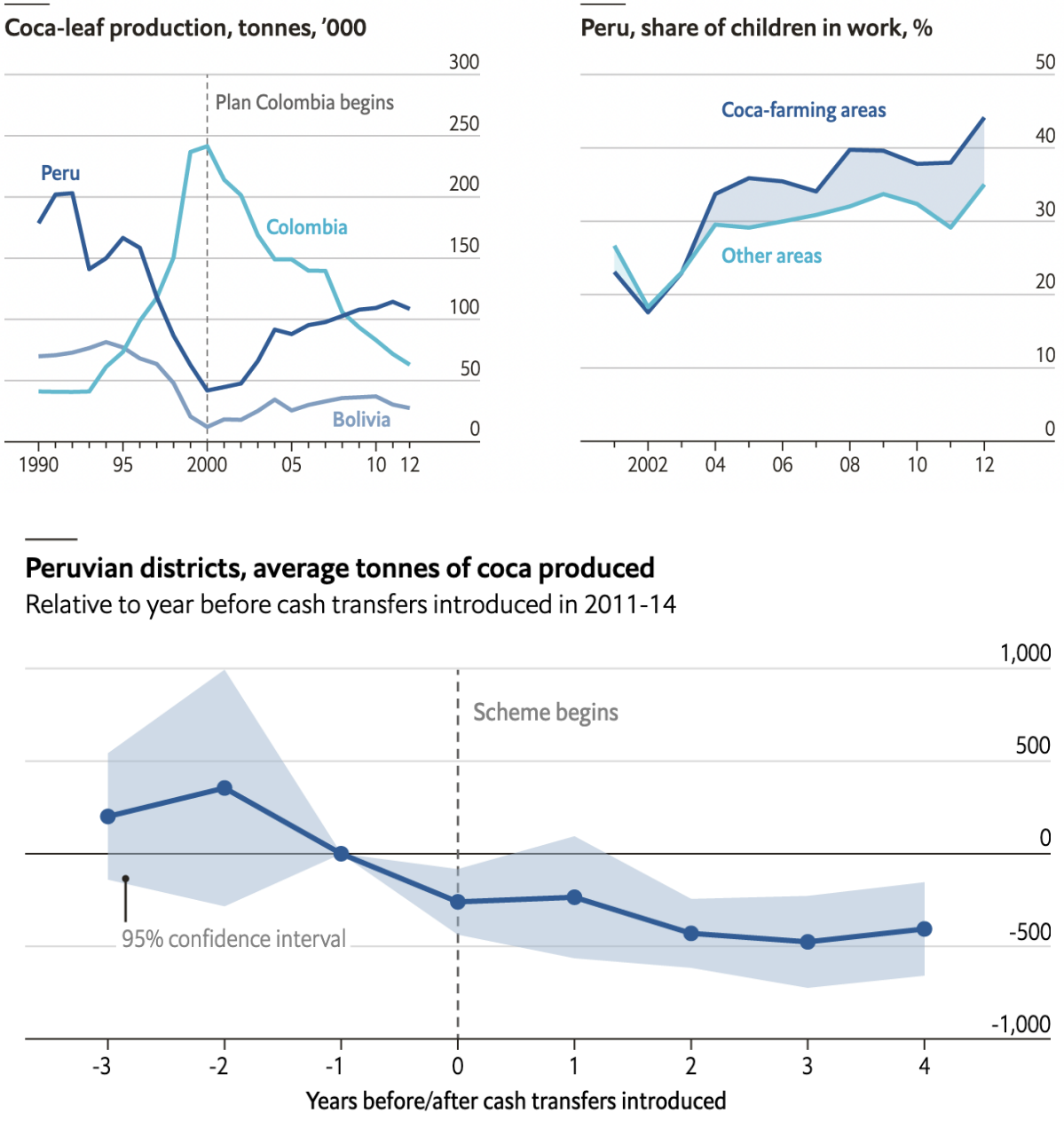
This graphic detail is based on data taken from a paper published by Maria Micaela Sviatschi of Princeton University. The paper compiles data on cocoa leaf production and child labor markets.

2. What is the purpose of visualization?

3. How is the visualization composed? What charts are used?

I decided to include this Graphic Detail…most conventional of the three

Three supporting charts



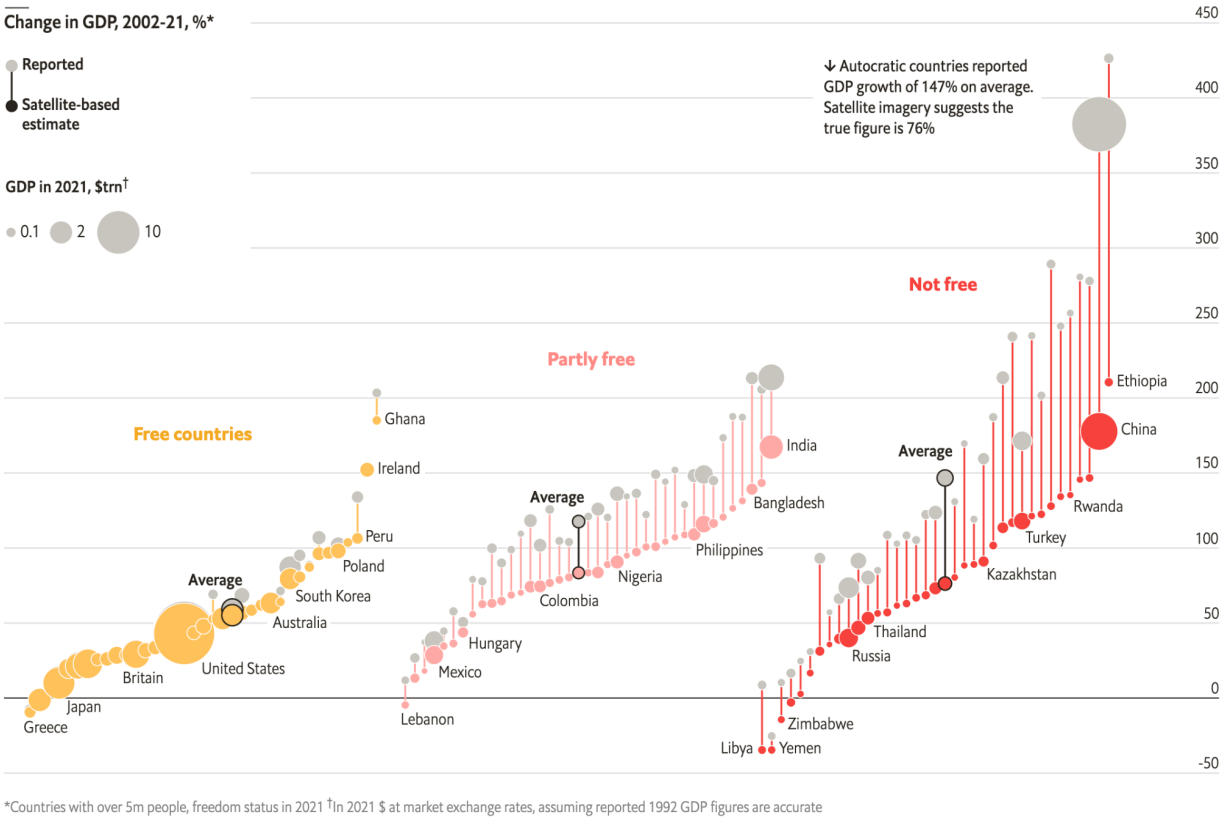
4. Does the visualization have a clear message? Who is the intended audience?

5. Is the visualization effective? Why/why not?

6. How would you change the visualization to strengthen the message?

A study of lights at night suggests dictators lie about economic growth

Sep 29th 2022



*Countries with over 5m people, freedom status in 2021 †In 2021 $ at market exchange rates, assuming reported 1992 GDP figures are accurate

https://www.economist.com/graphic-detail/2022/09/29/a-study-of-lights-at-night-suggests-dictators-lie-about-economic-growth

1. What data does it use?

This graphic detail takes data from a forthcoming paper by Luis Martinez, an economist. The paper uses a measure of visible artificial light at night to estimate economic activity, and compares it with both the official GDP statistics of a country, and its level of political freedom.

2. What is the purpose of visualization?

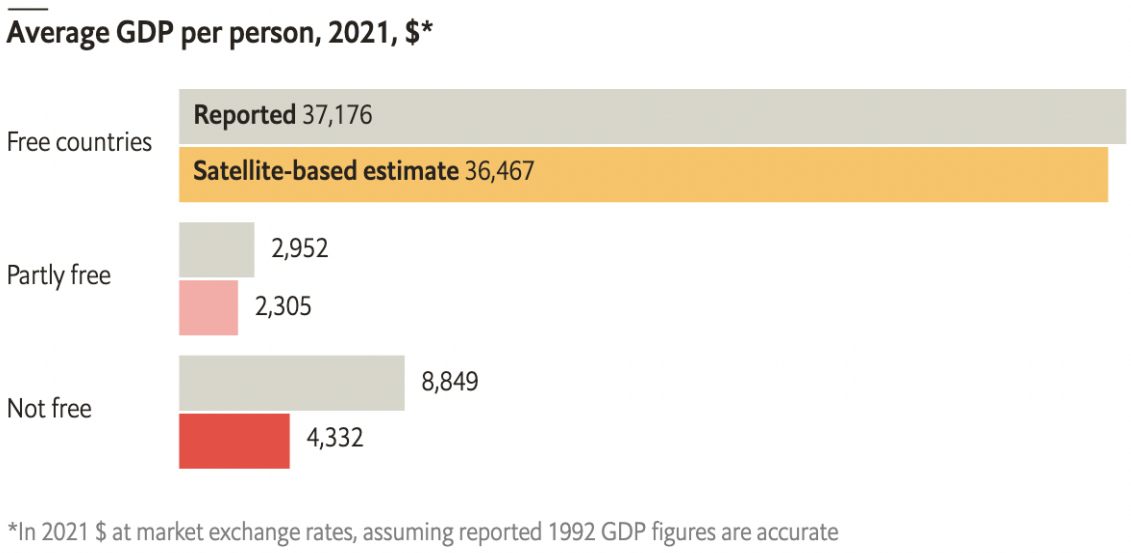
The purpose of the visualization is to depict the gaps between countries' self-reported economic statistics, and their actual level of economic development. Much of the data used to calculate widely repeated metrics like GDP and human development (which in turn impact things like international aid and foreign investment) is created by national governments. Without sufficient transparency, this creates incentives for rulers to falsify their data, as a means of

self-aggrandizement or legitimization. The gaps between estimated actual economic development and self-reported growth is nearly %100 in the average authoritarian regime, and nearly 0% in democracies.

3. How is the visualization composed? What charts are used?

The primary visualization of this Graphic Detail article appears to be a variation on the waterfall chart. Each bar corresponds to a country, and the difference between its self-reported GDP growth, and the true scale of their economic expansion estimated by the researchers from 2002 to 2021. At the bottom of each bar, a bubble shows the satellite estimated size of each country's economy. At the top, another bubble shows the self-reported size. The y-axis scale shows economic growth percentage over the study period. There is no scale on the x-axis. The designer has instead clustered the countries by whether they are deemed "Free," "Partly Free," or "Unfree" by Freedom House. Within these clusters, countries are organized left to right by the estimate of their true economic growth.

There is a single supporting chart: a horizontal bar chart, that displays the average real and self-reported GDPs of free, partly free and unfree countries.



4. Does the visualization have a clear message? Who is the intended audience?

The visualization has a simple message: that authoritarian countries falsify their economic statistics. In our age of rising authoritarianism, this is a particularly vital story to tell. Dictators the world over are attempting to weave a narrative of authoritarian competence, which states that an iron fist is required to drag a country into prosperity. As seen above, much of that authoritarian prosperity is a mirage.

As noted previously, the Economist is a liberal publication (in the global, not American, sense). Combatting authoritarianism, and promoting democracy, free trade, and economic transparency have been among the paper's missions since its founding in the 1800s. The Economist and its readers share concerns about the rise of global authoritarians over the course of the past two decades. This Graphic Detail strikes a blow against those authoritarians, and reassures readers of the vigors of democracy.

5. Is the visualization effective? Why/why not?

Of the three Graphic Details I've included in this report, this is by far the one I like the most. The effect of the trio of boldly colored waterfall graphs is incredibly striking, and conveys the central narrative (that authoritarian regimes falsify their statistics, but democracies do not) effectively. The supporting bar chart provides a useful summary statistic.

6. How would you change the visualization to strengthen the message?

No notes!