

# The Crash of 2033

*Or, Peak Telecom & The Anthropocene,  
Or, The Crumbling,  
Or, It's the Hope That Kills You*

- A presentation by Alex Davies, from Rethink Technology Research
- @ 20<sup>th</sup> Annual TFI Technology Conference
- ~remote presentation

# Rethink Technology Research

**Founded:** 2002

**Located:** Bristol, UK

**Website:** [www.rethinkresearch.biz](http://www.rethinkresearch.biz)

**Me:** Alex Davies

**Role:** Senior Analyst & Editor (wearer of many hats)

**Email:** [alex@rethinkresearch.biz](mailto:alex@rethinkresearch.biz)

**Powerpoint Capabilities:** Minimal

**Rambling Ability:** Unlimited



# Rethink Technology Research



est. 2002, UK

Video, Media &  
Entertainment



Cellular and  
Wireless Networks



Energy,  
Renewables



Weekly  
Newsletter



Research  
and  
Forecasting

Brought to you by:

COMMScope

in

x

f

+

BROADBAND

# What if, in 10 years, young people don't subscribe to fixed broadband at all?

By Linda Hardesty · May 30, 2024 12:55pm

Rethink

interdigital

community Wi-Fi

6G

[About us](#)[Wireless](#)[Video & Entertainment](#)[Energy](#)

# Video & Entertainment

[Weekly Analysis](#)[Forecasts & Data](#)[Operators Database](#)[Podcasts](#)[Webinars](#)[Consulting](#)[Testimonials](#)

## Rethink TV

Rethink TV forecasts and explains how changing business models will revolutionize video delivery



### ▼ Rethink TV Subscription



### Content Security

Forecast to 2029

#### Content Security

CAS plummets, DRM stagnates, and Watermarking surges

[Show me more](#)

### 5G Broadcast Adoption

Forecast to 2033

#### 5G Broadcast Adoption

Roadmap for adoption of 5G-based broadcast alternatives

[Show me more](#)

### Content Recommendation Engines

Forecast to 2029

#### Content Recommendation Engines

Per-user prices collapse by 61% over the next 5 years, as genAI enters the fray

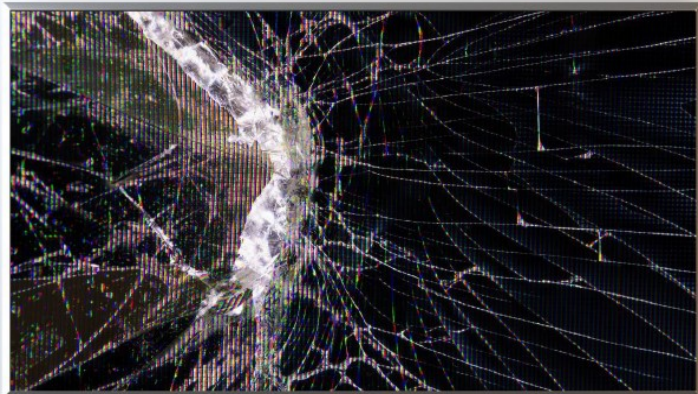
[Show me more](#)

Faultline's The Crash of 2033 - Predicting the next ten years, by studying the past decade

FREE TO ALL

## The Crash of 2033

Predicting the next ten years, by studying the past decade



## Background – ‘vision papers’

**2003** – first ten-year vision paper – ‘*The Faultline*’

**2013** – ‘*The Faultline Revisited*’ – very successful

I joined Rethink in 2013, and was heading up Riot (Rethink IoT) until 2020 – Covid showed challenging commercialization, so wound it down

Took over Rethink TV (video group research wing), overhauled it, turned it into strong product

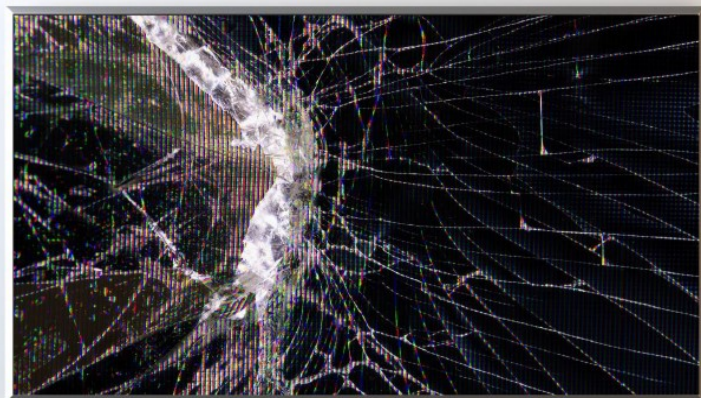
**2023** – Caroline left, so I took over the wireless group, then Peter passed away unexpectedly

**2024** – Myself and Tommy complete ‘*The Crash of 2033*,’ the next ten-year vision paper



## The Crash of 2033

Predicting the next ten years, by studying the past decade

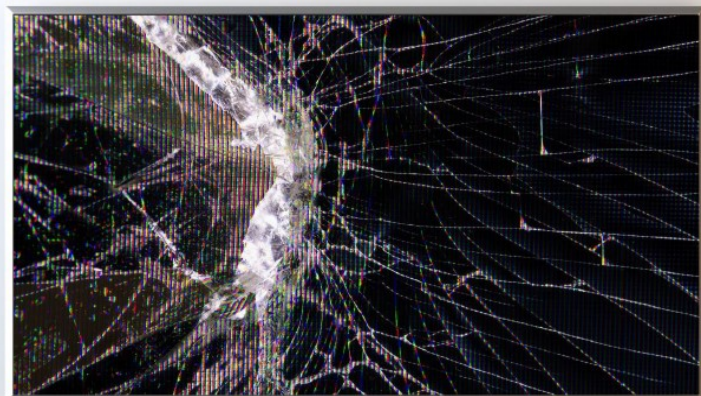


1. A new generation of young consumers – actual ‘cord-nevers,’ no fixed line, no pay TV ecosystem, smartphone as primary.
2. Fracturing of viewing audiences continues, hyper-personalization advertising as primary model – living in own separate digital realities.
3. Casting to large screen as new gen’s main interaction with large TV screens.
4. Fixed broadband reaches utility dead-end – mobile M&A
5. Hollywood unseated as main driver of content revenues – social media, gaming, podcasting, UGC, parasocial.

Download: <https://bit.ly/3QDXaAK>

## The Crash of 2033

Predicting the next ten years, by studying the past decade



6. Hybrid delivery mechanisms – ATSC 3.0, 5G Broadcast (5G-B), 5G Multicast Broadcast Services (5G-MBS).
7. 'AI' as single biggest disruptor to content value chain – creative, production, distribution.
8. Next-gen codecs and M2M video communications – leaps in video compression efficiencies, but pressure of new streams.
9. Prolific content piracy becomes the norm, new models of copyrighted distribution via social media sharing.
10. Vendors judged more on efficiency than technical merit – a green revolution that will most definitely be televised.

Download: <https://bit.ly/3QDXaAK>



# Hunches

- **If:**
  - New generation of consumers uses smartphones as primary media consumption device
- **And:**
  - Cellular network quality improves with 5G SA, D2D, and then 6G
    - Better indoor penetration
    - Better mobile capabilities
    - Perhaps even some metaverse traction
- **And:**
  - Current macroeconomic and demographic trends persist
    - Aging populations
    - Increasing rents and house prices
    - Falling fertility rate & older first-time-mothers
    - High student debts
    - General oligarchy in the Disinformation Age
    - Climate-change migration pressures
    - Climate change in general
- **Then:**
  - Fixed-line broadband value proposition (inc. pay TV) collapses

# Caveats

- We're a small team – impossible for us to forecast each of the hunches accurately, so we're having to trust outsiders
  - Having to use third-party data – risky, especially if derived from the big consultancies
  - Vendor resources usually have a commercial bias
  - Operator resources tend to have head in the sand ...
- Essentially impossible to accurately forecast the logic behind *The Crash of 2033* (crash is actually sports rights vs OTT/D2C ...)
- The goal of these papers is essentially marketing – get our name out there, capture attention

# Perspective

- Me:
  - 33 – graduated 2013.
  - Have lived through ~5 ‘once in a lifetime’ economic downturns (Dotcom Collapse, 9/11, Credit Crunch, Austerity, Brexit, Covid)
  - Supply chain crises, two-decades of Afghan war, second-phase of Russian invasion of Ukraine, Liz Truss ruining my remortgage, Middle East tensions, Taiwanese Strait
  - This has all informed my world outlook, but I shall try to defer to facts.
  - Have attempted to avoid cherry picking.

# Perspective

- Put simply, the generations after me (in developed economies) are *very* different to mine and yours.
- They behave in strange manners, consume strange content, and already very tired of people commenting on these factors.
- They find it very hard to take life advice from generations that have created their current material condition/s.
- They are very (painfully) aware that they do not and will not have it as good as their parents
- This is a very North American and Western Europe view – not trying to be all encompassing.

# Chart 1: The changing age distribution of the UK's population

Percentage of total population by age group and sex

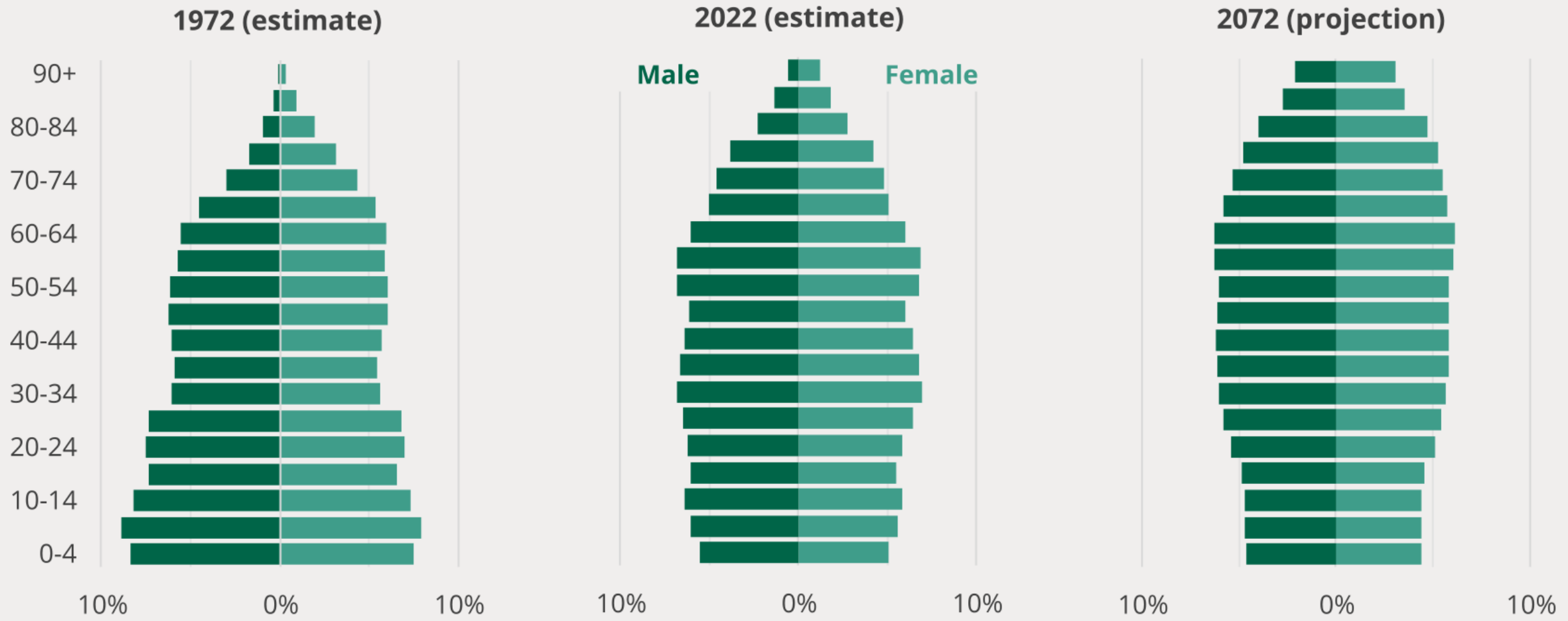
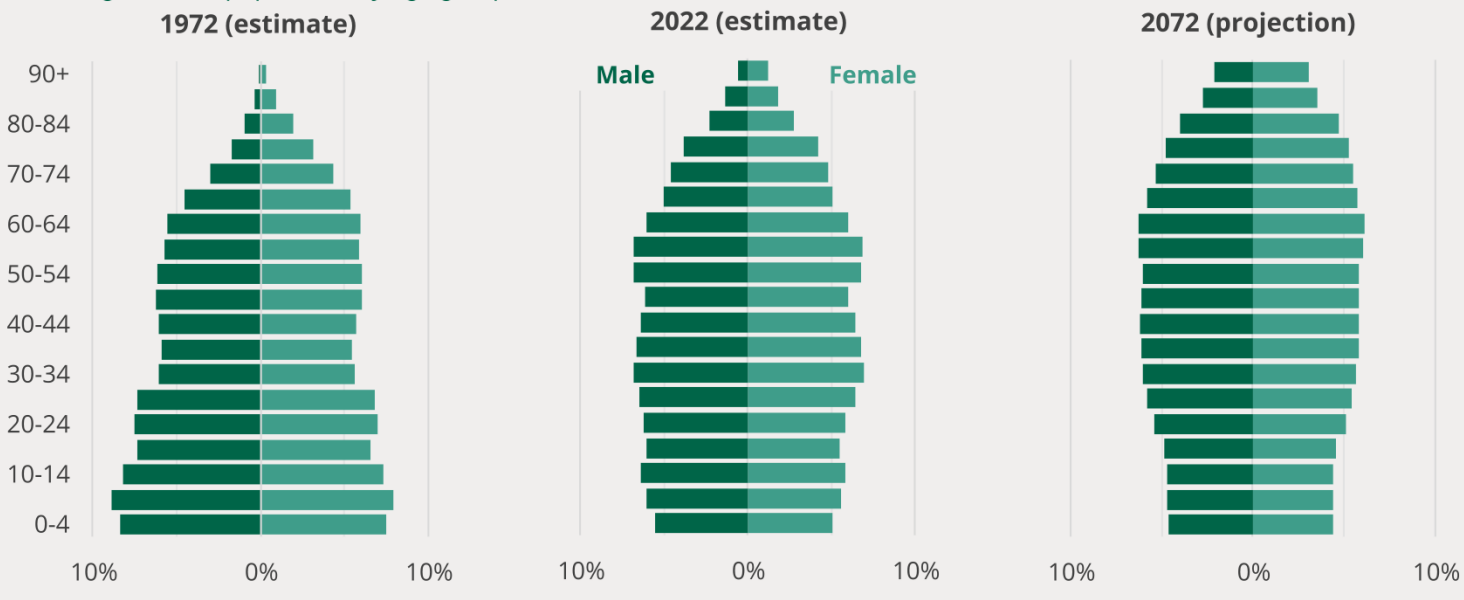




Chart 1: The changing age distribution of the UK's population

Percentage of total population by age group and sex



Societal Problems - Strain:

- Aging populations
- Fewer young people
- Less income tax revenue
- More social care costs

## Post-war baby booms drove up fertility rates

Number of live births, England and Wales, 1900 to 2023



Source: Births in England and Wales from the Office for National Statistics

UK Population in 1945: 37.9 million

UK Population in 2020: 67.1 million

Baby boom peaks of ~900k

Less than 600k now

Roughly, 42.1 people:births in booms

Roughly, 111.1 people:births today

Fertility rate of ~2.3 in 1945

Drops to ~1.75 in 2020

# Neoliberalism! (why things are like this)

*Neoliberalism* is contemporarily used to refer to market-oriented reform policies such as "eliminating [price controls](#), [deregulating capital markets](#), lowering [trade barriers](#)" and reducing, especially through [privatization](#) and [austerity](#), state influence in the economy.<sup>[7]</sup> It is also commonly associated with the economic policies introduced by [Margaret Thatcher](#) in the United Kingdom and [Ronald Reagan](#) in the United States.<sup>[24]</sup> Some scholars note it has a number of distinct usages in different spheres:<sup>[46]</sup>

- As a [development model](#), it refers to the rejection of [structuralist economics](#) in favor of the [Washington Consensus](#).
- As an [ideology](#), it denotes a conception of freedom as an overarching [social value](#) associated with reducing state functions to those of a [minimal state](#).
- As a [public policy](#), it involves the privatization of public economic sectors or services, the deregulation of private corporations, sharp decrease of [government budget deficits](#) and reduction of spending on [public works](#).

At a base level we can say that when we make reference to 'neoliberalism', we are generally referring to the new political, economic and social arrangements within society that emphasize market relations, re-tasking the role of the state, and [individual responsibility](#). Most scholars tend to agree that neoliberalism is broadly defined as the extension of competitive [markets](#) into all areas of life, including the [economy](#), [politics](#) and [society](#).

*The Handbook of Neoliberalism*<sup>[10]</sup>

Age of women marrying (● mean, ● median) and giving birth (● mean) for the first time in England and Wales

32 years old

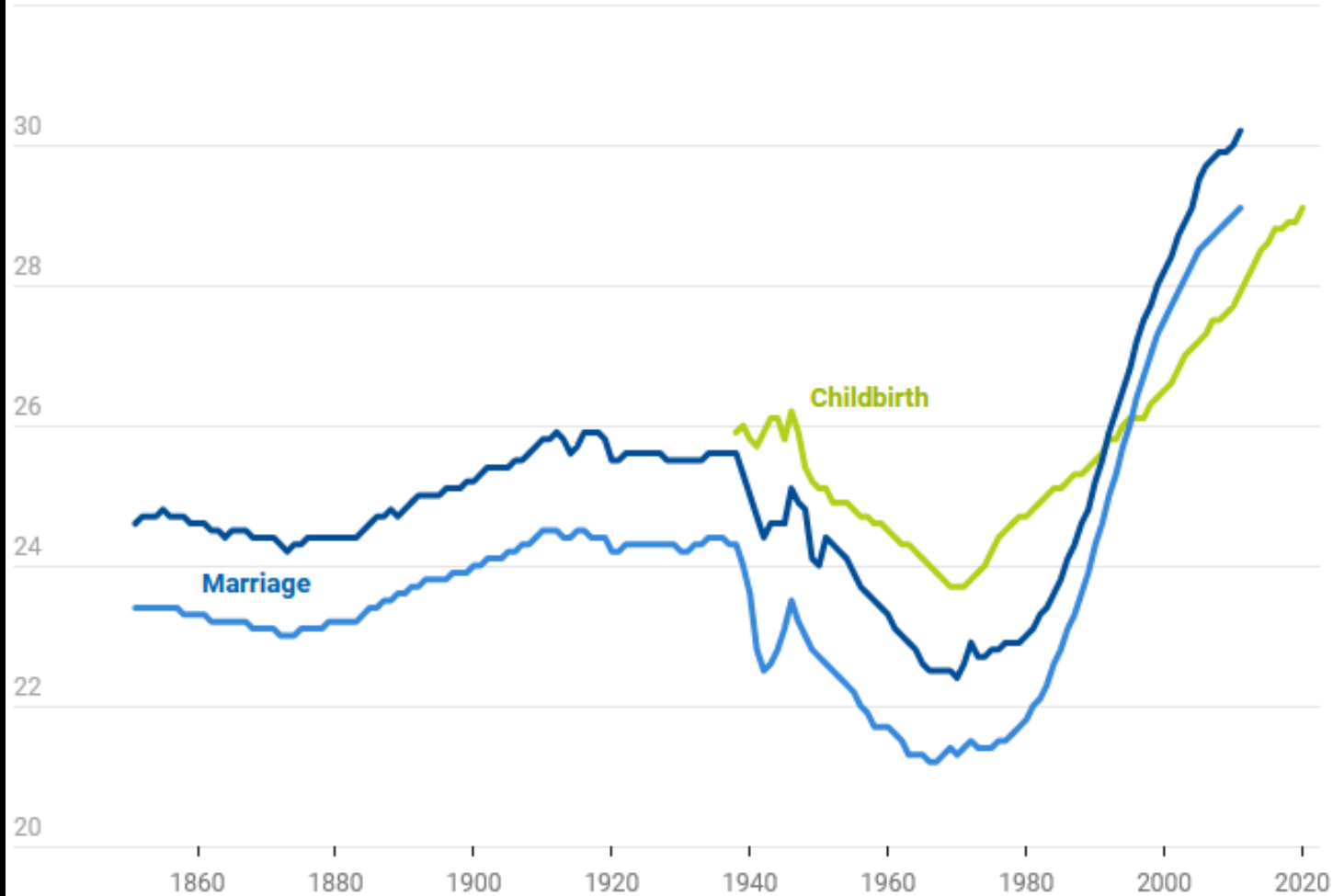


Chart: Rose Mintzer-Sweeney • Source: Office for National Statistics • [Get the data](#)

“MiLlEnNiAlS aRe KiLlInG  
tHe BaBy InDuStRy!”

“WhEn ArE yOu GiViNg Us  
GrAnDkIdS?!”

“HoW mUcH cAn  
ChIlDcArE cOsT?!”

“JuSt StOp EaTiNg So  
MuCh AvOcAdO tOaSt  
AnD sTaRbUcKs!”

# low Western birth rates starterpack



partners are quickly replaced if core values do not align



found an affordable house, needs 3 years of work



long education and dual incomes to get ahead



uncertain career future, poor economic outlook



for some reason, costs a fortune or is hard to find



parents live too far away to be able to help



commutes are too long



construction of nice towers... for students or foreign investors



fertility issues after leaving it too late

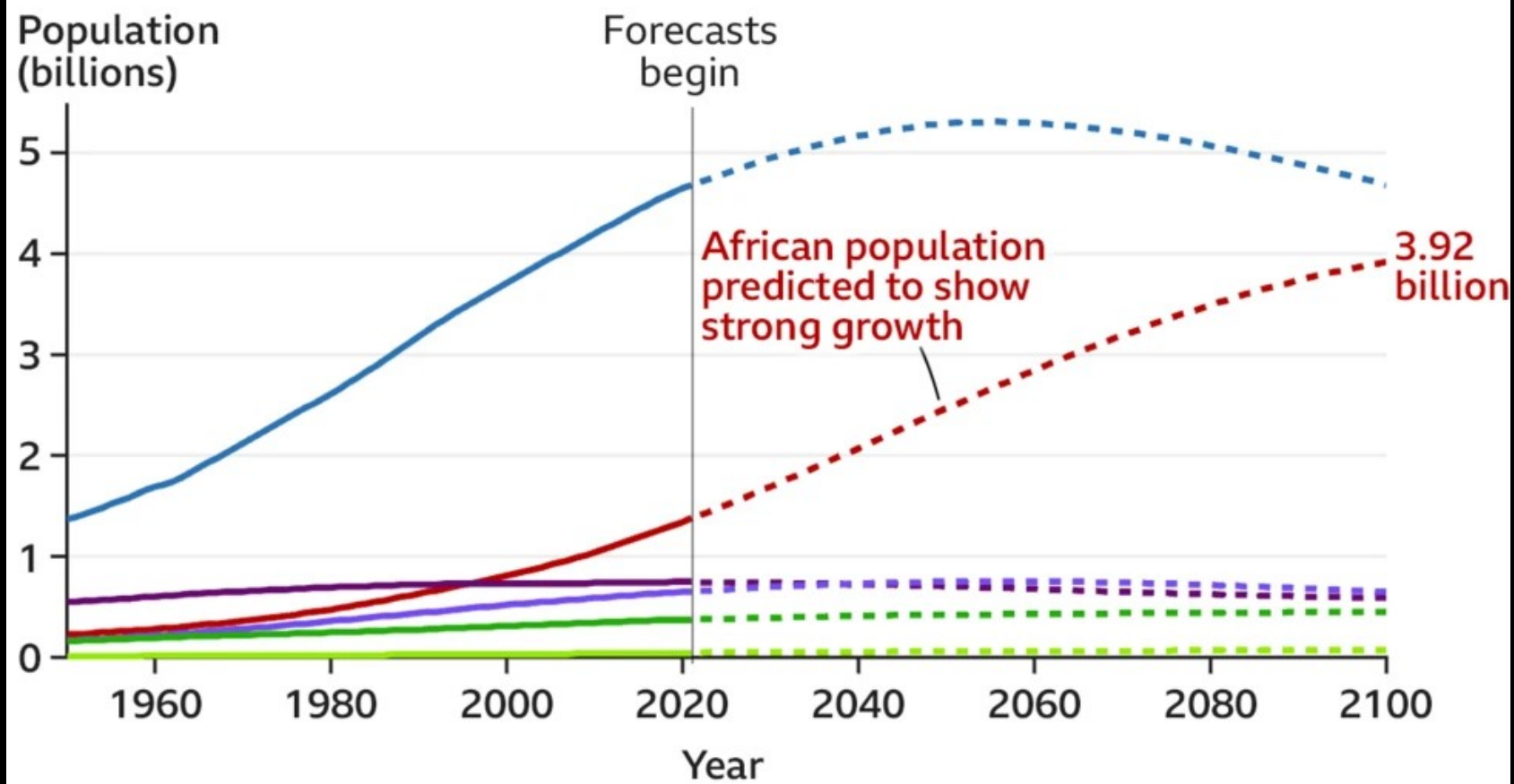
Not just a 'western' phenomena – China, Japan, South Korea

Dropping from fertility rate of 2.1 to 1.4 is roughly equivalent to a 70% population reduction within 3 generations (60-90 years)



# Africa is predicted to narrow the population gap with Asia by the end of the century

■ Asia ■ Africa ■ Europe ■ Latin America ■ North America ■ Oceania

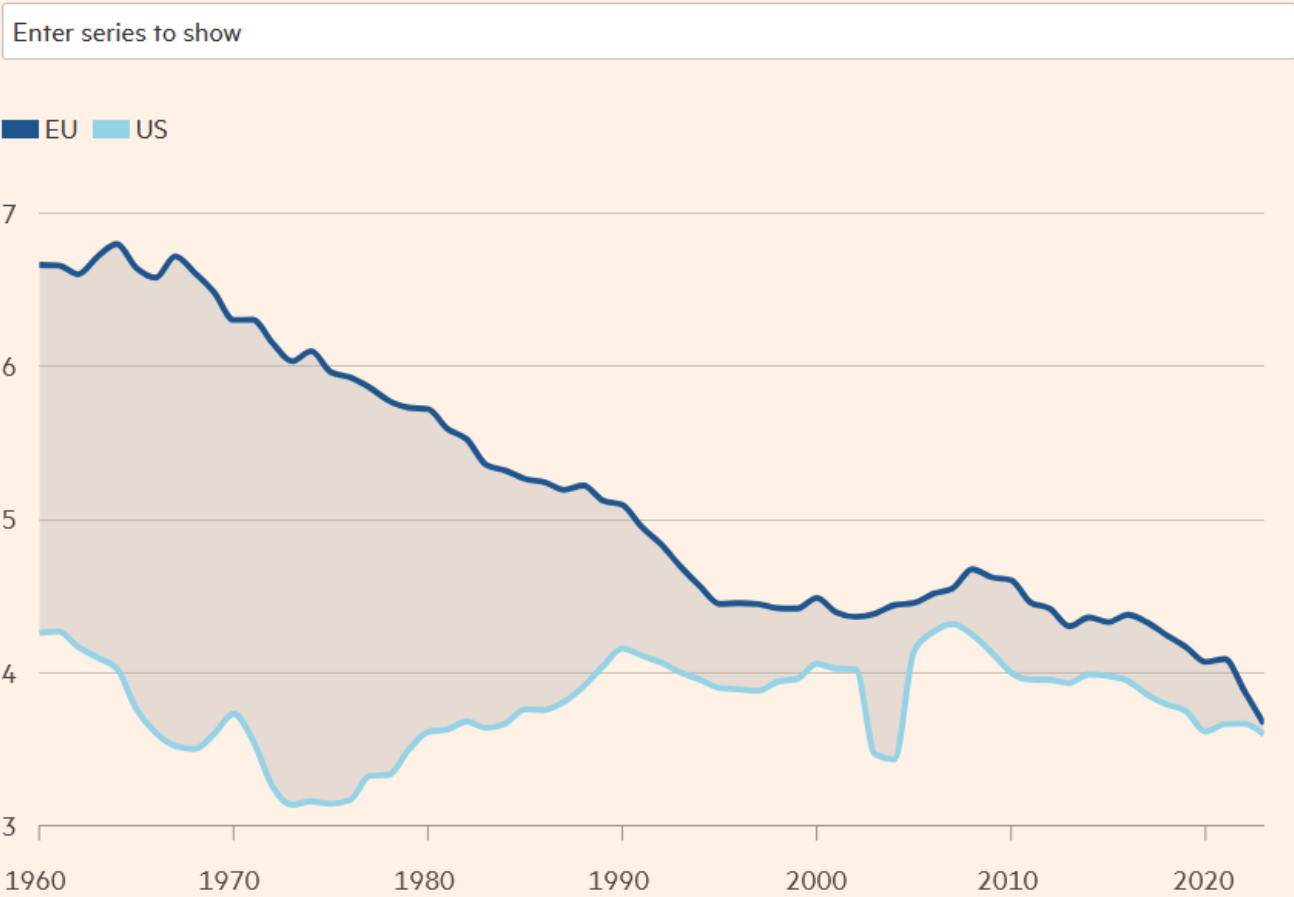


Source: UN World Population Prospects 2022

BBC

# The EU's post-war baby boom is well and truly over

Number of births (mn)

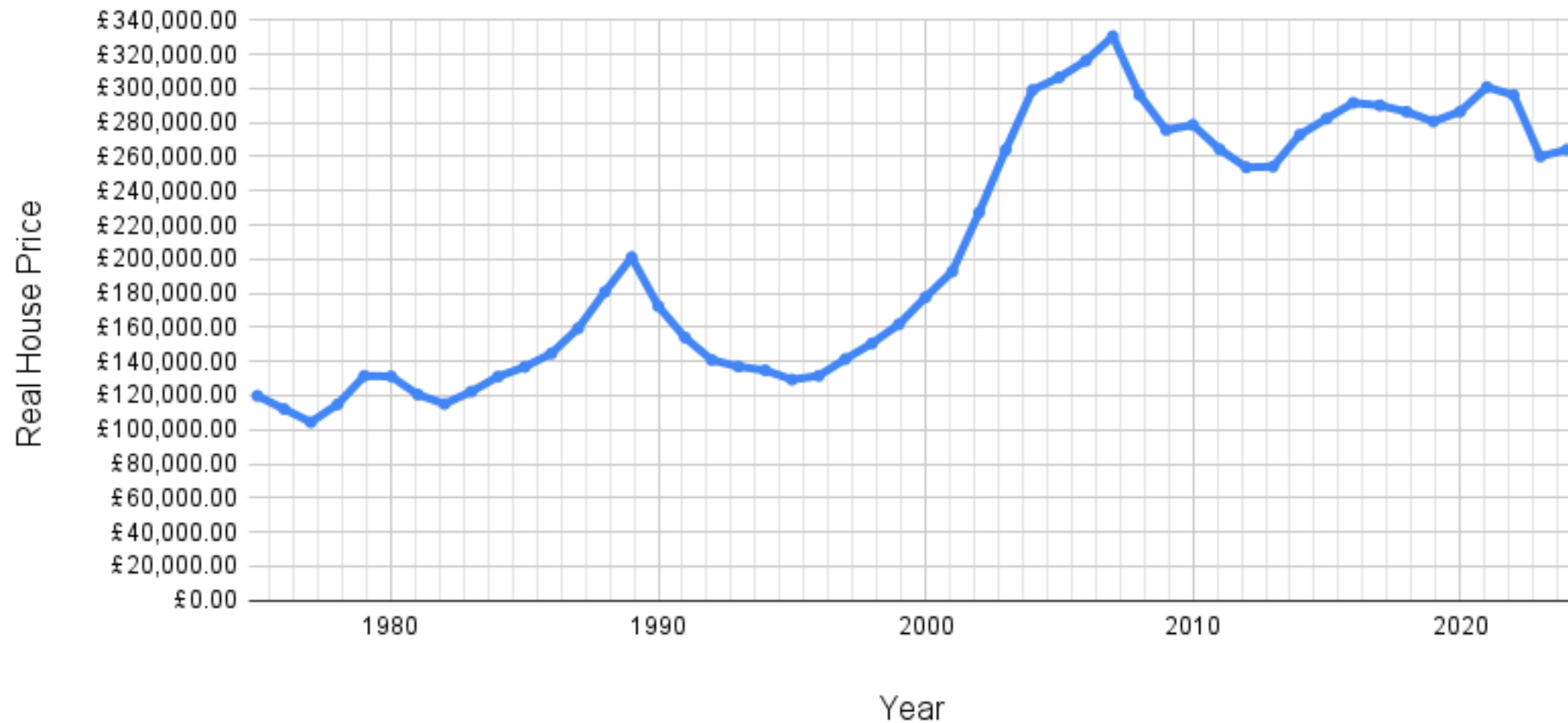


FINANCIAL TIMES

Source: Eurostat, US Centers for Disease Control and Prevention

“It is possible that the perceived uncertainties — such as . . . job insecurity, rising costs of living and housing prices, and multiple global crises, including the Covid-19 pandemic, geopolitical tensions and climate change — could negatively affect individual reproductive decisions,” - **Guangyu Zhang, population affairs officer at the UN.**

Youngsters have greater difficulty than before to establish themselves in the labour market, in the housing market, and perhaps also in the dating market. That is one part of the story which is fairly clear.” - **Willem Adema, senior economist at the OECD.**



'Real' prices – adjusted for inflation

- 1980 - £131,258
- 2000 – £177,651 (up 35% in 20 years)
- 2020 - £286,383 (up 61% in 20 years, up 118% in 40 years)

## Job vacancies

Number of job vacancies

Quarterly change: ▼-35,000

Since Jan-Mar 2020: ▲35,000

Vacancies decreased on the quarter but remain above pre-pandemic levels.

**Source: Vacancy Survey from ONS**

[Read more](#)



## Real Earnings

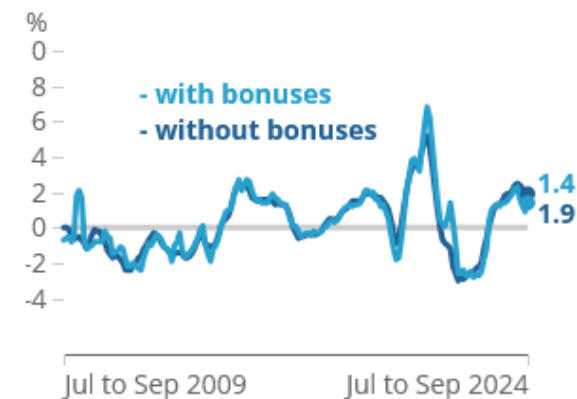
Average Weekly Earnings annual growth rates - real pay (using CPIH)

Regular and total annual growth rates are down from the high rates over the last couple of years

Note: The total annual growth rate is affected by the civil service one-off payments made in July and August 2023.

**Source: MWSS from ONS**

[Read more](#)



## Employment rate

Employment rate (all aged 16 to 64)

Quarterly change: ▲0.3pps

Since Dec-Feb 2020: ▼-1.4pps

The employment rate is up on the quarter but largely unchanged on the year, and is still below pre-pandemic rates.

Note: Due to increased volatility of LFS estimates, resulting from smaller achieved sample sizes, estimates of change should be treated with additional caution.

**Source: LFS from ONS**

[Read more](#)



## Unemployment rate

Unemployment rate (all aged 16+)

Quarterly change: ▲0.1pps

Since Dec-Feb 2020: ▲0.2pps

The unemployment rate is up on the quarter and up on the year, and is above pre-pandemic rates.

Note: Due to increased volatility of LFS estimates, resulting from smaller achieved sample sizes, estimates of change should be treated with additional caution.

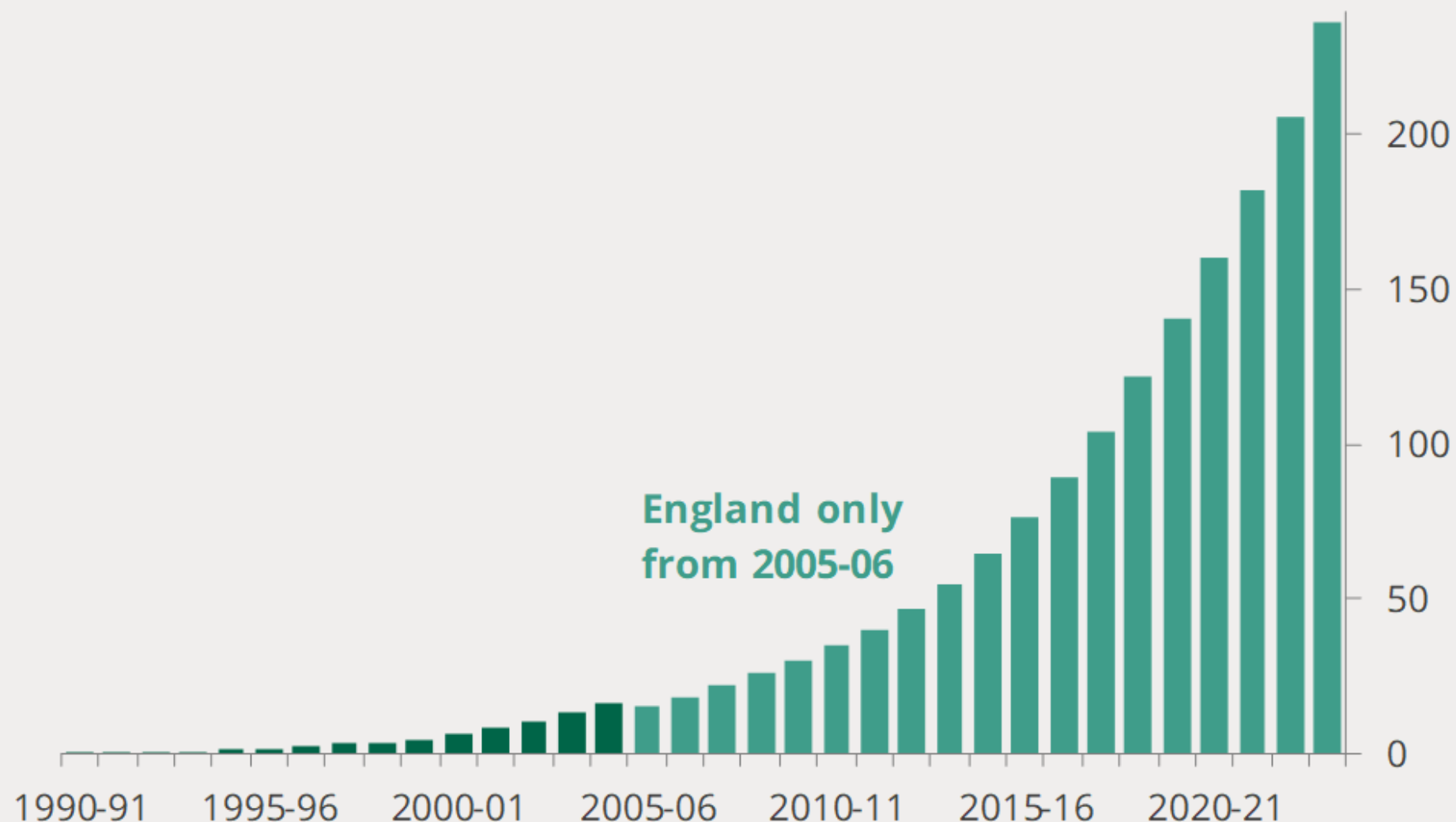
**Source: LFS from ONS**

[Read more](#)



# Student debt approaches £250 billion at the end of 2023-24

Loan debt outstanding at financial year end, UK/England, £ billion cash



## 'Extraction Economy'

Money does not re-enter economy

Debts, Rents, Inflated Mortgages, all felt in loss of traditional economic activity – household budgets squeezed

Money isn't real (anymore)



Real assets (Commodities, Real Estate, Collectibles) vs. Financial Assets (Large Cap Stocks, Long-term Govt Bonds) since 1925

[illegible]

# Billionaire wealth surges by \$2 trillion in 2024, three times faster than the year before, while the number of people living in poverty has barely changed since 1990

Published: 20th January 2025

- *Oxfam predicts there will be at least five trillionaires a decade from now.*
- *204 new billionaires were minted in 2024, nearly four every week.*
- *Sixty percent of billionaire wealth is now derived from inheritance, monopoly power or crony connections, as Oxfam argues that “extreme billionaire wealth is largely unmerited.”*
- *Richest 1 percent in the Global North extracted \$30 million an hour from the Global South through the financial system in 2023.*
- *Oxfam urges governments to tax the richest to reduce inequality, end extreme wealth, and dismantle the new aristocracy. Former colonial powers must address past harms with reparations.*

Billionaire wealth grew by \$2 trillion in 2024 alone, equivalent to roughly \$5.7 billion a day, at a rate three times faster than the year before. An average of nearly four new billionaires were minted every week.

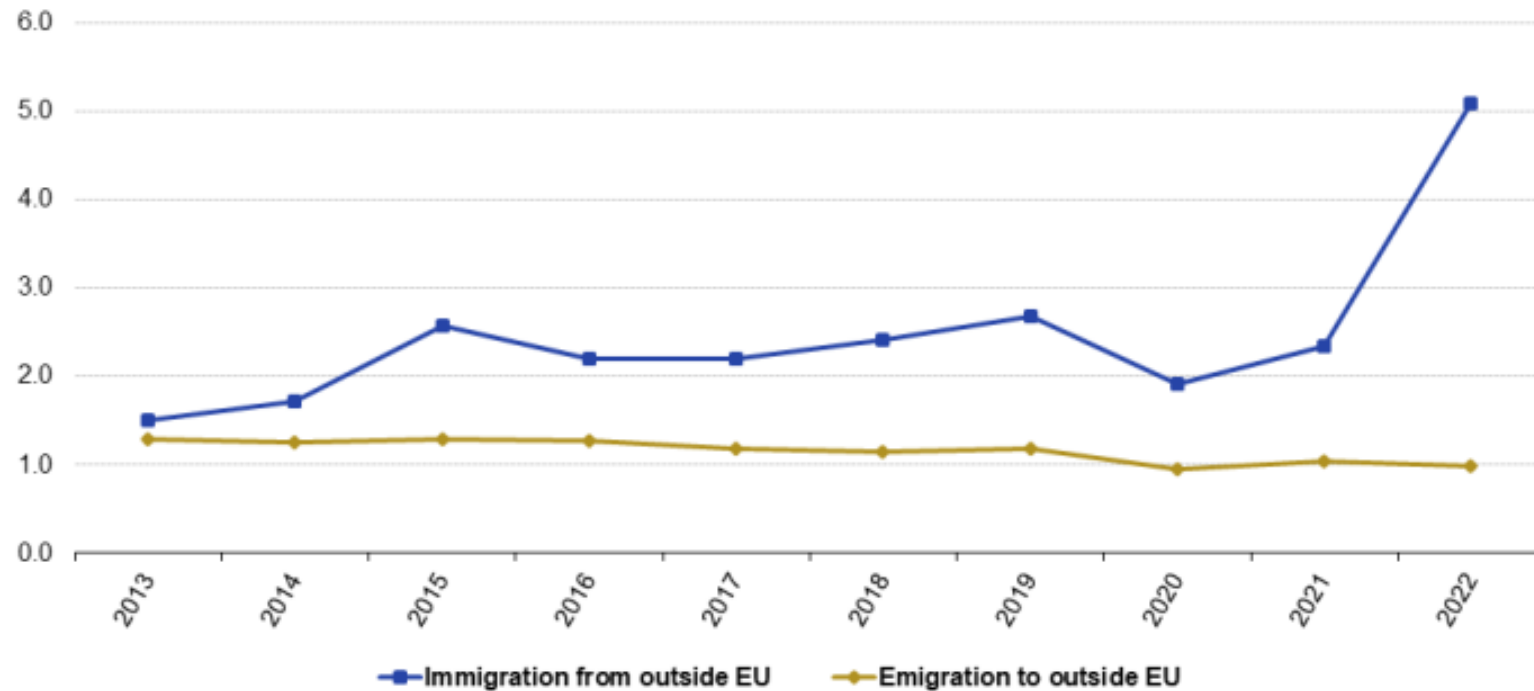
Meanwhile, the number of people living in poverty has barely changed since 1990, according to World Bank data.

**\$5.7 bn per day**

**\$2 trillion a year**

## Immigrants from outside EU and emigrants to outside EU, EU, 2013–2022

(million)



Note: Cyprus (2013-2019) migration data include the United Kingdom in the composition of the EU. Bulgaria, Poland, Portugal, Slovakia, Finland, Sweden and Liechtenstein did not include refugees from Ukraine who benefit from temporary protection in their population and migration statistics.

Source: Eurostat (online data codes: migr\_imm5prv, migr\_imm12prv, migr\_emi3nxt and migr\_emi5nxt)

eurostat 

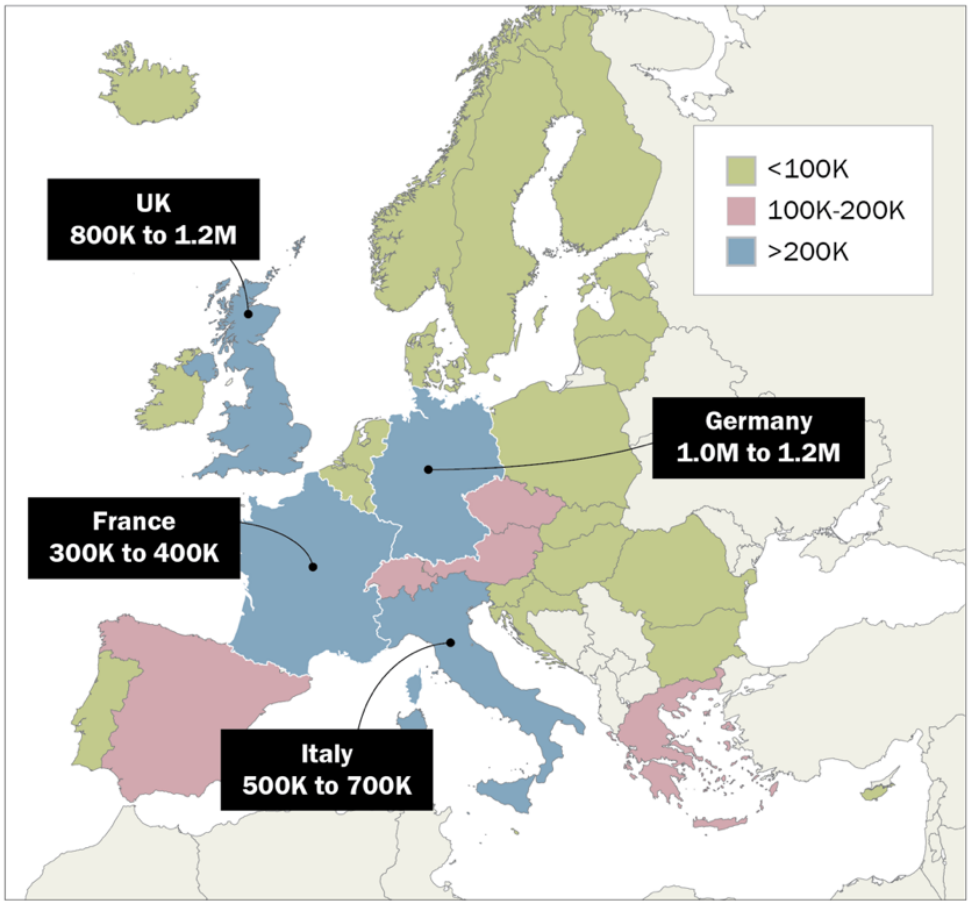
It's war now, soon it will be climate change

Wars in:

- Syria
  - Ukraine
  - Ethiopia
  - Myanmar
  - Sudan
  - Gaza
  - Maghreb & Sahel
- 
- Beginning of Climate Immigration
  - Contentious, as declining populations require immigration to provide required labour

# More than two-thirds of Europe's unauthorized immigrants in 2017 lived in Germany, the UK, Italy and France

Estimated number of unauthorized immigrants in thousands by country of residence, 2017



	LOW	HIGH	% of country pop.
Austria	100	200	2%
Belgium	—	<100	<1
Bulgaria	—	<100	<1
Croatia	—	<100	<1
Cyprus	—	<100	2
Czech Republic	100	200	1
Denmark	—	<100	<1
Estonia	—	<100	<1
Finland	—	<100	<1
France	300	400	<1
Germany	1,000	1,200	1
Greece	100	200	1
Hungary	—	<100	<1
Iceland	—	<100	<1
Ireland	—	<100	1
Italy	500	700	<1
Latvia	—	<100	<1
Liechtenstein	—	<100	<1
Lithuania	—	<100	<1
Luxembourg	—	<100	<1
Malta	—	<100	2
Netherlands	—	<100	<1
Norway	—	<100	<1
Poland	—	<100	<1
Portugal	—	<100	<1
Romania	—	<100	<1
Slovakia	—	<100	<1
Slovenia	—	<100	2
Spain	100	200	<1
Sweden	—	100	<1
Switzerland	100	200	1
UK	800	1,200	2

Note: All numbers are rounded; see Methodology for rounding rules. The total number of unauthorized immigrants includes asylum seekers waiting for a decision on their case. “Low” and “High” show the range of estimates for the unauthorized immigrant population. “—” shown for “Low” estimate means below 100,000. Percentages of total population are rounded, based on midpoint estimates.

Sources: Pew Research Center estimates based on Eurostat and European labor force survey data.

“Europe’s Unauthorized Immigrant Population Peaks in 2016, Then Levels Off”

PEW RESEARCH CENTER

‘Unauthorized’ is a loaded term

EU immigration very politically charged

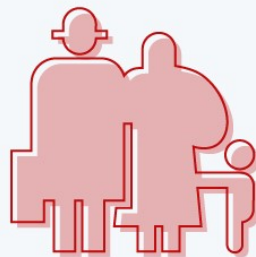
EU borders are porous

EU member states use immigration routes for political leverage



# Climate Change, the Great Displacer

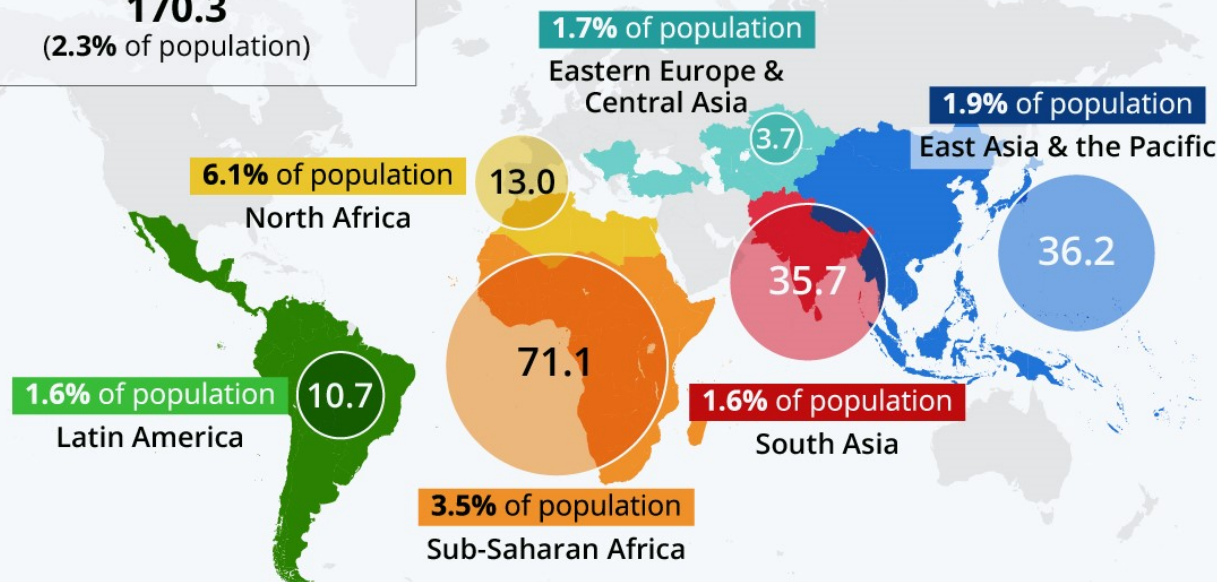
Average number of internal climate migrants  
by 2050 per region (in millions)\*



Total in surveyed regions

**170.3**

(2.3% of population)



\* Modeled on pessimistic reference = High emission & unequal development scenarios concerning water availability, crop productivity and sea-level rise

Source: World Bank



statista

Extreme weather

Extreme heat

Crop failures

Conflicts driven by resource scarcity

Rising sea levels

Immigration levels to external (largely US and Europe) regions is going to increase sharply through the period

This will put increasing pressure on those economies, likely leading to serious political upheaval and tension





# Sub-Conclusion

- What hope do you have of things drastically improving through this period?
- Do you trust political leaders to move these needles significantly?
- Just how much wealth can the billionaire class extract before the currently-crumbling 'free market' capitalist model of today completely falls apart?

## doomer

in British English

('du:mə  )

**noun**

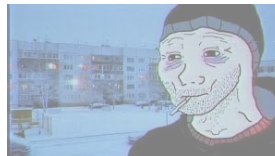
*informal*

**a.** a person who expects or predicts the imminent collapse of human civilization

**b.** (*in combination*)

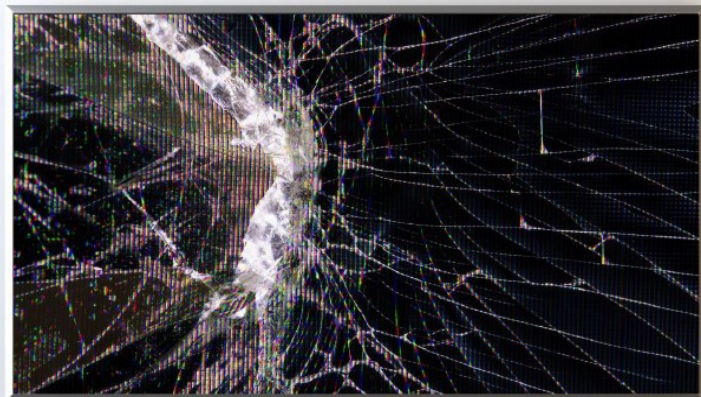
*a climate doomer*

Collins English Dictionary. Copyright © HarperCollins Publishers



## The Crash of 2033

Predicting the next ten years, by studying the past decade



1. A new generation of young consumers – actual cord-nevers, no fixed line, no pay TV ecosystem, smartphone as primary.
2. Fracturing of viewing audiences continues, hyper-personalization advertising as primary model.
3. Casting to large screen as new gen's main interaction with large TV screens.
4. Fixed broadband reaches utility dead-end – mobile M&A
5. Hollywood unseated as main driver of content revenues – social media, gaming, podcasting, UGC, parasocial.
6. Hybrid delivery mechanisms – ATSC 3.0, 5G Broadcast.
7. 'AI' as single biggest disruptor to content value chain – creative, production, distribution.
8. Next-gen codecs and M2M video communications – leaps in video compression efficiencies, but pressure of new streams.
9. Prolific content piracy becomes the norm, new models of copyrighted distribution via social media sharing.
10. Vendors judged more on efficiency than technical merit – a green revolution that will most definitely be televised.

Download: <https://bit.ly/3QDXaAK>

# Operators

- No real divide between fixed and mobile anymore
  - Telecom -> Telco (DSL then fiber)
  - Cable TV -> Cableco (DOCSIS-based broadband, analog to digital)
  - Satellite TV -> Satellite Broadband (sort of, not quite, now more LEO)
  - Mobile Telephony (1G, 2G) -> Mobile Broadband (3G+) (FWA now too)
- Nearly all incumbent telcos have mobile divisions
- Nearly all cablecos have an MVNO service (not long until full MNO?)
- Nearly all MNOs have bought into fixed-line services
- Pay TV is dying, but most incumbents have or have had a video service
- T-Mobile USA was an exception – now has FWA and fiber

# Hunches

- **If:**
  - New generation of consumers uses smartphones as primary media consumption device
- **And:**
  - Cellular network quality improves with 5G SA, D2D, and then 6G
    - Better indoor penetration
    - Better mobile capabilities
    - Perhaps even some metaverse traction
- **And:**
  - Current macroeconomic and demographic trends persist
    - Aging populations
    - Increasing rents and house prices
    - Falling fertility rate & older first-time-mothers
    - High student debts
    - General oligarchy in the Disinformation Age
    - Climate-change migration pressures
    - Climate change in general
- **Then:**
  - Fixed-line broadband value proposition (inc. pay TV) collapses

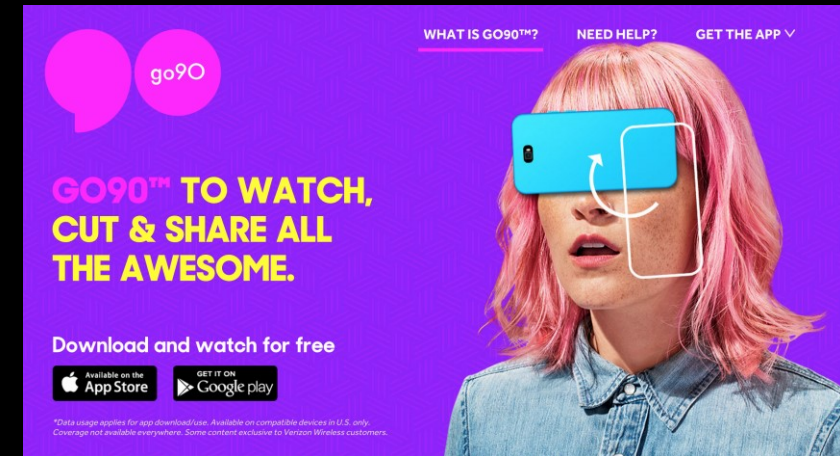
# Collapsing value of operators

- This is self-inflicted
  - 3G spectrum spending bonanza forced hand
  - Bonkers prices for new services (video calling, MMS, data)
  - Led consumers to seek out OTT options (therefore needing only data)
  - Stingy 4G data caps fueled a transition to WiFi as primary
  - End of 4G era saw beginning of unlimited SMS and calls and (effectively) data
  - Arrival of 5G meant they could not re-implement data caps (shot in foot, in corner)
- So what's the point of 5G? What does it bring to table that 4G+OTT does not?
  - Network slicing? That's going to leave a bad taste in the mouth
  - Private networks (nope, enterprises don't trust public macro networks)
  - Spectral efficiency? Consumers don't care
  - Operational efficiency? Not yet, at least – still dragging around the legacy junk



# Operators

- IoT -> Blockchain -> Crypto/NFT -> 5G -> Metaverse -> AI
  - Marketers, PR, Investors, etc. – all looking for the next big *thing*
  - Operators played some role in all of these functions (duh)
  - So, Operators convinced themselves that they had to be in control
  - This did not go well
- M&A was not the answer
  - Trying to buy media companies didn't make core business any better
  - AT&T + Time Warner
  - Verizon + Yahoo
  - T-Mobile + Sprint
  - Dish (lol)
  - EU now encouraging Operators to buy each other ...



# Operators

- Radicalized myself, at MWC 2024
  - Tried to give benefit of the doubt
  - Realized they are institutionally incapable of digging themselves out of this hole
  - Bloated, entrenched, rotting, inefficient, terribly reliant on vendors (vicious cycle)
  - 1NCE SIM example – an \$40 billion annual problem (\$5 \* 8bn SIM cards)
- 5G has not paid the bills
  - Ceded the field to OTT apps, due to 3G greed
  - Backed into corner by race into 'unlimited' tariffs
  - Burnt by consultancy promises (slicing, robo-surgeons)
  - Idiotic 5G Non-Standalone idea – 5G-SA still minority
  - Capex crunch – bad/no RoCI



5G / MOBILE / TECH

## No, they did not do surgery on a banana over 5G



This banana is being operated on by a Da Vinci Xi robot located in Los Angeles. No 5G was involved. Image: Dr. Kais Rona / Instagram

/ If your mother says she loves you: check it.

By [Nilay Patel](#), editor-in-chief of The Verge, host of the [Decoder](#) podcast, and co-host of [The Vergecast](#).

Aug 28, 2023, 5:06 PM GMT+1





# Operators

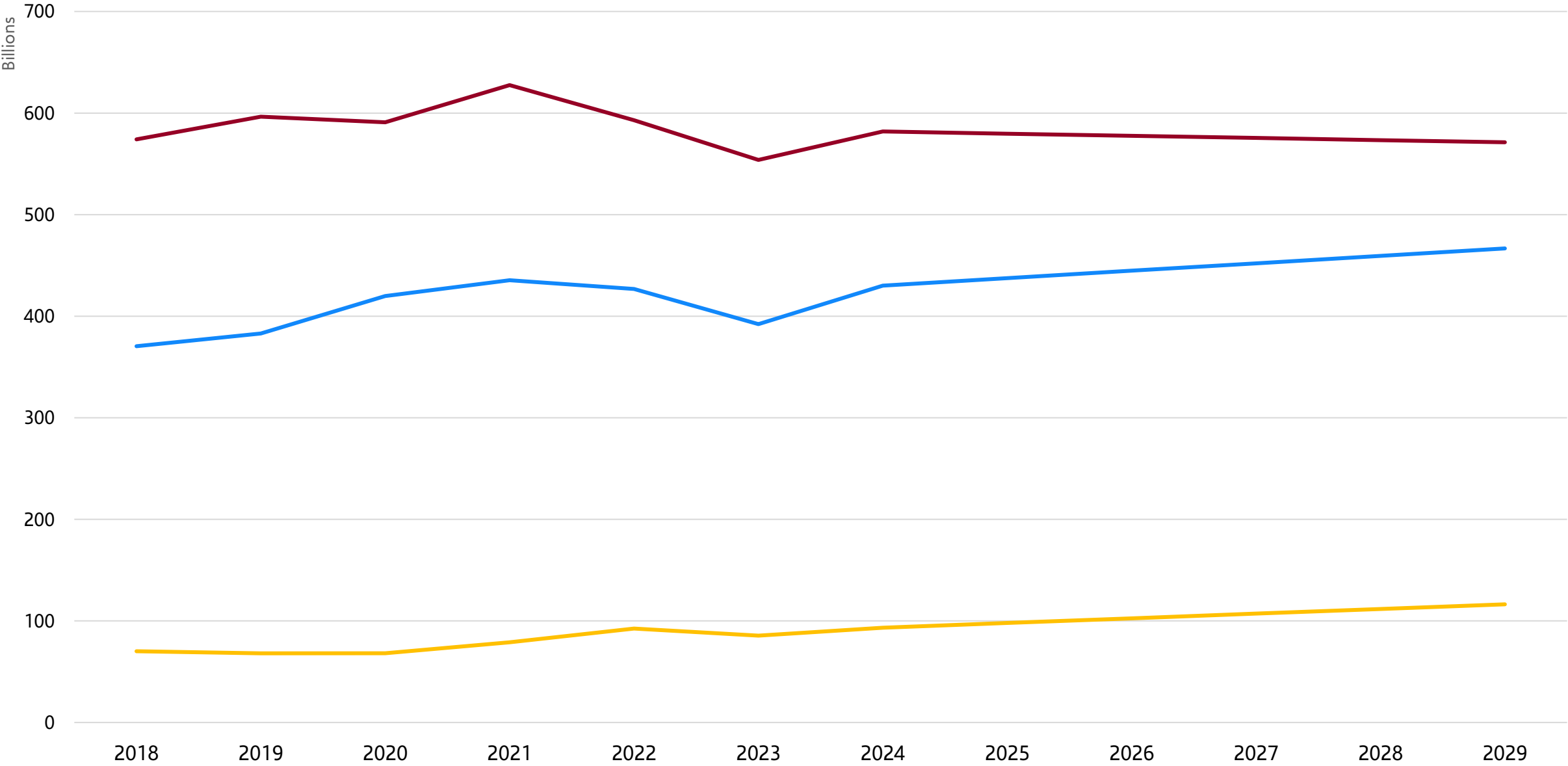
- Asset stripping?
  - Myopic – feels entirely fueled by MBA types that pushed SPACs – robbing Peter to pay Paul
  - If network is so important, why would you give up control of such a critical part of it?
  - Feels like latest oscillation between capex vs. opex trend
  - Need to fix the underlying problem (stagnant ARPU)
  - What happens post-6G when you don't have the asset to sell again?
- My advice?
  - Move existing subs into an MVNO (lightweight, lean, no legacy headaches, unburdened)
  - Spin off / reverse merger, to jettison network as MNO
  - Sell MNO to ruthless VC, who will optimize network operations
  - Buy connectivity services from MNO
  - Yes, I do see irony of previous point – how else do you get rid of the legacy headache?





# North America - Revenue & Expenses (\$)

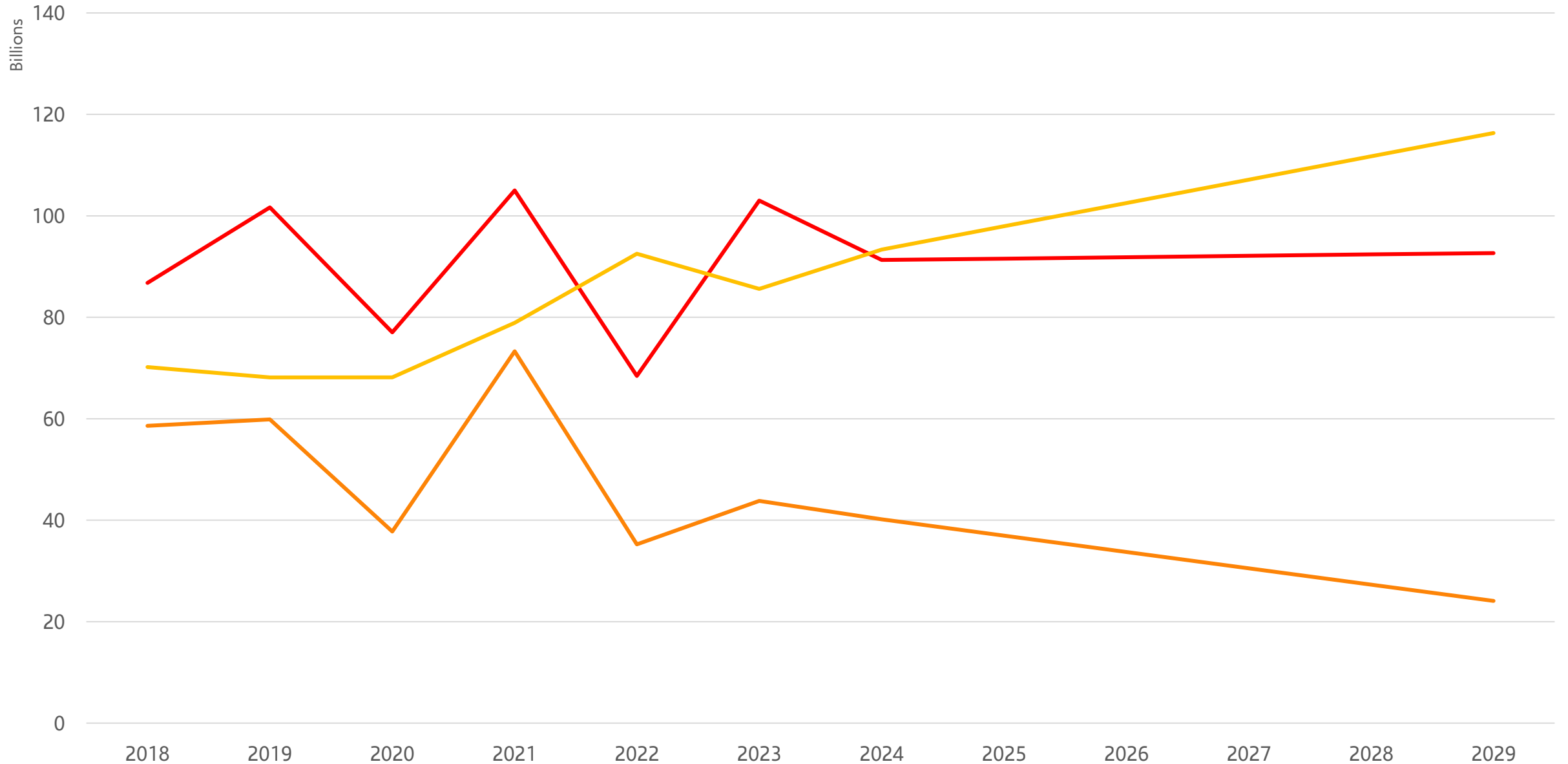
Core Revenue   Capex   Opex





# North America - Incomes & Capex (\$)

— Operating Income — Net Income — Capex



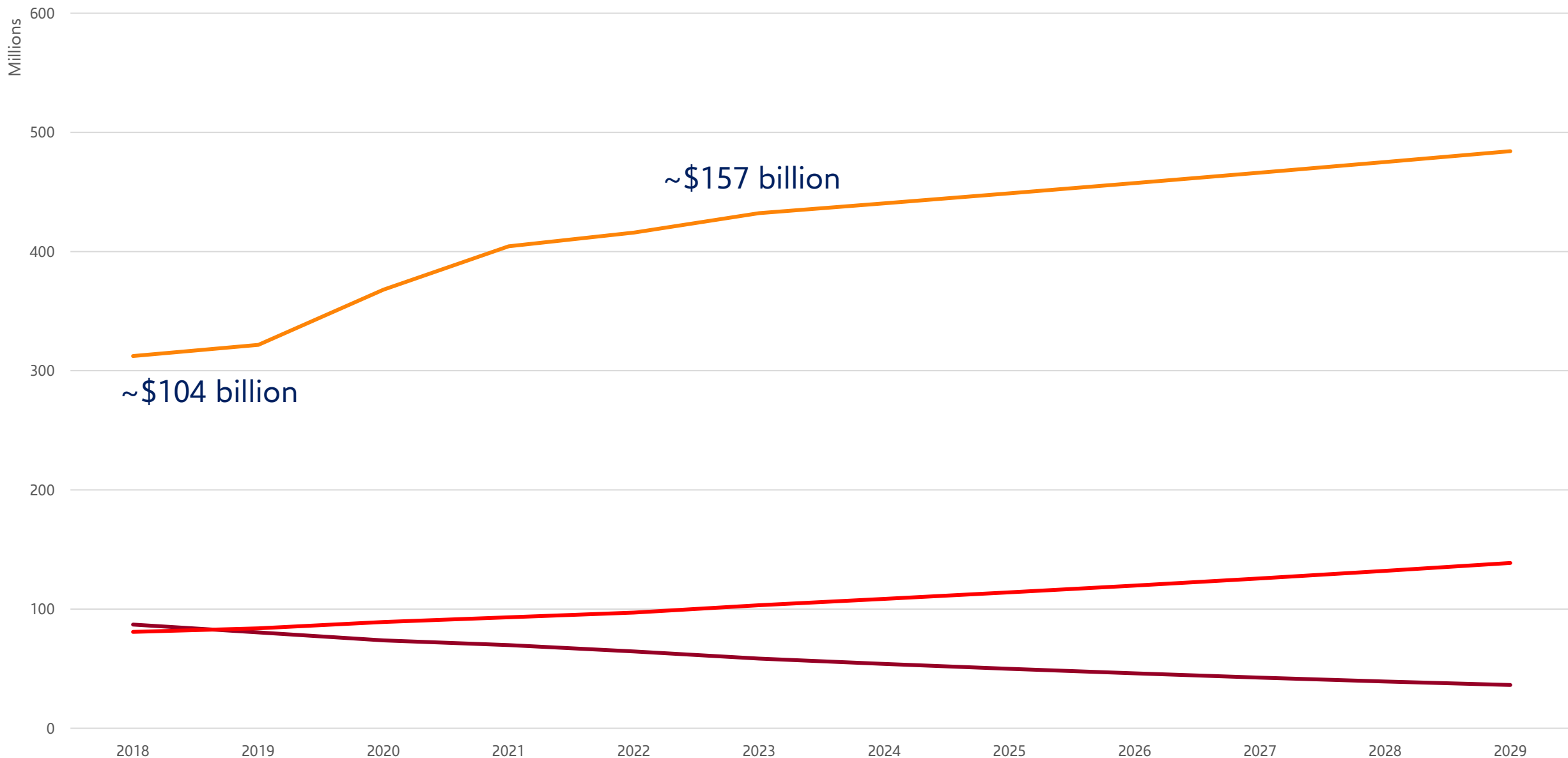


# North America - Video, Broadband, Mobile Customers

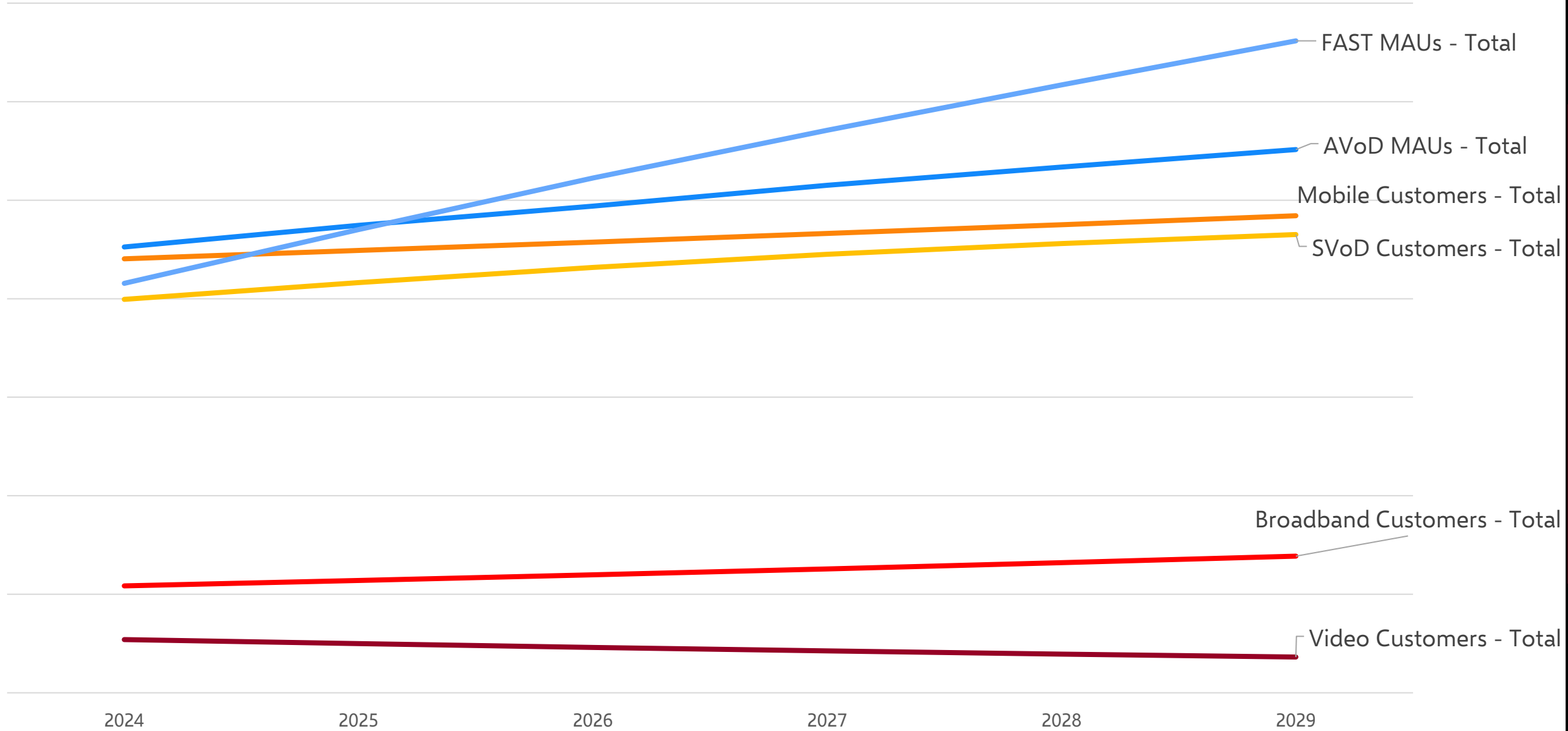
— Video Customers - Total

— Broadband Customers - Total

— Mobile Customers - Total

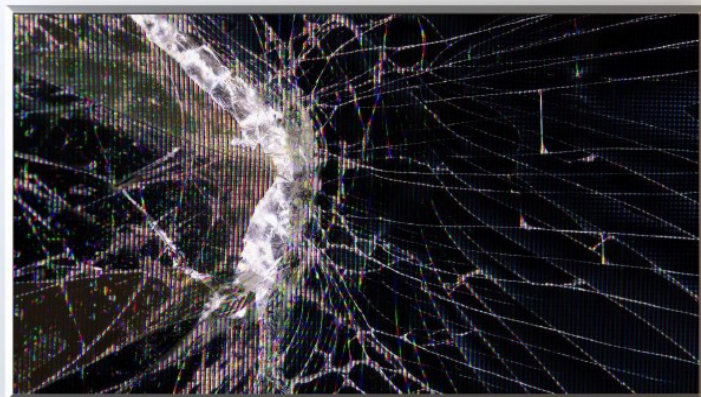


# North America - Comparisons



## The Crash of 2033

Predicting the next ten years, by studying the past decade



1. A new generation of young consumers – actual ‘cord-nevers,’ no fixed line, no pay TV ecosystem, smartphone as primary.
2. Fracturing of viewing audiences continues, hyper-personalization advertising as primary model.
3. Casting to large screen as new gen’s main interaction with large TV screens.
4. Fixed broadband reaches utility dead-end – mobile M&A
5. Hollywood unseated as main driver of content revenues – social media, gaming, podcasting, UGC, parasocial.

Download: <https://bit.ly/3QDXaAK>



# Audience Questions

- ?
- ?
- ?
- ?

# Rethink Technology Research

**Website:** [www.rethinkresearch.biz](http://www.rethinkresearch.biz)

Alex Davies, Senior Analyst & Editor

**Email:** [alex@rethinkresearch.biz](mailto:alex@rethinkresearch.biz)



# Rethink Technology Research



est. 2002, UK

Video, Media &  
Entertainment



Cellular and  
Wireless Networks



Energy,  
Renewables



Weekly  
Newsletter



Research  
and  
Forecasting