EPYLLION

By Matthew Ball

The State of Video Gaming in 2025

(Version: January 18, 2025)

The most up-to-date version of this PDF can always be found **here**

From 2011 to 2021, video gaming soared. Spending grew at over twice the rate of the preceding 20 years, with annual revenues up 150% overall (from $80B to $200B)

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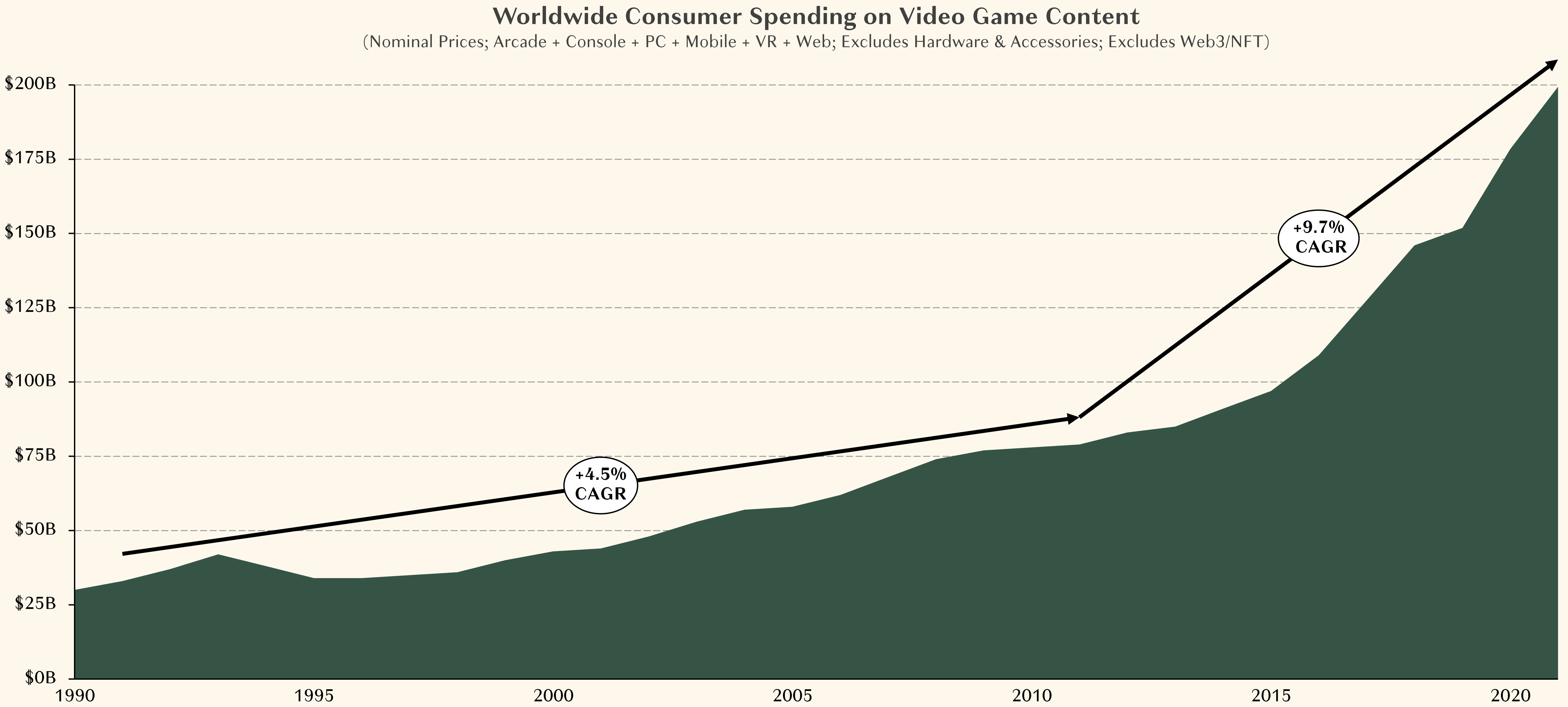
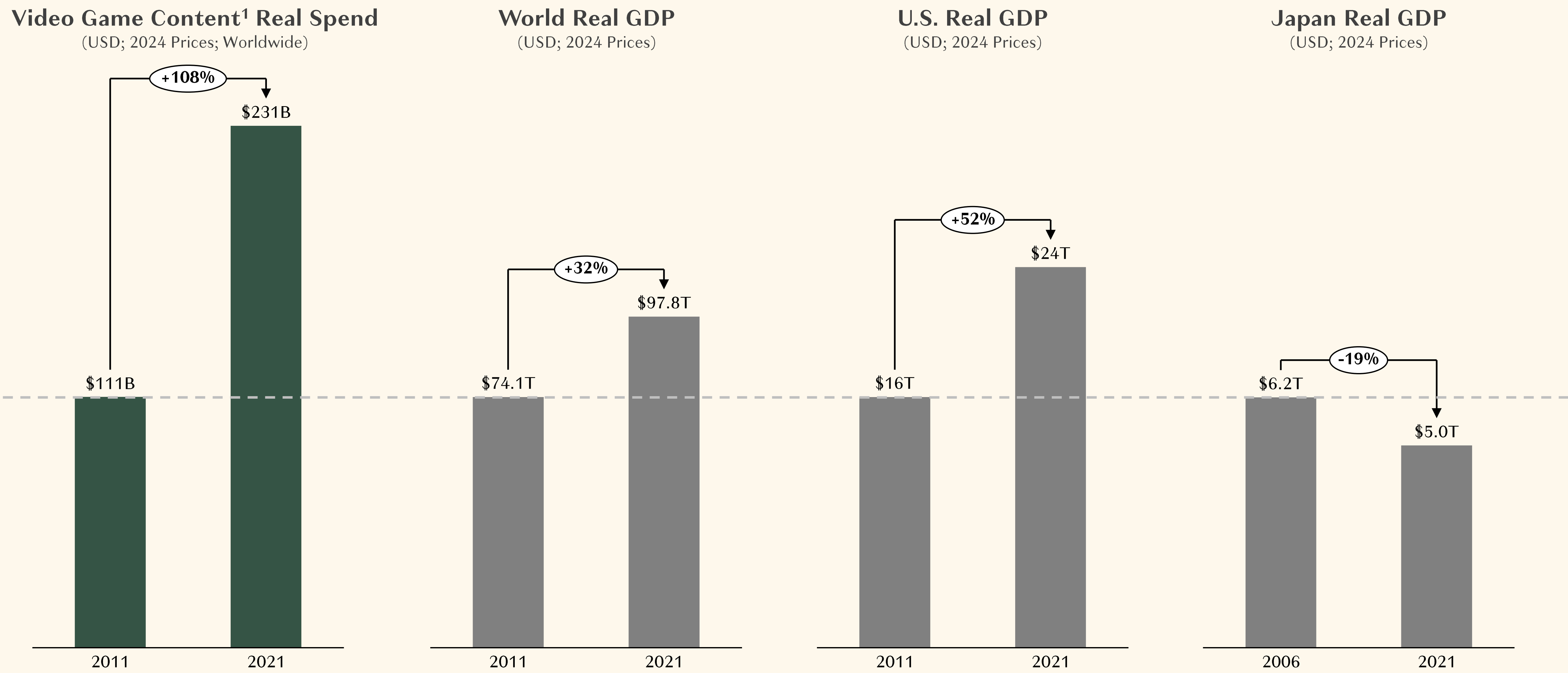


v.1/18/2025

Sources: Pelham Smithers / Bloomberg, IDG, Newzoo, Meta, IDC, Epyllion analysis

Gaming's 2011 to 2021 growth didn't just beat its historical averages, it significantly outpaced global growth benchmarks (e.g. 3.4x the rate of world *real* GDP)



v.1/18/2025 Notes: ¹Inclusive of Arcade + Console + PC + Mobile + VR + Web; Excludes Web3/NFT

Sources: Pelham Smithers / Bloomberg, IDG, Newzoo, Meta, IDC, Epyllion analysis, World Bank, Epyllion analysis

Though a few anticipated a slowdown or even a pullback after COVID, most expected that gaming's growth would continue at high rates — if not accelerate

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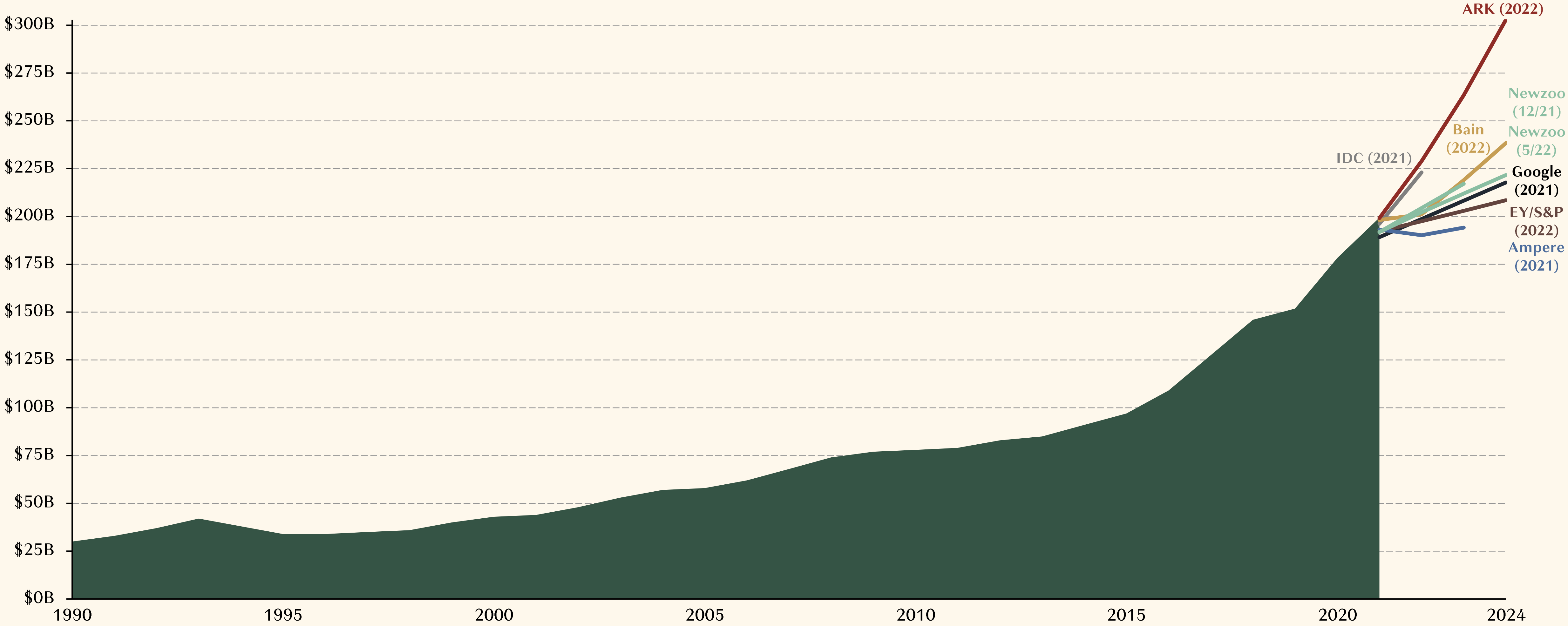
Worldwide Consumer Spending on Video Game Content, Plus Select External Forecasts For Growth[1]

(Nominal Prices; Arcade + Console + PC + Mobile + VR + Web; Excludes Hardware & Accessories; Excludes Web3/NFT)



Notes: [1] Forecasts that did not include AR/VR or arcade are normalized; different starting values in 2021 reflects different estimates for 2021 at the time of forecast

Sources: Pelham Smithers / Bloomberg, IDG, Newzoo, Meta, IDC, ARK, Bain, Google, E&Y, Ampere, Epyllion analysis

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Instead, spend fell by ~3.5% in 2022, then barely grew in 2023 & 2024, finishing flat over 3 years — and thus short tens of billions in revenue versus forecasts

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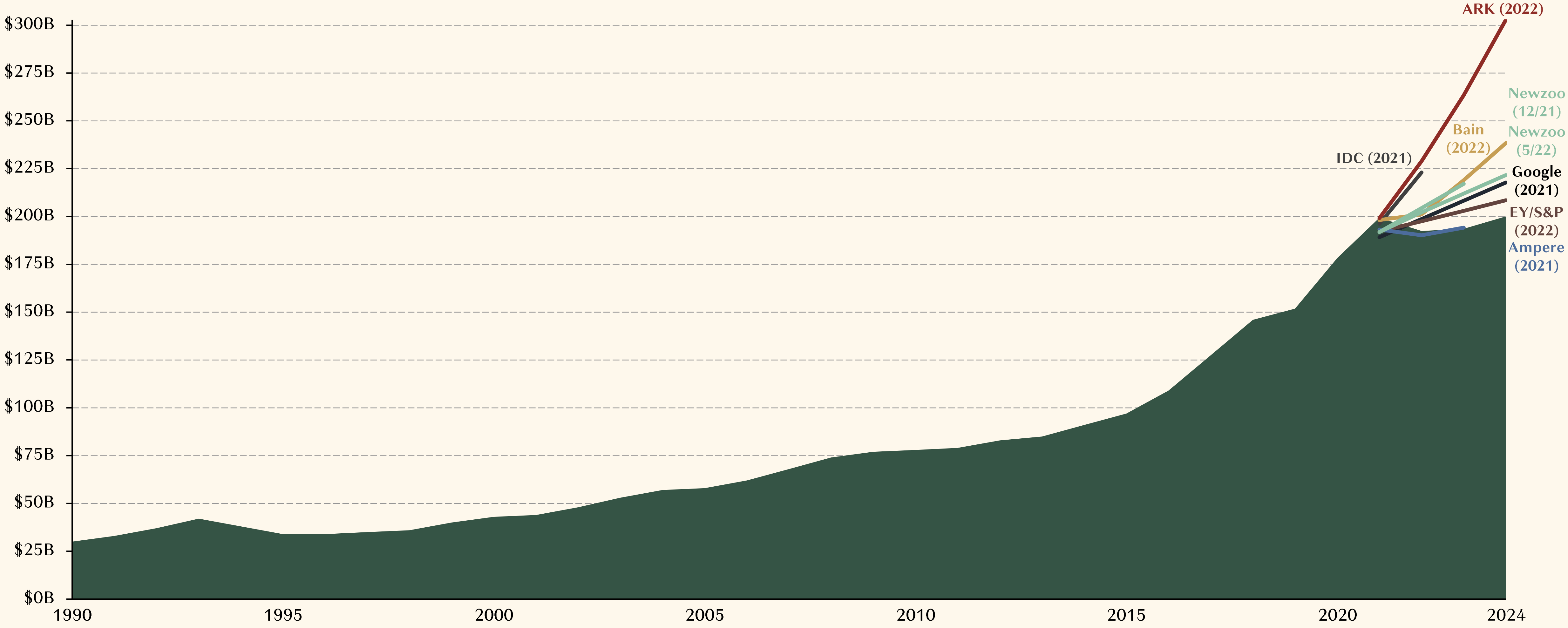

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Sources: Pelham Smithers / Bloomberg, IDG, Newzoo, Meta, IDC, ARK, Bain, Google, E&Y, Ampere, Epyllion analysis

This decline occurred despite the end of console/GPU shortages in mid-2022, and in 2023, arguably *the* best content release slate in the industry’s 70-year history

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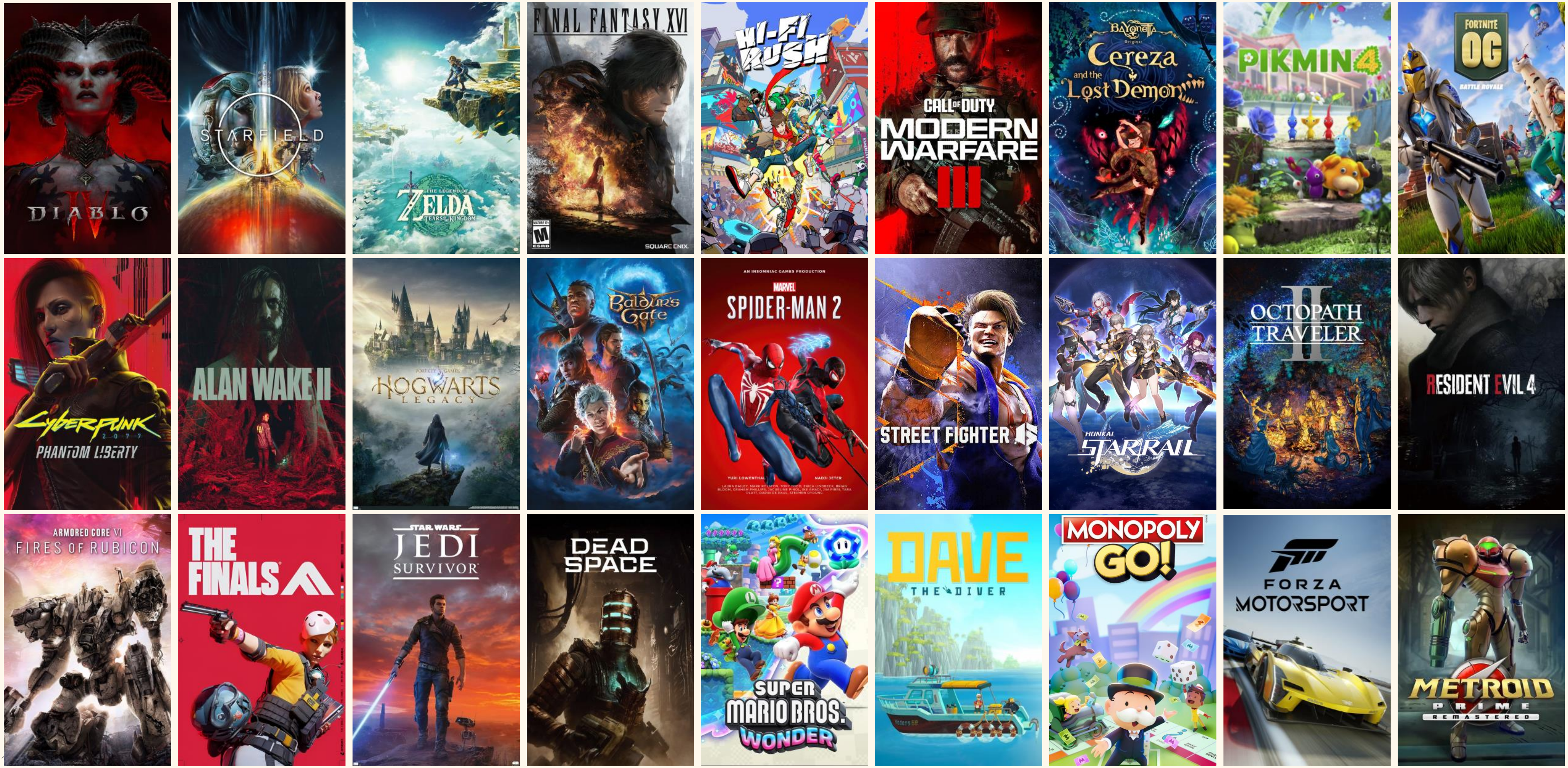

A post-pandemic pullback is an insufficient explanation for gaming's contraction and stall. Spending on books, music, and video (esp. digital) continued to grow

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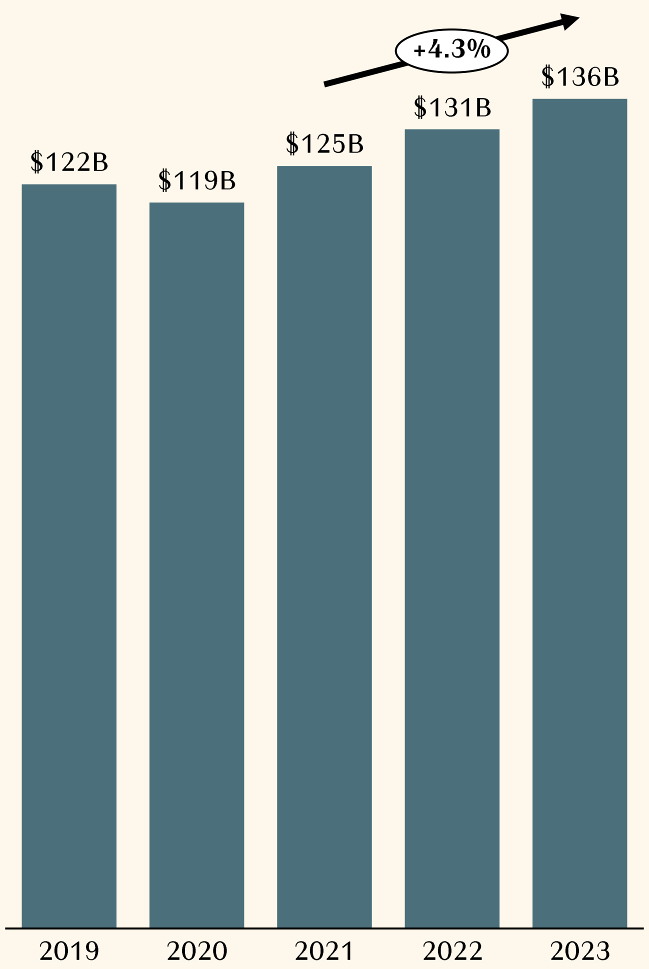
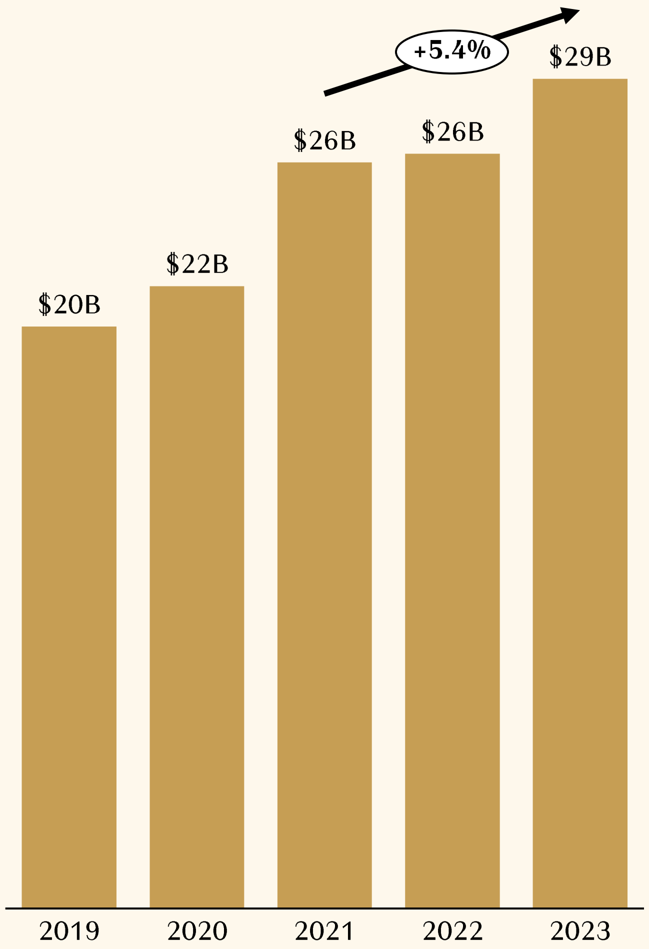
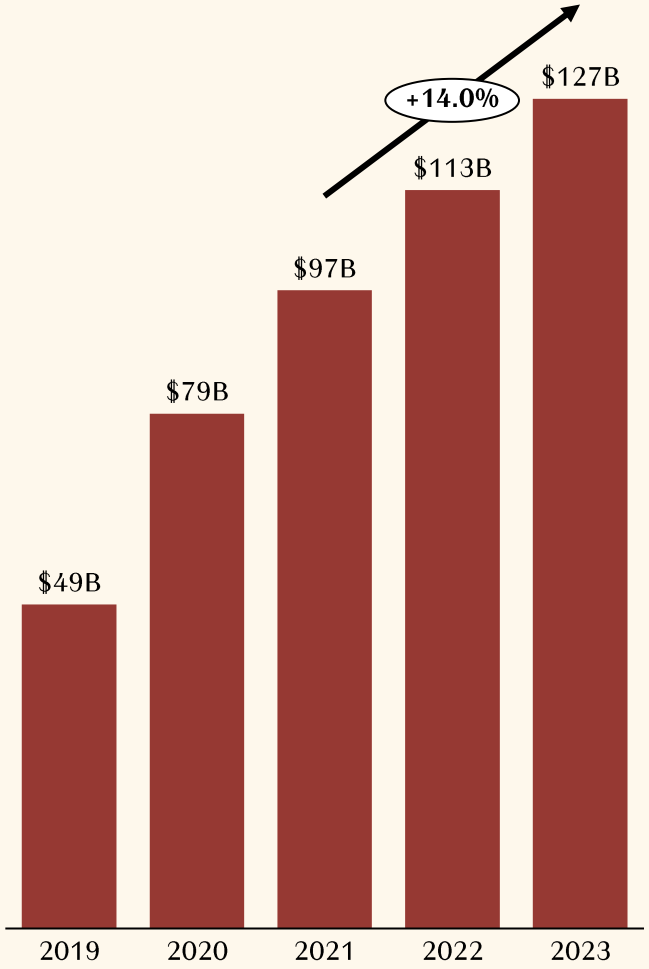


Worldwide Book Revenues
(Nominal Prices)



Worldwide Recorded Music Revenues
(Nominal Prices)



Spend on Digital Video
(Nominal Prices)

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Sources: International Publishers Association, International Federation of the Phonographic Industry, Digital TV Research, MoffettNathanson

And so not only does the video gaming industry now fall short of global growth benchmarks, it's actually *shrinking* in real terms — down roughly 13% since 2021

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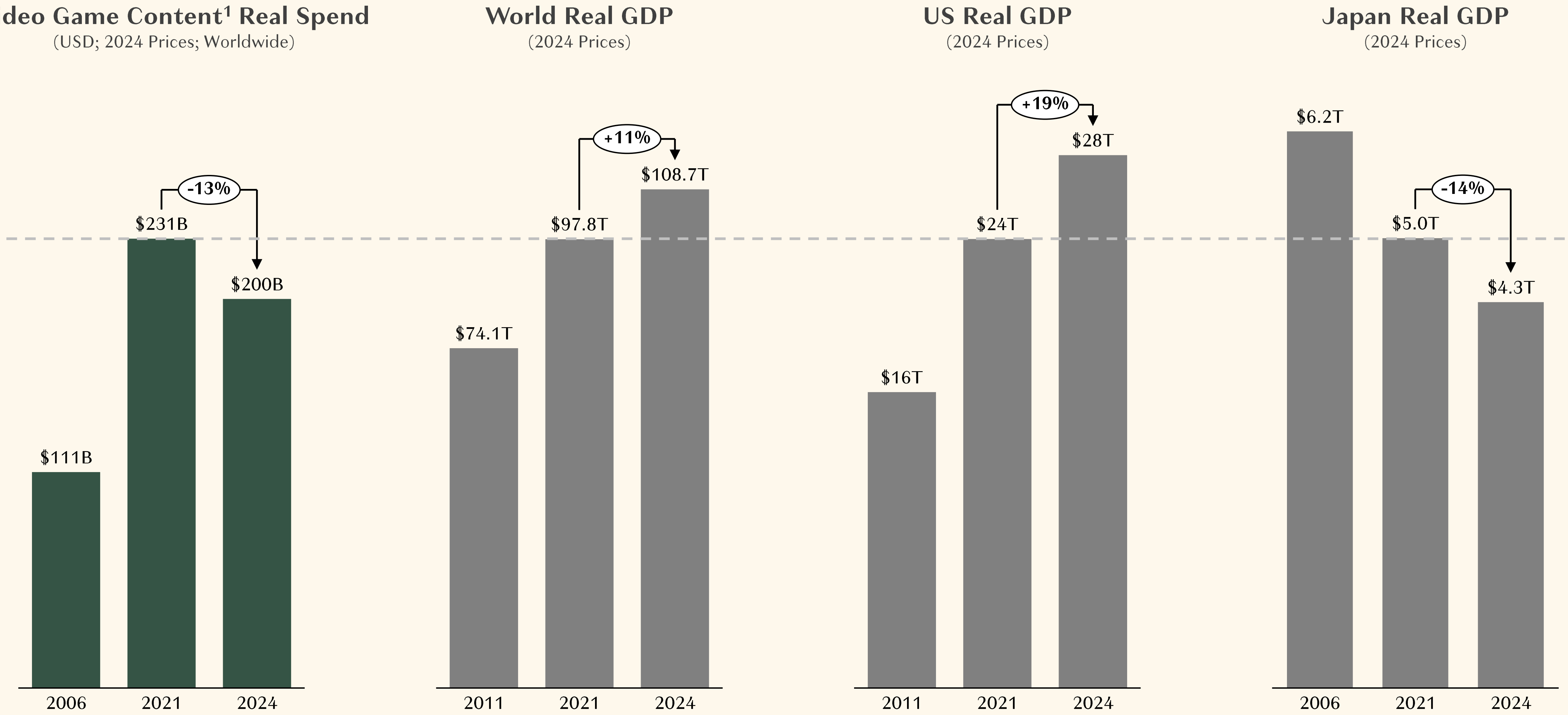

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Sources: Pelham Smithers / Bloomberg, IDG, Newzoo, Meta, IDC, Epyllion analysis, World Bank, Epyllion analysis

It’s not just spend that is declining — players are too. Average playtime has partly recovered, but this is mostly *because* less engaged players stopped playing entirely

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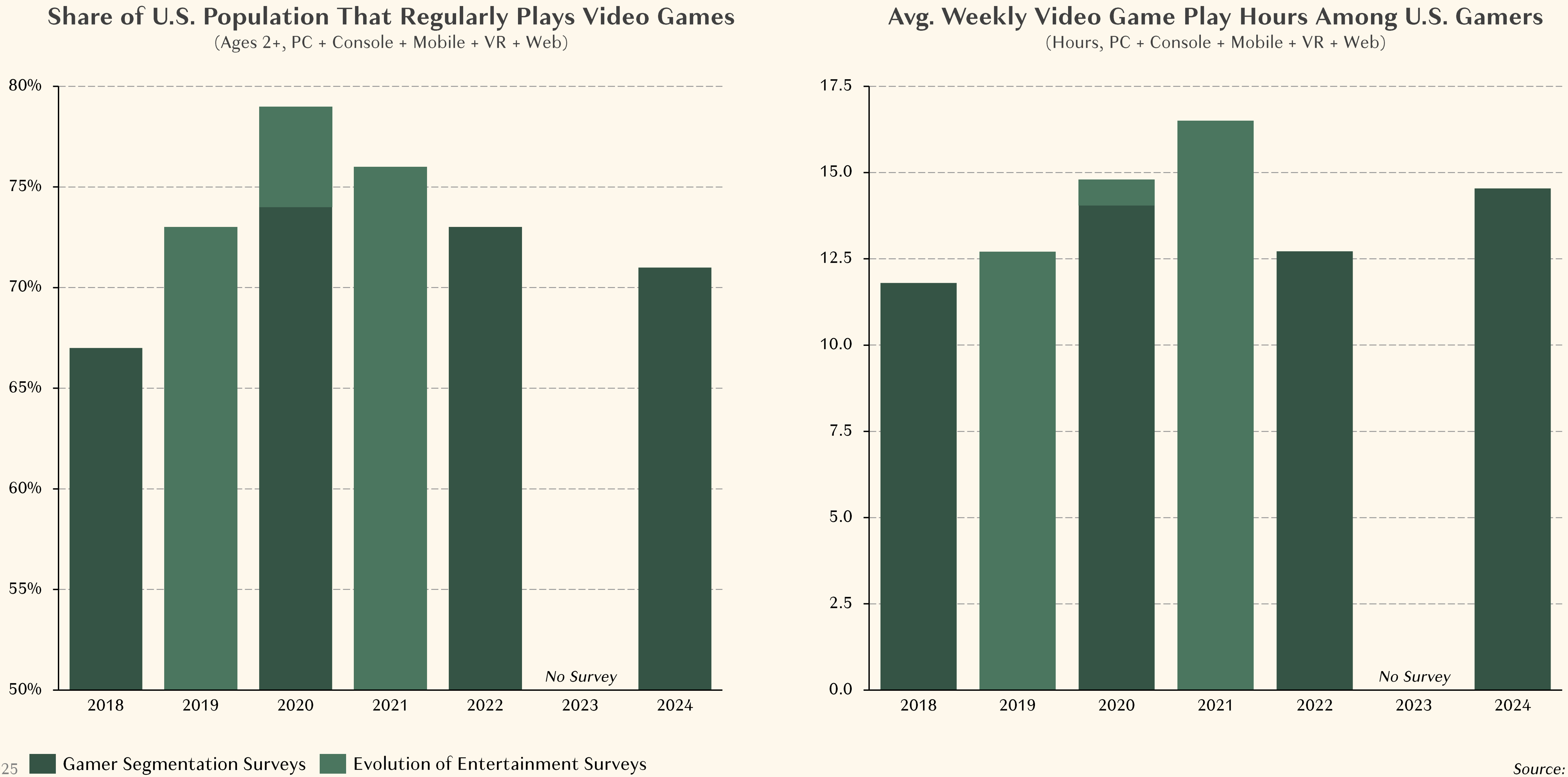

Share of U.S. Population That Regularly Plays Video Games
(Ages 2+, PC + Console + Mobile + VR + Web)

Avg. Weekly Video Game Play Hours Among U.S. Gamers
(Hours, PC + Console + Mobile + VR + Web)

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Source: Circana

The shortfall of players, dollars, and hours versus forecasts (and even vs. 2021) has led to an unprecedented number of commercial disappointments or flops

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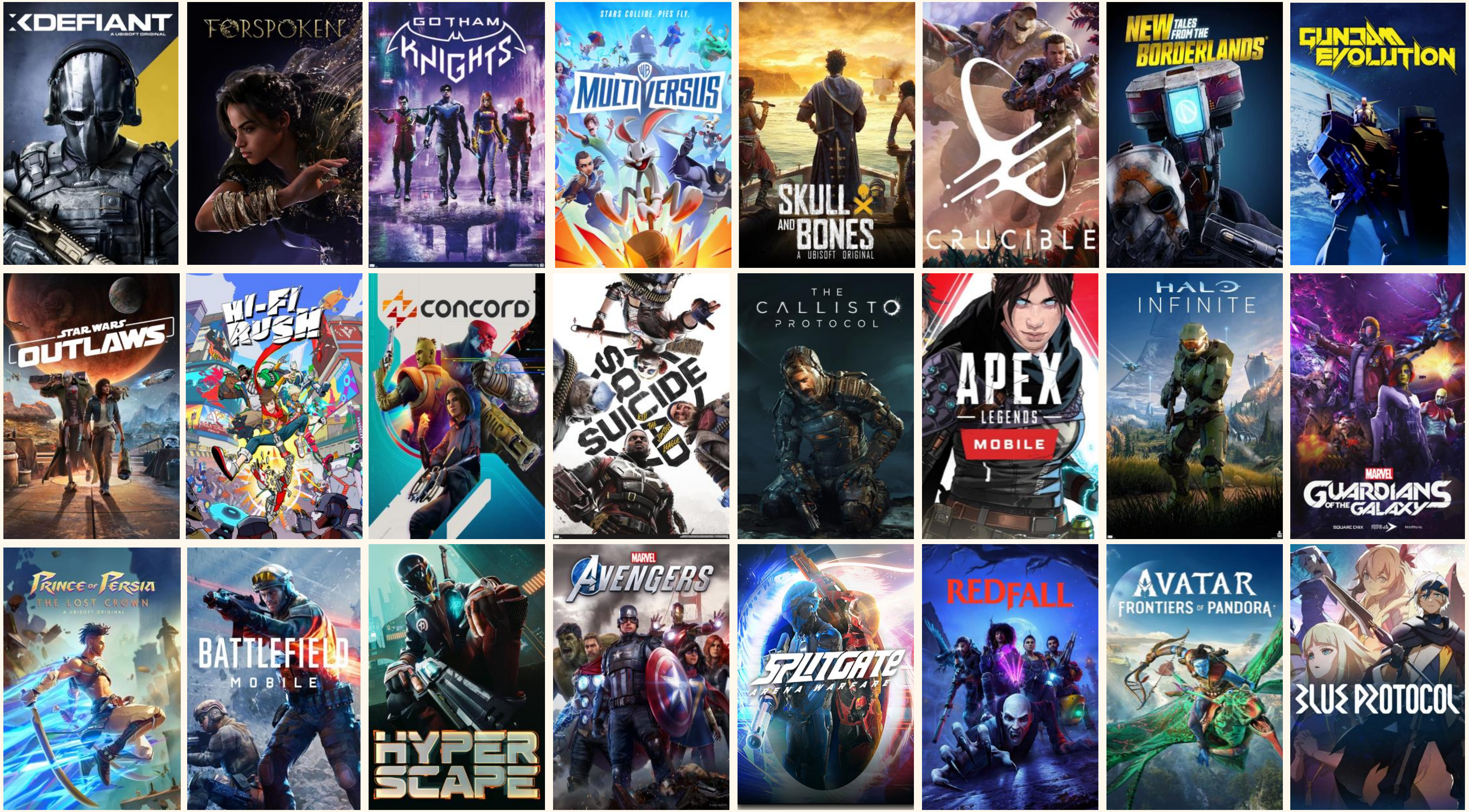

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Rising failure rates have also led gamemakers to cancel scores of in-production titles, having lost faith in the business cases they had approved only a few years ago

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Naughty Dog cancels its The Last of Us multiplayer game

The Last of Us Online scrapped after years of development


Take-Two says cancelled games weren't 'core franchise' titles

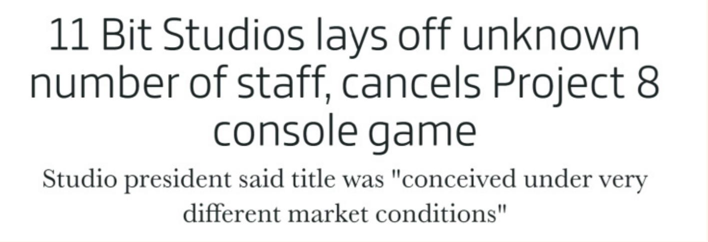
THE PUBLISHER'S RELEASE SLATE HAS DROPPED BY 12 TITLES, FOLLOWING GAME CANCELLATIONS


Take-Two sells Private Division and almost all its games


New *Deus Ex* Game Reportedly Canceled By *That* Gaming Company

Swedish holdings company Embracer Group has seemingly canceled an in-development *Deus Ex* game at Eidos-Montréal


Bandai Namco Reveals It Canceled at Least Five In-Development Games


11 Bit Studios lays off unknown number of staff, cancels Project 8 console game

Studio president said title was "conceived under very different market conditions"

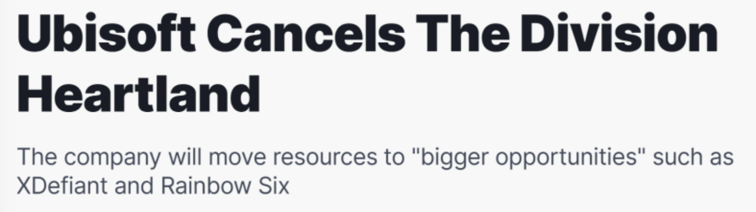

Bungie's Canceled Project Payback Was A Third-Person Spinoff Set In Destiny Universe

The project was canceled two months ago, with most of Bungie now reportedly working on Marathon.


People Can Fly lays off more than 120 employees as it cuts back on in-development games: 'We need to tailor our plans to our financial capacity'

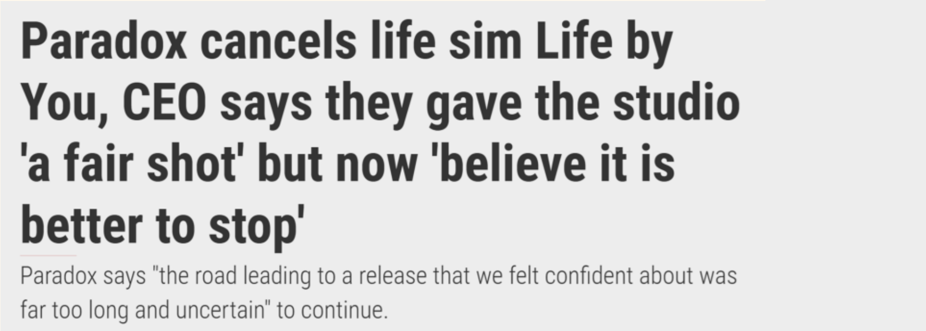

Epic says Fortnite's Rocket Racing is ending 'themed updates'

THE PSYONIX-DEVELOPED GAME LAUNCHED LESS THAN A YEAR AGO


Ubisoft Cancels The Division Heartland

The company will move resources to "bigger opportunities" such as XDefiant and Rainbow Six


Microsoft Cancels New Blizzard Video Game After Six Years of Development


Paradox cancels life sim Life by You, CEO says they gave the studio 'a fair shot' but now 'believe it is better to stop'

Paradox says "the road leading to a release that we felt confident about was far too long and uncertain" to continue.


Sony cancels two live service projects including God of War title


Niantic lays off 230 employees, cancels NBA and Marvel games


EA Cancels Respawn *Star Wars* Shooter Amid Mass Layoff

The game was announced in 2022 as part of a larger partnership between EA and Lucasfilm


Battlefield Mobile Canceled To Better Deliver On "Vision" For The Franchise


XDefiant Is Being Shut Down, Developer Closed

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Sources: Naughty Dog, The Verge, Bloomberg, IGN, Kotaku, Game Developer, GameSpot, PC Gamer, Polygon, VGC

And VC content funding has plummeted, too, falling 77% from H2’21–H1’22 highs and back to 2018–2019 levels even (despite consumer spend being up 34% or $51B)

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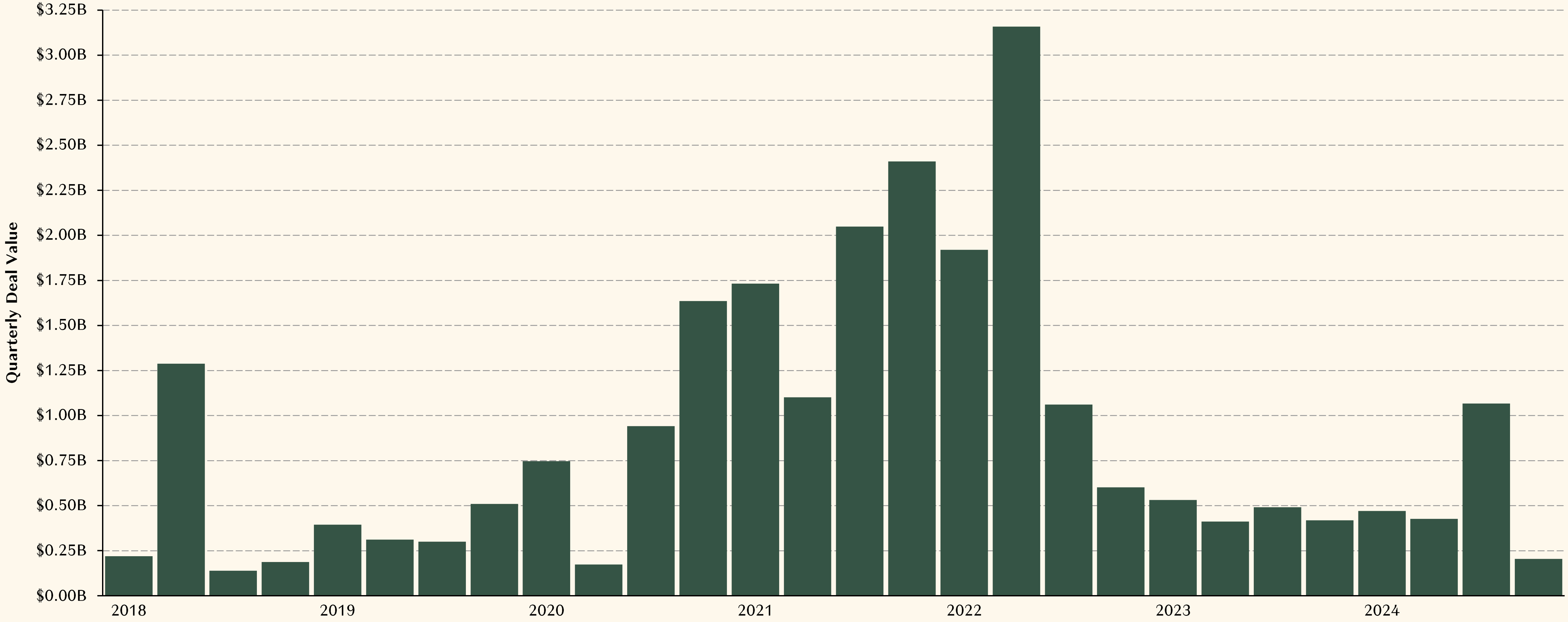
By Matthew Ball

Worldwide VC Funding In Video Gaming Content Development Studios/Publishers by Quarter

(Nominal Prices; Excludes Investments In Video Game-Related Technology and Delivery Companies)



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Source: Pitchbook

The collapse in venture investment dollars comes not just from smaller average investment rounds, but also far fewer rounds and from far fewer investors

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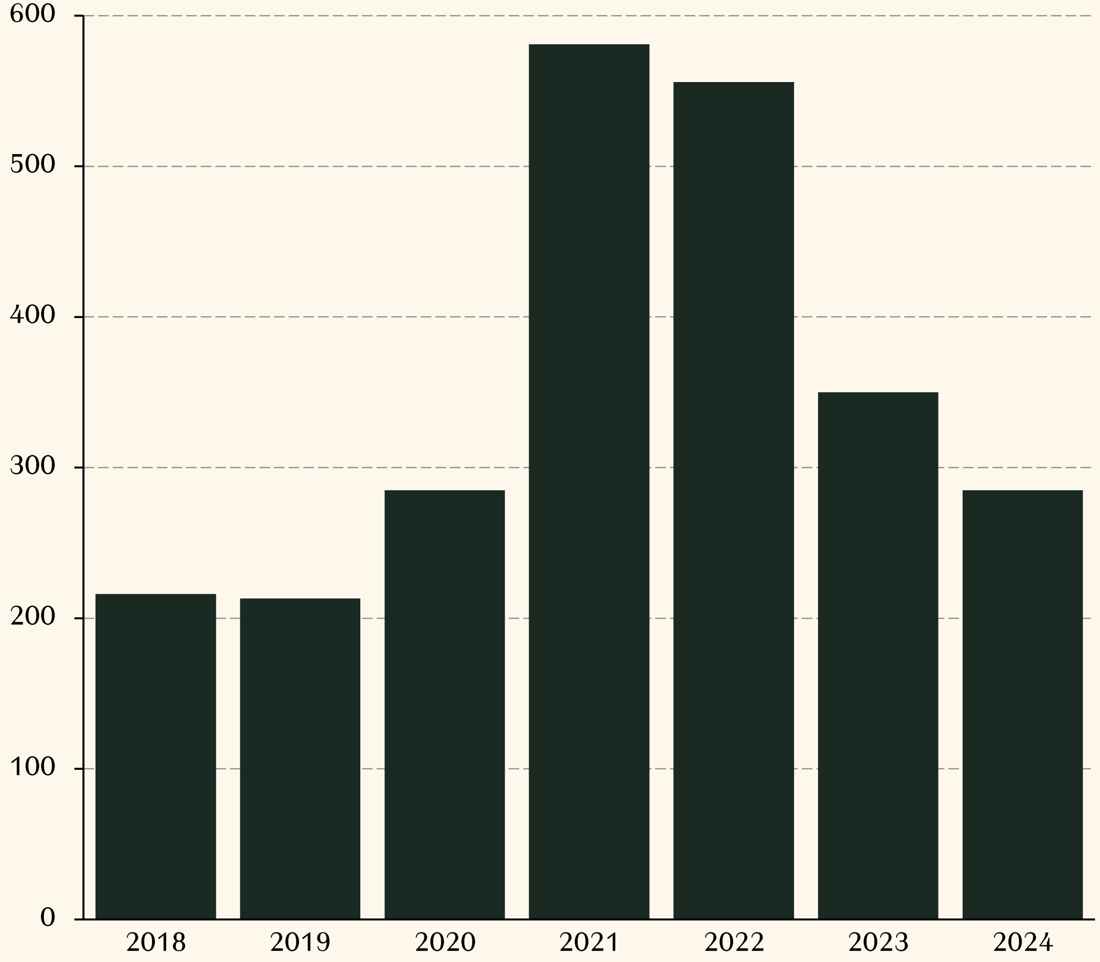
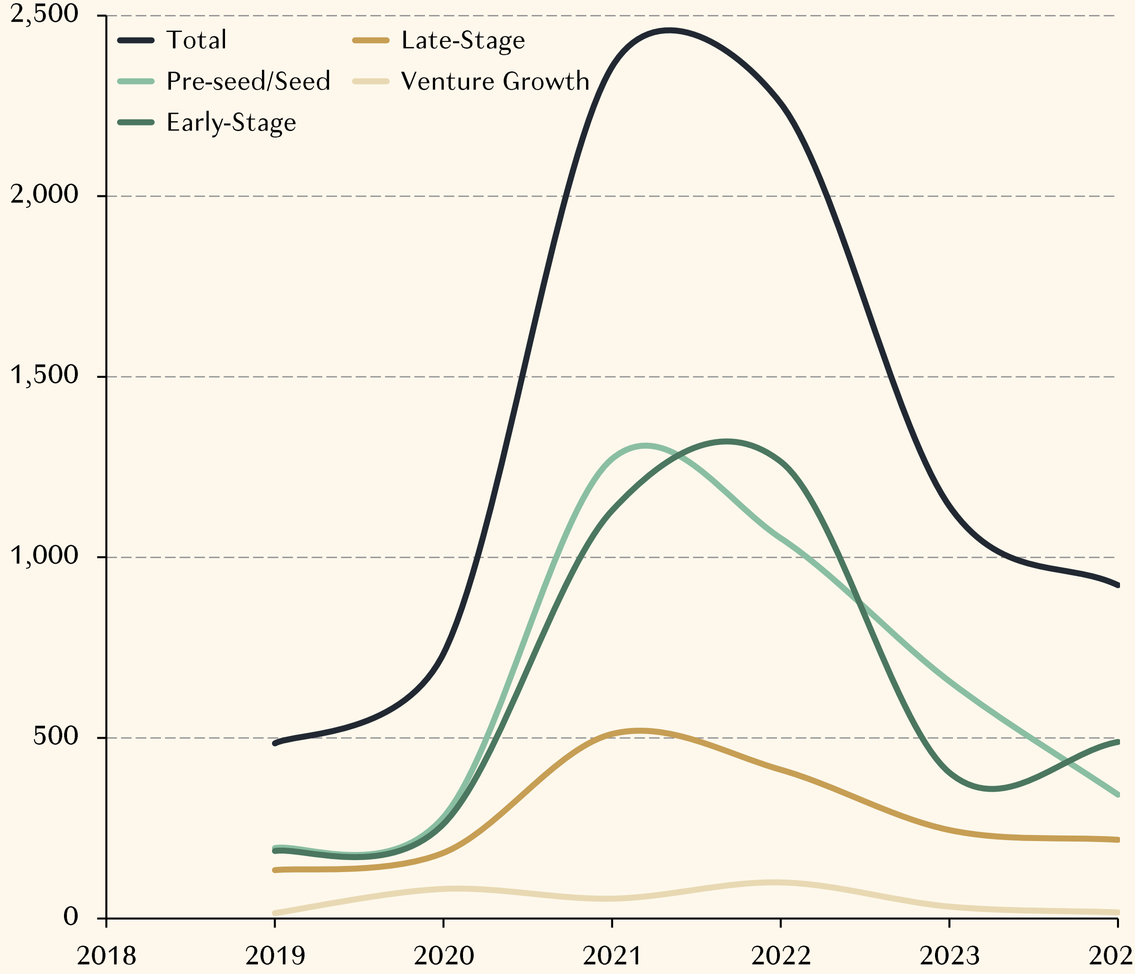
Total VC Deals in Video Game Content Studios/Publishers

(Worldwide; Content-Related Investments; Excludes Venture Growth Rounds)



Active VCs in Video Game Content Studios/Publishers by Year

(Worldwide; Content-Related Investments; At Least One Investment Made in Year)



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Source: Pitchbook

Many of the independent studios founded since 2019 are now closing because they can’t find the VC or publisher funding needed to finish their games

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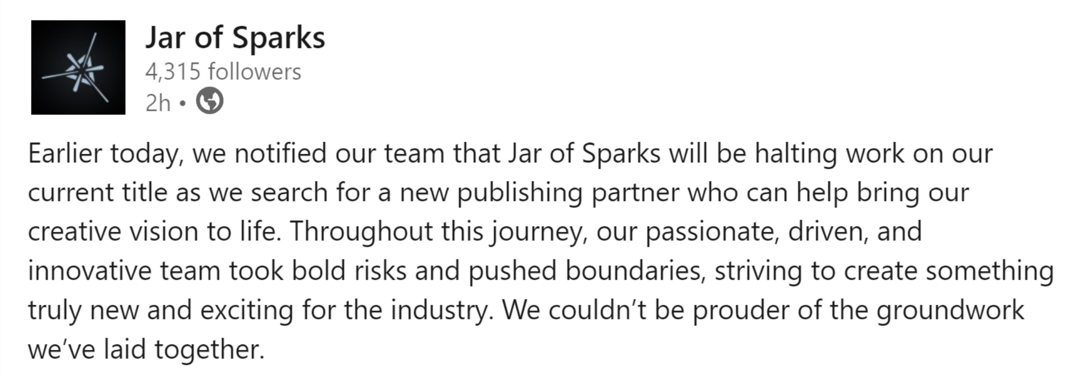
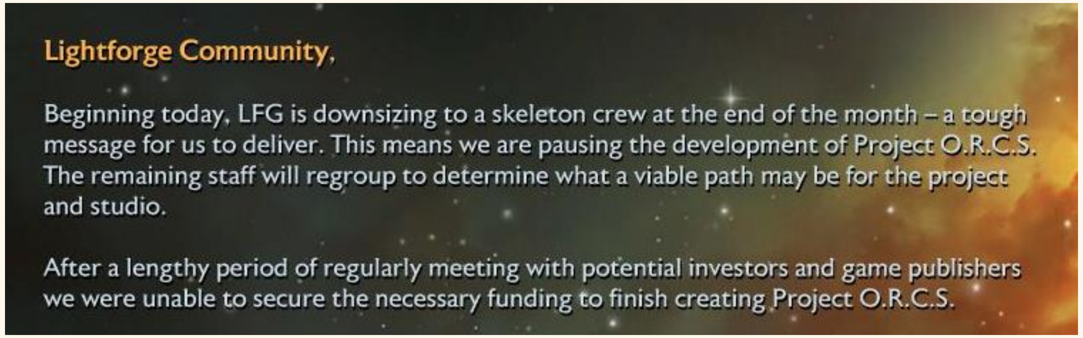


Jar of Sparks
4,315 followers
2h •

Earlier today, we notified our team that Jar of Sparks will be halting work on our current title as we search for a new publishing partner who can help bring our creative vision to life. Throughout this journey, our passionate, driven, and innovative team took bold risks and pushed boundaries, striving to create something truly new and exciting for the industry. We couldn’t be prouder of the groundwork we’ve laid together.

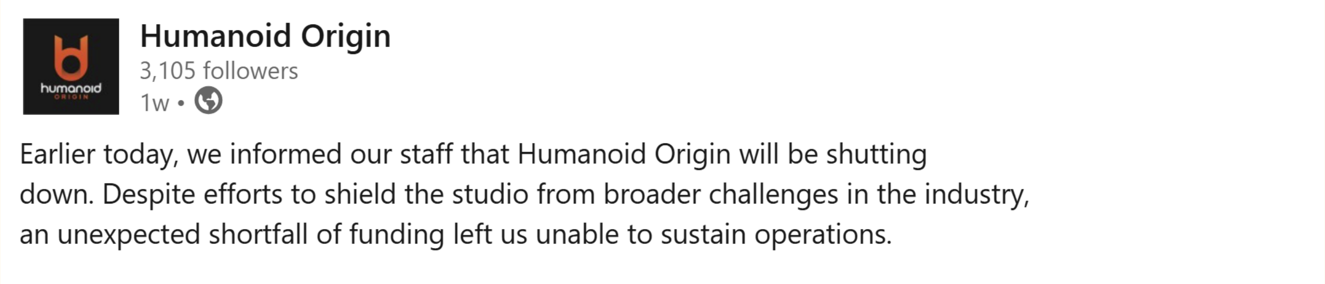
Deviation Games Is Shut Down Before It Can Ship a Game



Lightforge Community,

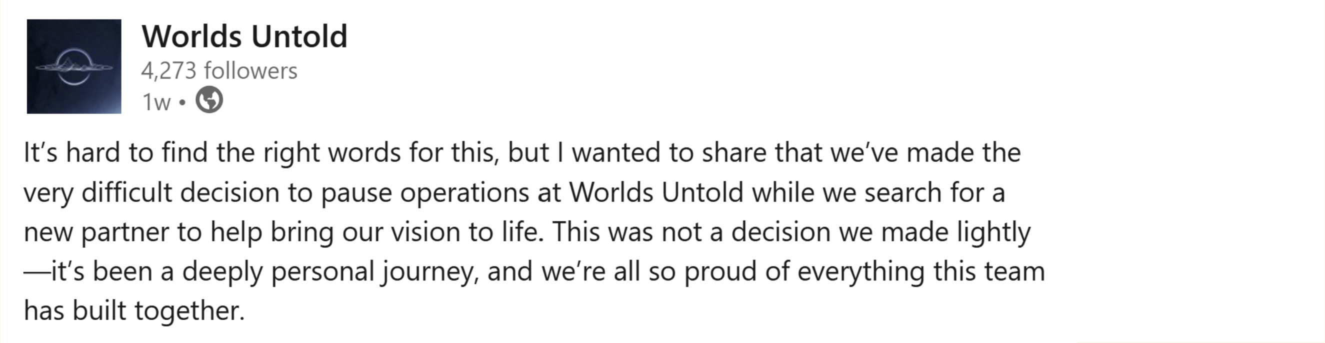
Beginning today, LFG is downsizing to a skeleton crew at the end of the month – a tough message for us to deliver. This means we are pausing the development of Project O.R.C.S. The remaining staff will regroup to determine what a viable path may be for the project and studio.

After a lengthy period of regularly meeting with potential investors and game publishers we were unable to secure the necessary funding to finish creating Project O.R.C.S.



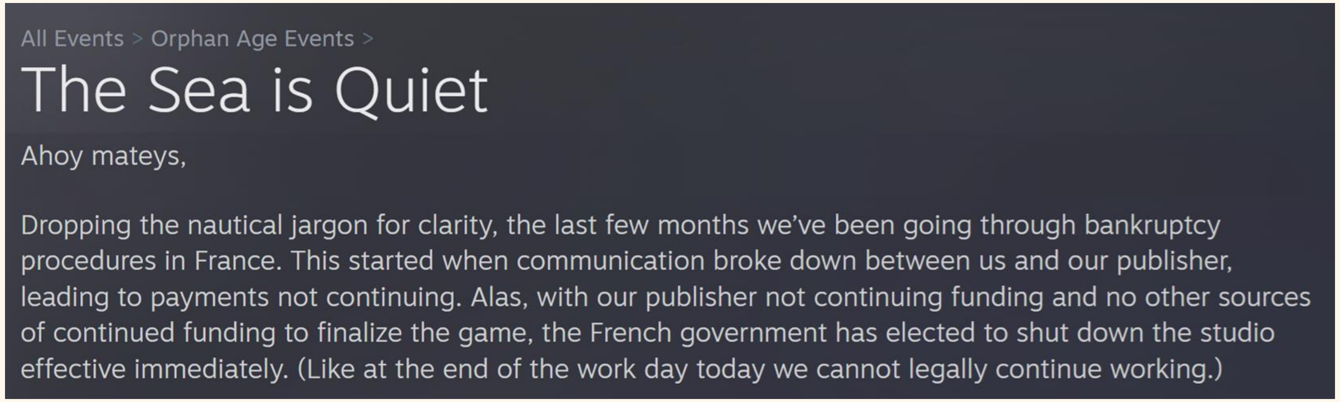
Humanoid Origin
3,105 followers
1w •

Earlier today, we informed our staff that Humanoid Origin will be shutting down. Despite efforts to shield the studio from broader challenges in the industry, an unexpected shortfall of funding left us unable to sustain operations.



Worlds Untold
4,273 followers
1w •

It’s hard to find the right words for this, but I wanted to share that we’ve made the very difficult decision to pause operations at Worlds Untold while we search for a new partner to help bring our vision to life. This was not a decision we made lightly—it’s been a deeply personal journey, and we’re all so proud of everything this team has built together.



All Events > Orphan Age Events >

The Sea is Quiet

Ahoy mateys,

Dropping the nautical jargon for clarity, the last few months we’ve been going through bankruptcy procedures in France. This started when communication broke down between us and our publisher, leading to payments not continuing. Alas, with our publisher not continuing funding and no other sources of continued funding to finalize the game, the French government has elected to shut down the studio effective immediately. (Like at the end of the work day today we cannot legally continue working.)

Sources: Surgent Studios, Lightforge, Humanoid Origin, Worlds Untold

Employees have been hit hard, suffering back-to-back-to-back record layoffs. Layoffs might help short-term margins, but they won't restore industry growth

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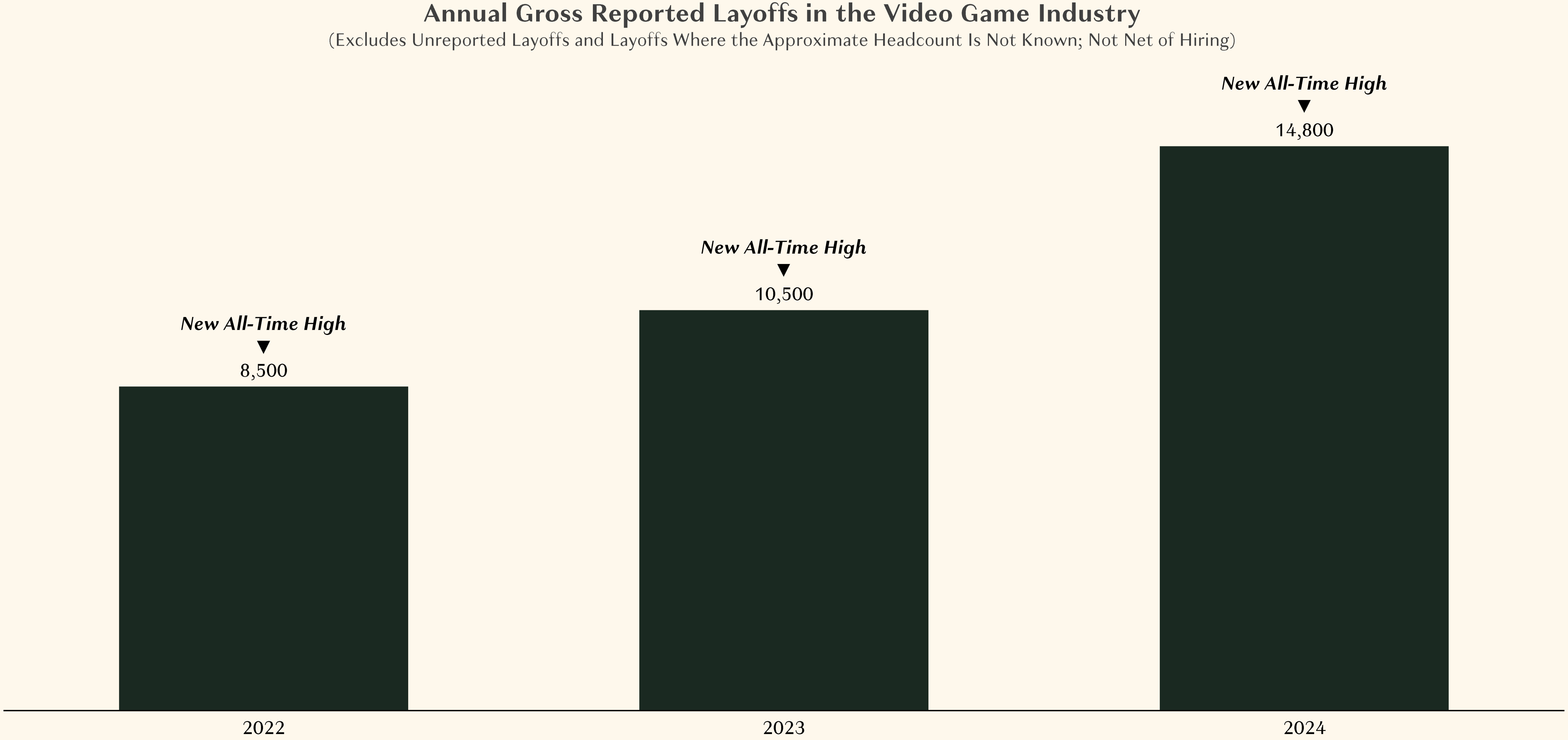

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Sources: Farhan Noor, Epyllion analysis

And what gamemakers *need* is growth. Gaming stocks have underperformed the market by 19–140% since 2020; some have lost 10–80% of value outright

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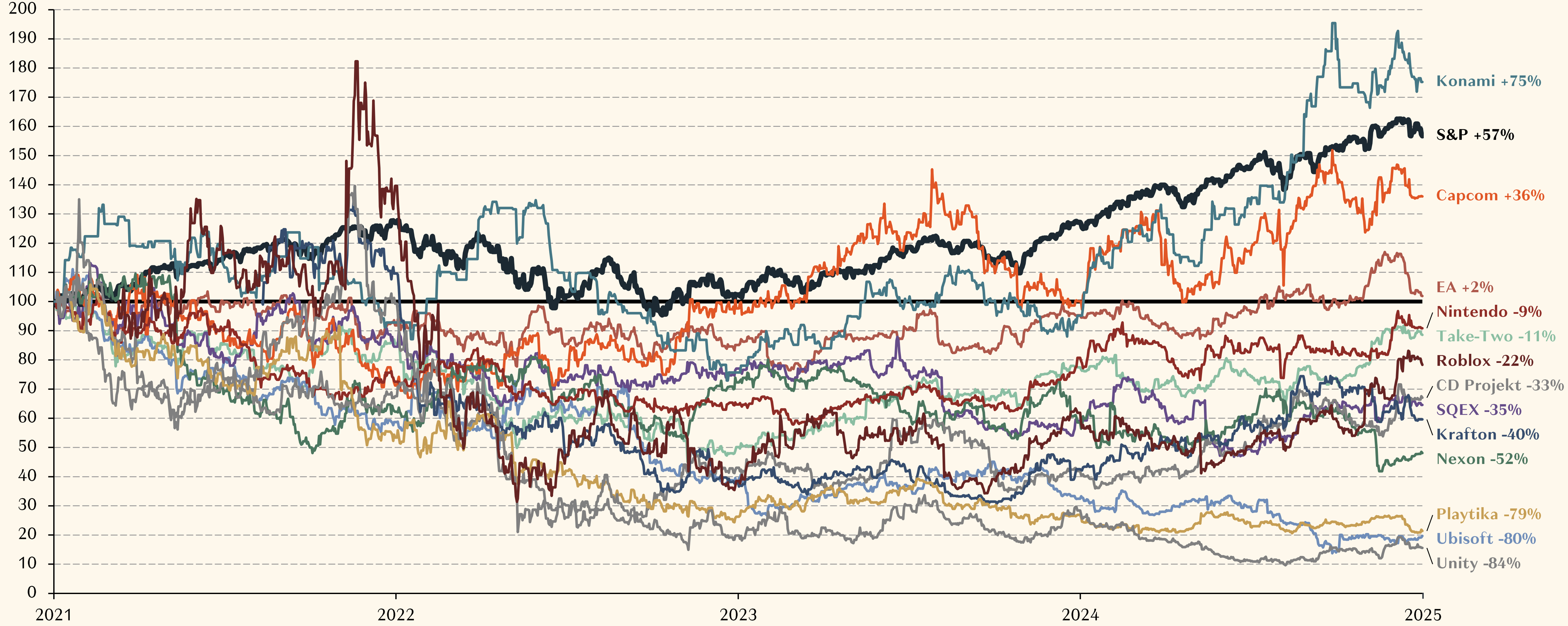
Indexed Share Prices of Major Independent Game Publishers

(Indexed to First Trading Day of 2021 or IPO Closing Price; Based on USD Price)



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Sources: Investing.com, NASDAQ

And behind the headline layoffs there is still meaningful hiring. Most publishers will have more employees in 2025 than in 2022 — even net of acquisitions

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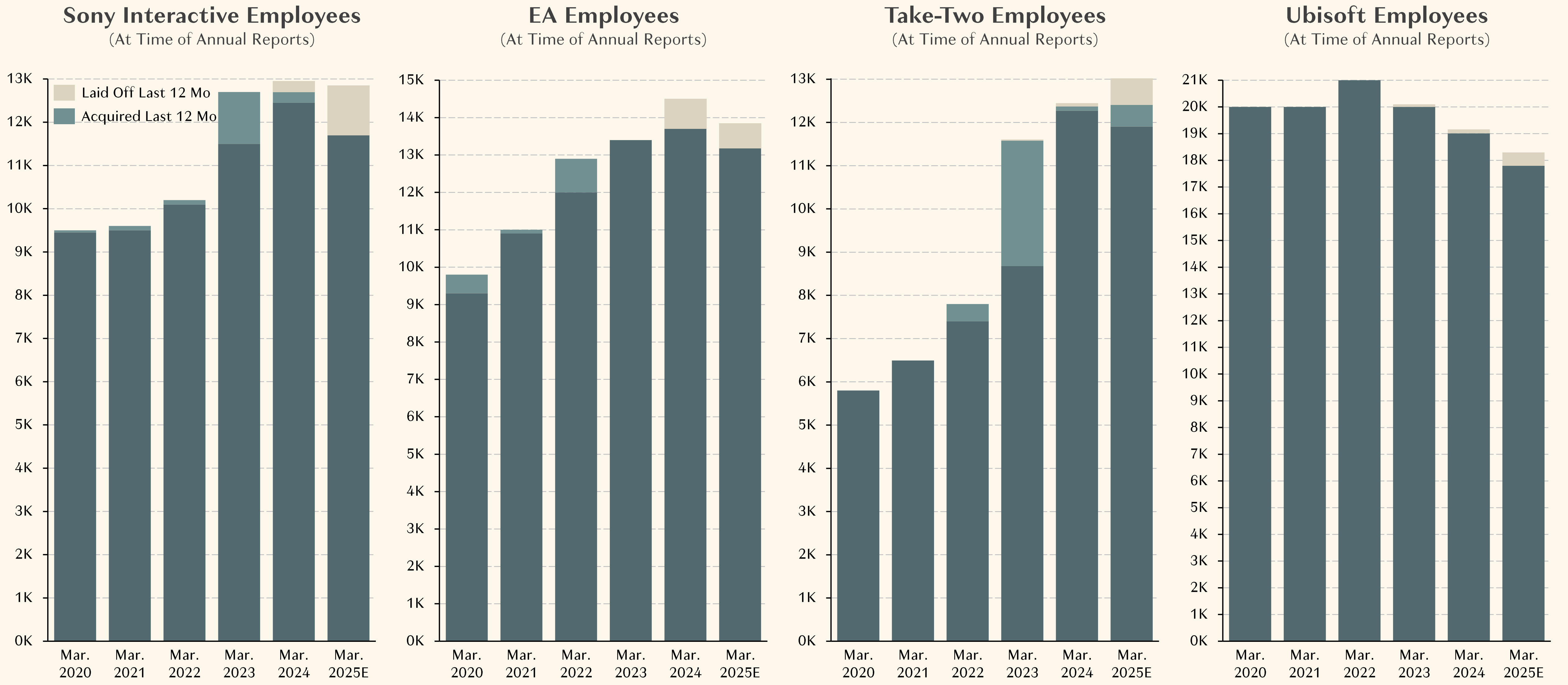

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Sources: Sony, EA, Take-Two, Ubisoft, Epyllion analysis

So, What’s Going On?

No industry has a “right” to grow several times faster than global real GDP — let alone for a decade. Gaming achieved it through several concurrent growth engines

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BY MATTHEW BALL

- Mobile
- Free-to-Play + MTX
- Live Services
- Cross-Platform Gaming
- Battle Royales
- Battle Passes
- UGC Platforms
- Social Gaming
- Social Game Services
- COVID Boost

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Source: Epyllion analysis

These several growth engines grew the video gaming industry's players + playtime + spend, while strengthening network effects and often amplifying one another

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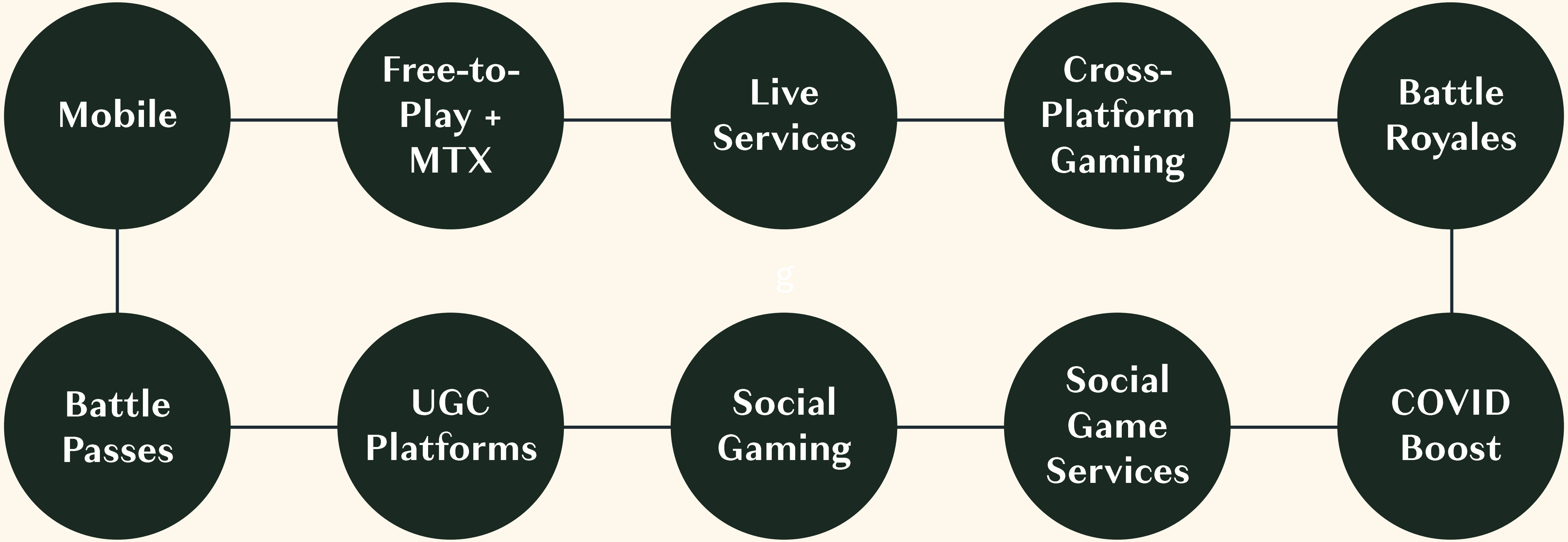

Billions of new players & new hours per day to play

Mobile

Reduced barriers to playing; expanded games' social graphs; unlocked "whale monetization"

Free-to-Play + MTX

Lifted engagement and the monetization ceiling for all games — especially the biggest

Live Services

Expanded every multiplayer game's social graph (and thus appeal, playtime, and spend)

Cross-Platform Gaming

Highest-grossing game genre in history; most popular AAA genre in history; expanded cultural appeal/range of games

Battle Royales

Battle Passes

Brand new monetization model that increased the paying share of FTP gamers and encouraged more player spend

UGC Platforms

Most popular experiences of all time

Social Gaming

Led "non-gamers" to take up video gaming to connect with friends/family

Social Game Services

YouTube, Discord, Twitch created a new "meta-layer" that enriched gaming , aided game discovery, and strengthened social play

COVID Boost

Helped normalized video gaming; aided game discovery; "pulled forward" revenues

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Source: Epyllion analysis

Nearly all of the top games of the last 15 years have taken advantage of several growth engines simultaneously. Many pioneered them outright.

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Mobile

Free-to-Play +

Live

Cross-Platform

Battle Royales

Battle Passes

Platforms

Gaming

Game Services

COVID Boost

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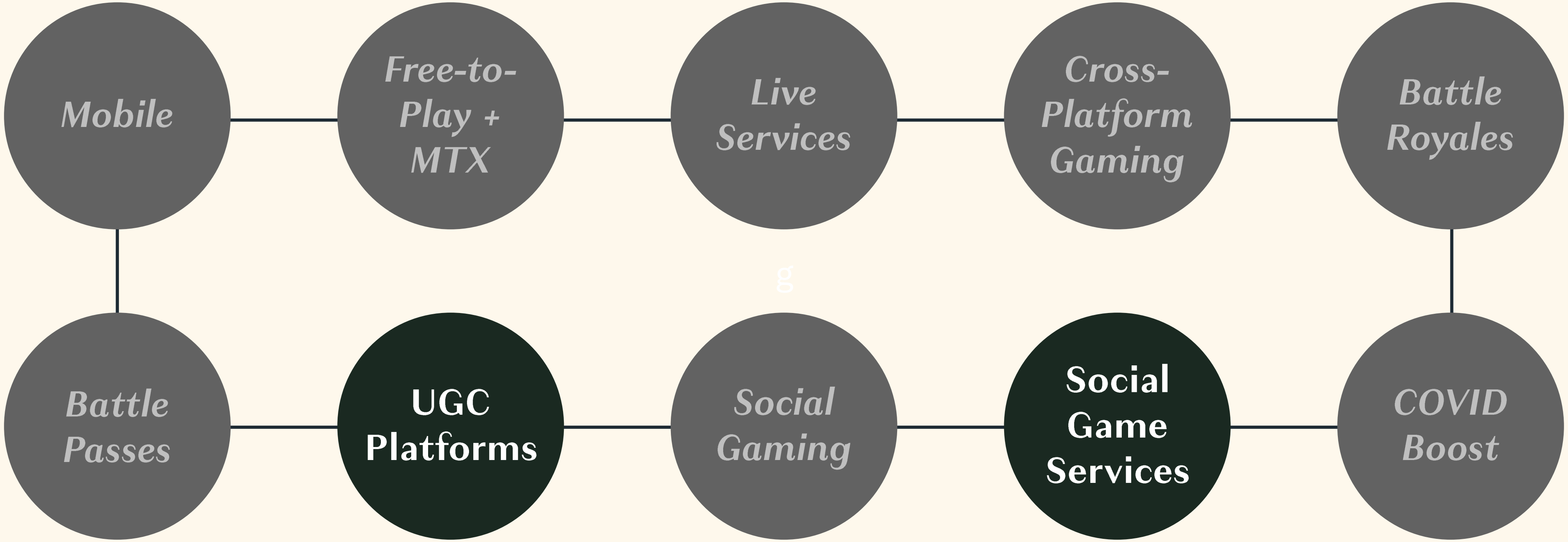
Source: Epyllion analysis

Yet the old growth engines are mostly exhausted. There are few high-value mobile players left to add, no new playtime to find, few games to add battle passes, etc.



Mobile

Free-to-Play + MTX

Live Services

Cross-Platform Gaming

Battle Royales

Battle Passes

UGC Platforms

Social Gaming

Social Game Services

COVID Boost

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Source: Epyllion analysis

And the many would-be growth engines have yet to drive real revenue or player growth — let alone generate new market leaders

Cloud Gaming

Subscriptions

AR, VR, and LBE

New Game Genres

Esports

Game + Esports Betting

Crypto, Web3, NFTs

App Store Regulation

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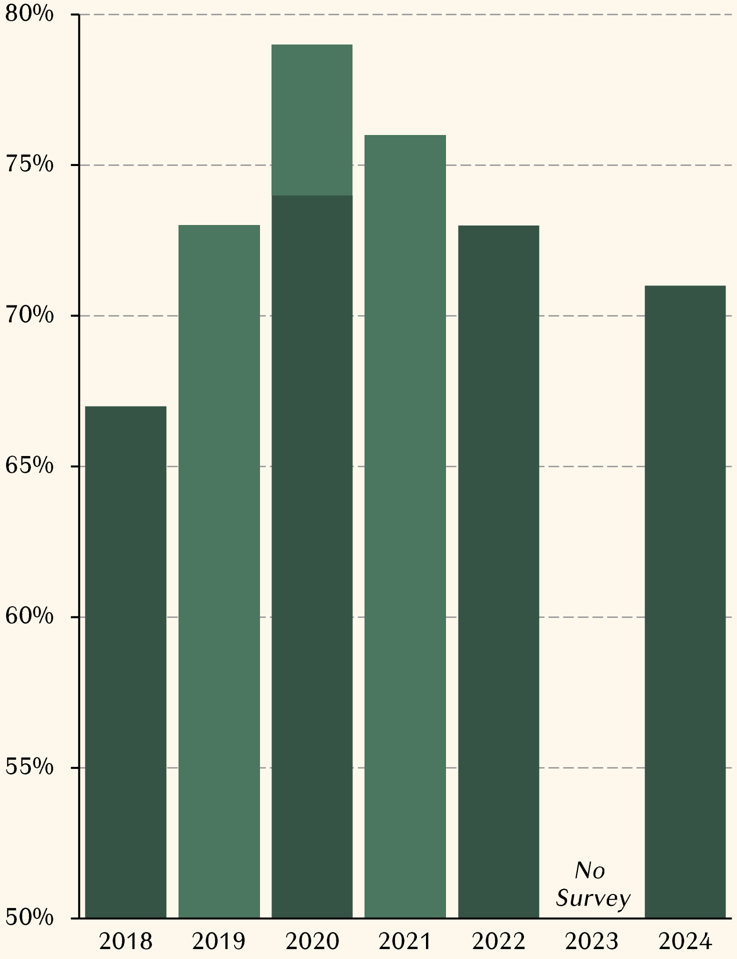
Source: Epyllion analysis

With video gaming's growth engines slowing, it's less surprising that participation, engagement, and spend are all waning. The 2011–2021 era is getting old.

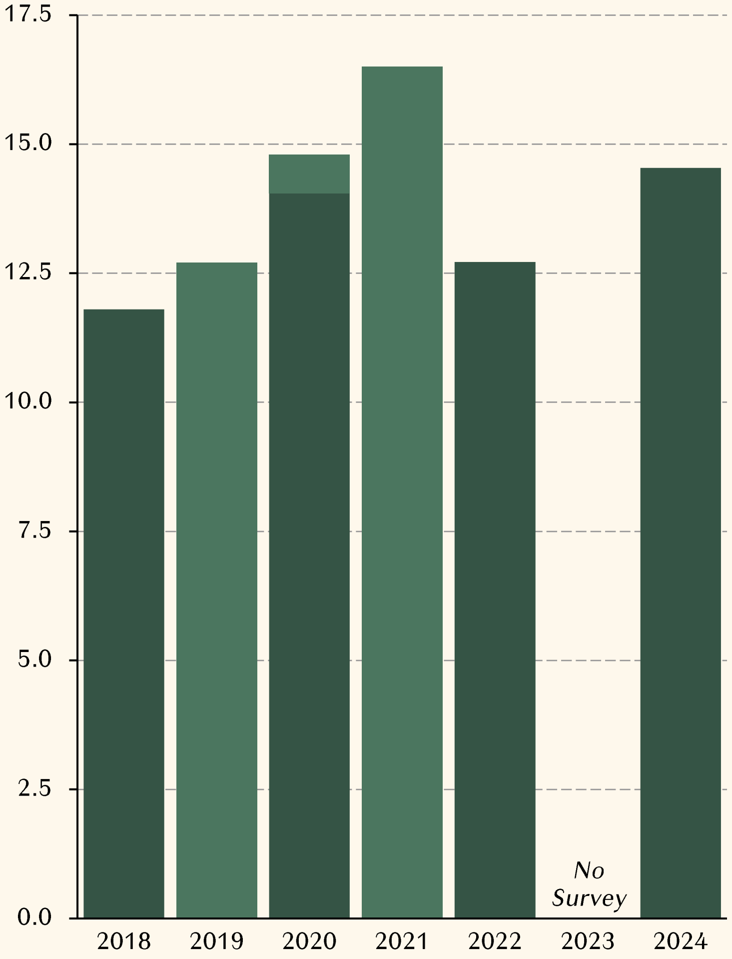
Share of U.S. Who Regularly Games

(Ages 2+)



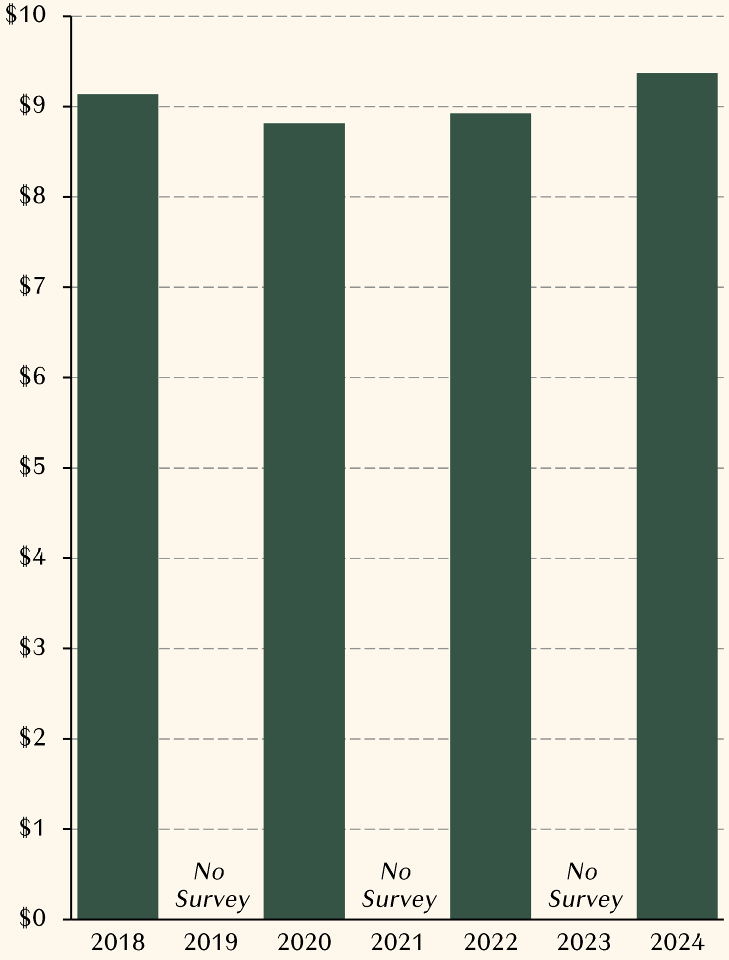
Weekly Playtime Among U.S. Gamers

(Hours)



Monthly Spend Among U.S. Gamers

(Nominal Prices)



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■ Gamer Segmentation Surveys ▨ Evolution of Entertainment Surveys

Source: Circana

Meanwhile, the industry is facing many new challenges — all while the old challenges have intensified

End of Mobile User Growth

Stagnant Console Install Bases

Growth in Foreign Developers

Rise of Social Video

Foreign-Focused Growth

ATT, IDFA, & GAID

Worsening Discovery

"Black Hole" Games

Reductions in Game Sampling

Rising Development Costs

Rising User Acquisition Costs

Lengthening Production Timelines

Closed App Stores

Deflationary Pricing

Fear of Failure Rates

Source: Epyllion analysis

Gaming's growth is driven by mobile's growth — the form factor is over two thirds of new spend since 2011 and is now 55% of the total market, up from 32%

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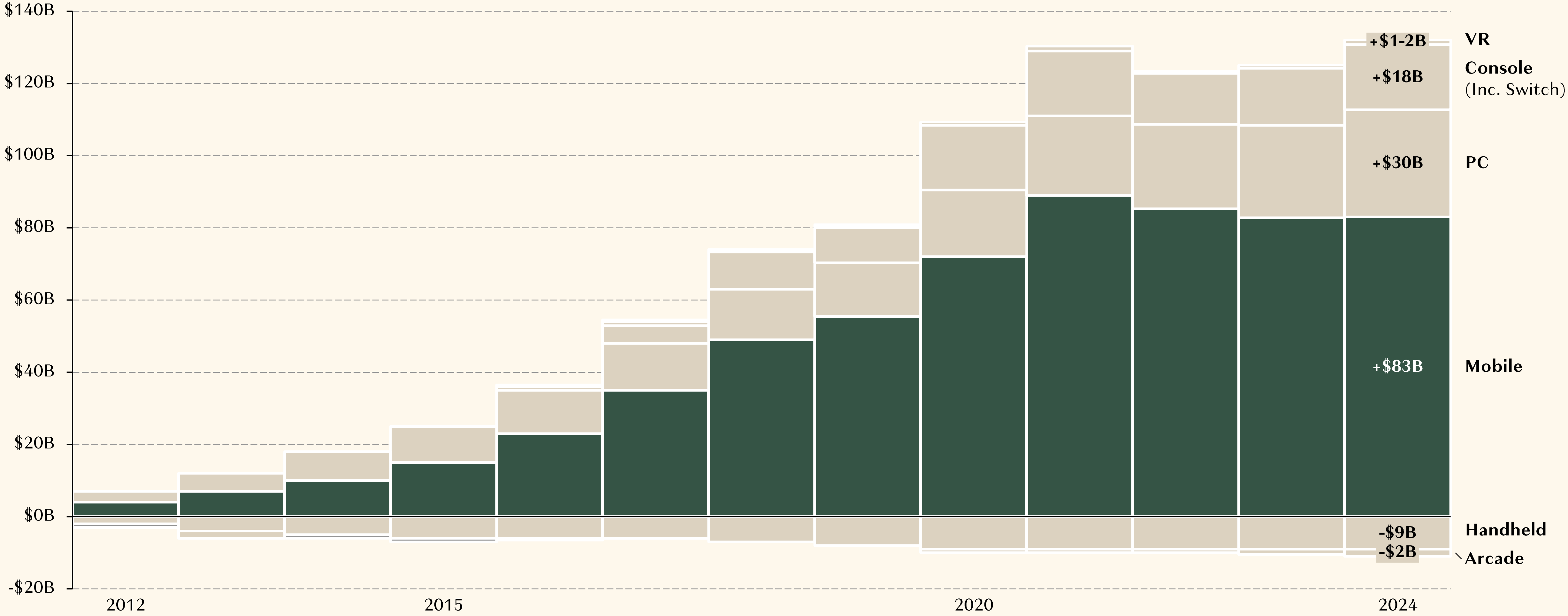
Share of Growth in Worldwide Consumer Spending on Video Game Content Since 2011

(Nominal Prices; Arcade + Console + PC + Mobile + VR + Web; Excludes Hardware & Accessories; Excludes Web3/NFT)



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Sources: Pelham Smithers / Bloomberg, IDG, Newzoo, Meta, IDC, Epyllion analysis

The iPhone led to *billions* of new players and hours. But after 18 years, growth now relies on population growth and smartphone adoption in (very) low ARPU markets

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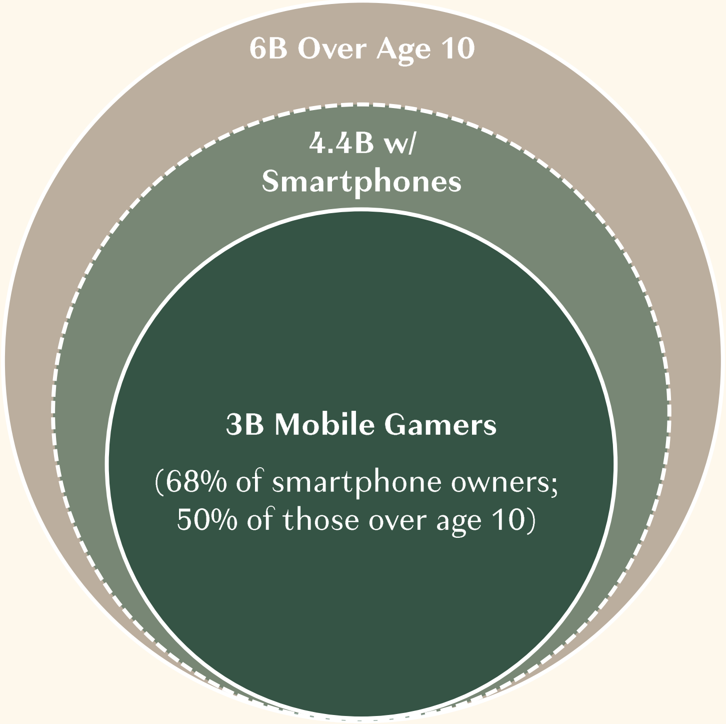
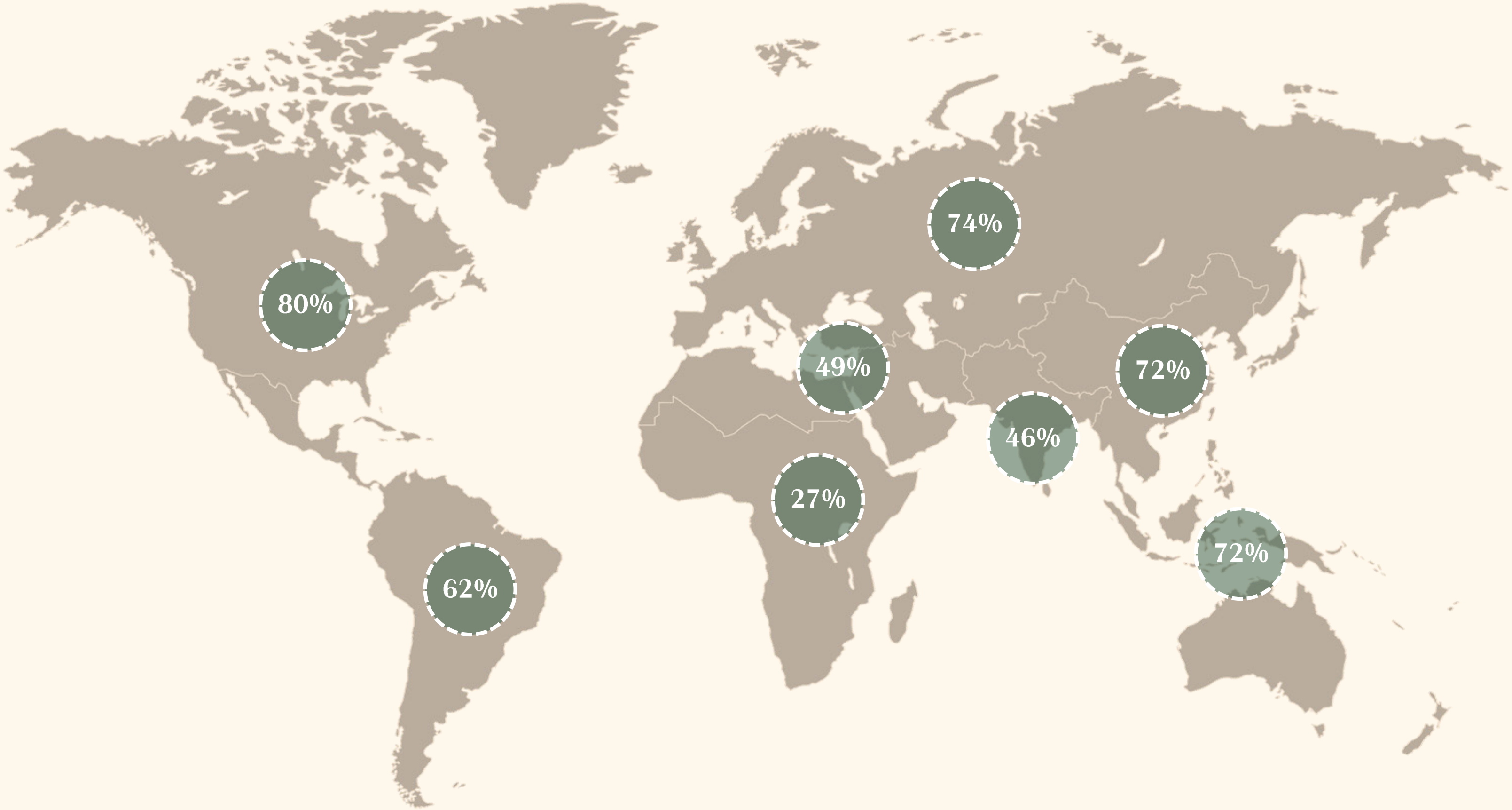


6B Over Age 10

4.4B w/ Smartphones

3B Mobile Gamers

(68% of smartphone owners; 50% of those over age 10)



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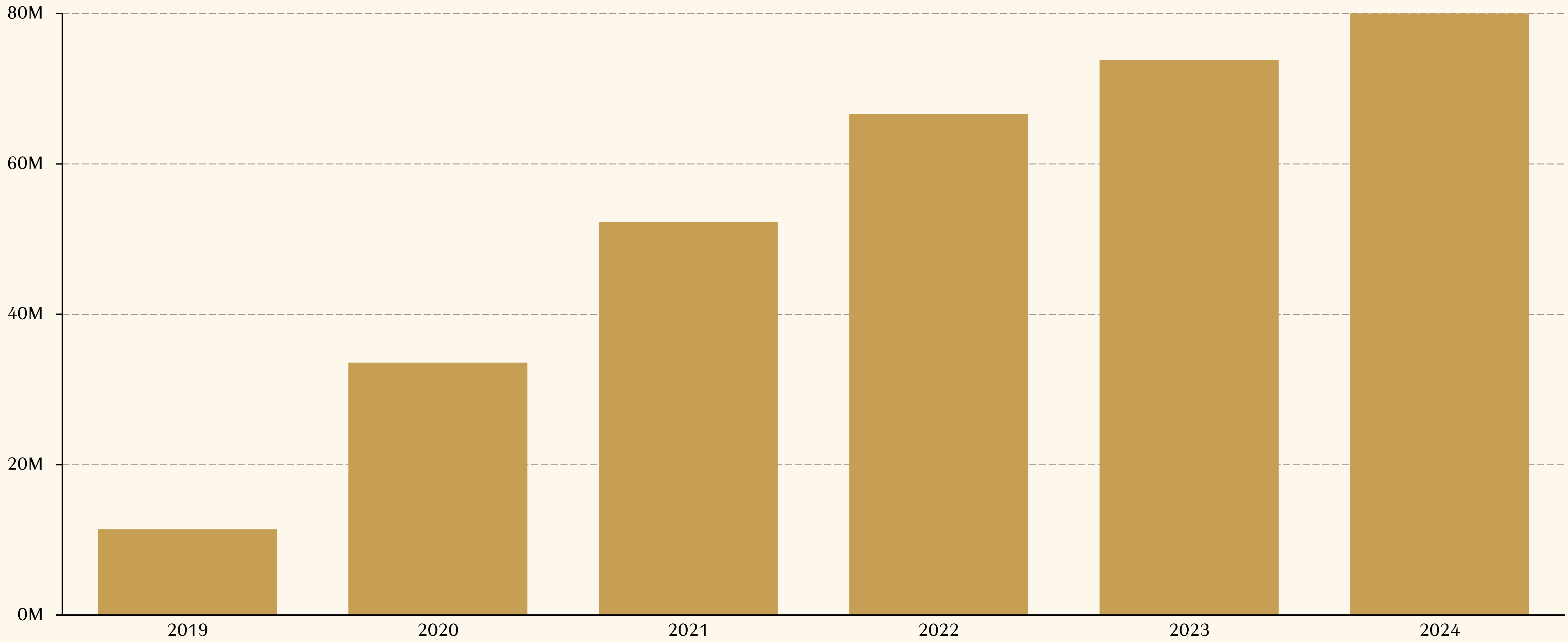
Sources: Microsoft, GSMA, World Bank

Social video is devouring mobile-based leisure time: U.S. adults spend 35MM more hours a *day* watching TikTok than in H2’20/H1’21 (peak of mobile gaming spend)

Daily Hours of TikTok Use Among All U.S. Adults



v.1/18/2025

Source: Emarketer

And TikTok's growth hasn't cannibalized other social video platforms — U.S. adults have grown their use of the category by over 100 million hours *a day* since 2020/21

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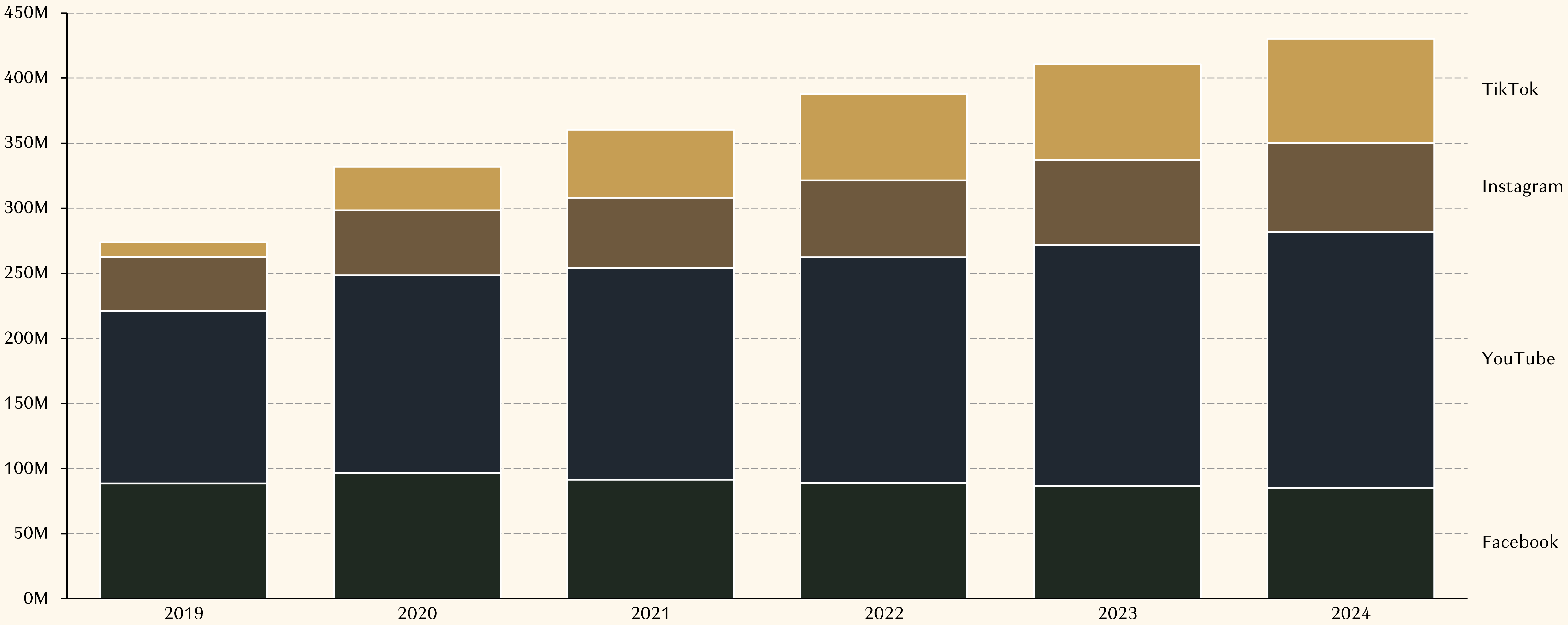
Daily Hours of Use Among All U.S. Adults



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Sources: Emarketer, Epyllion analysis

IDFA's vicious cycle: install volumes down and costs up → player time, spend, and ad revenue fall → UA is even costlier → install volumes go down more, etc.

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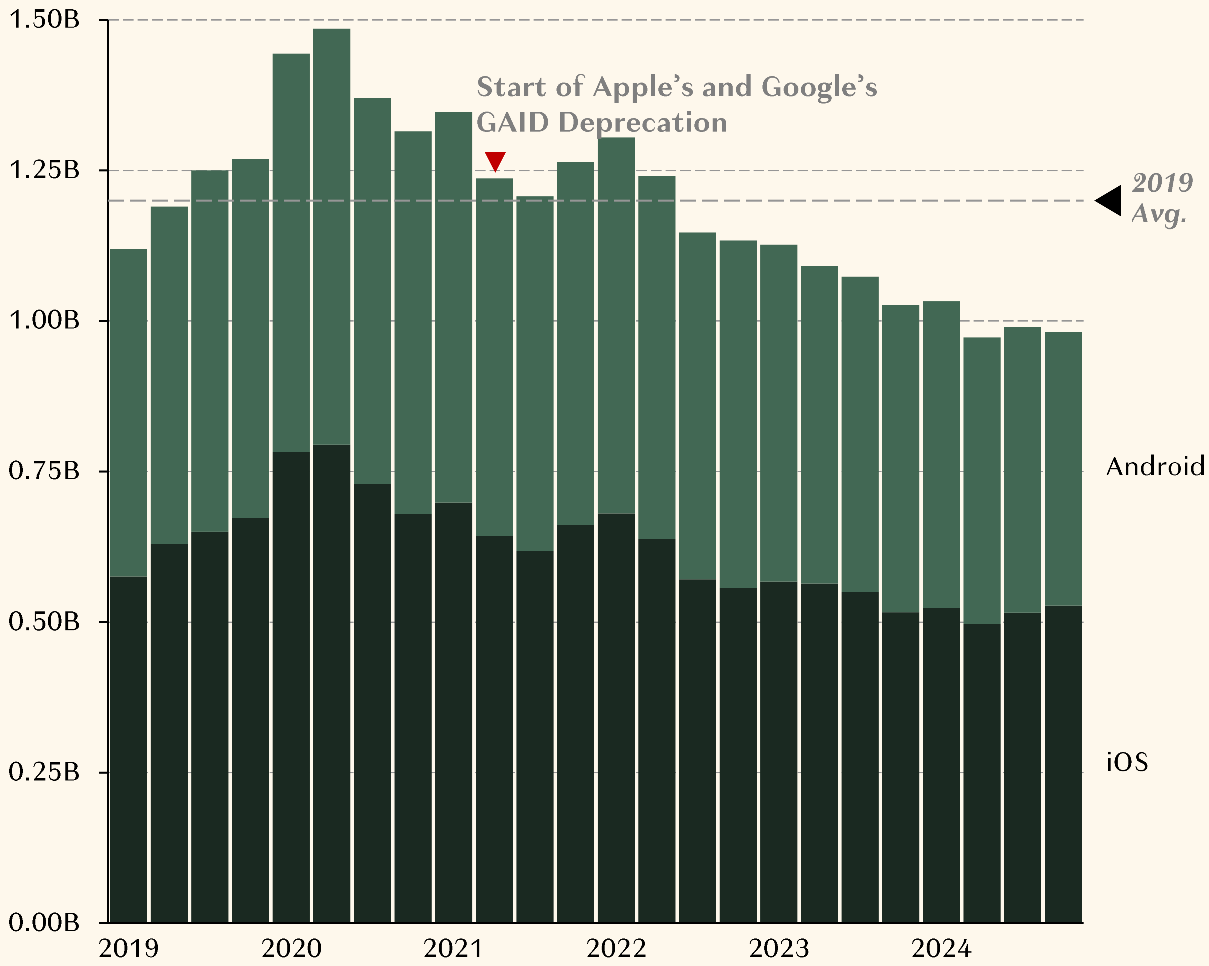
By Matthew Ball

U.S. Mobile Game Downloads by Quarter

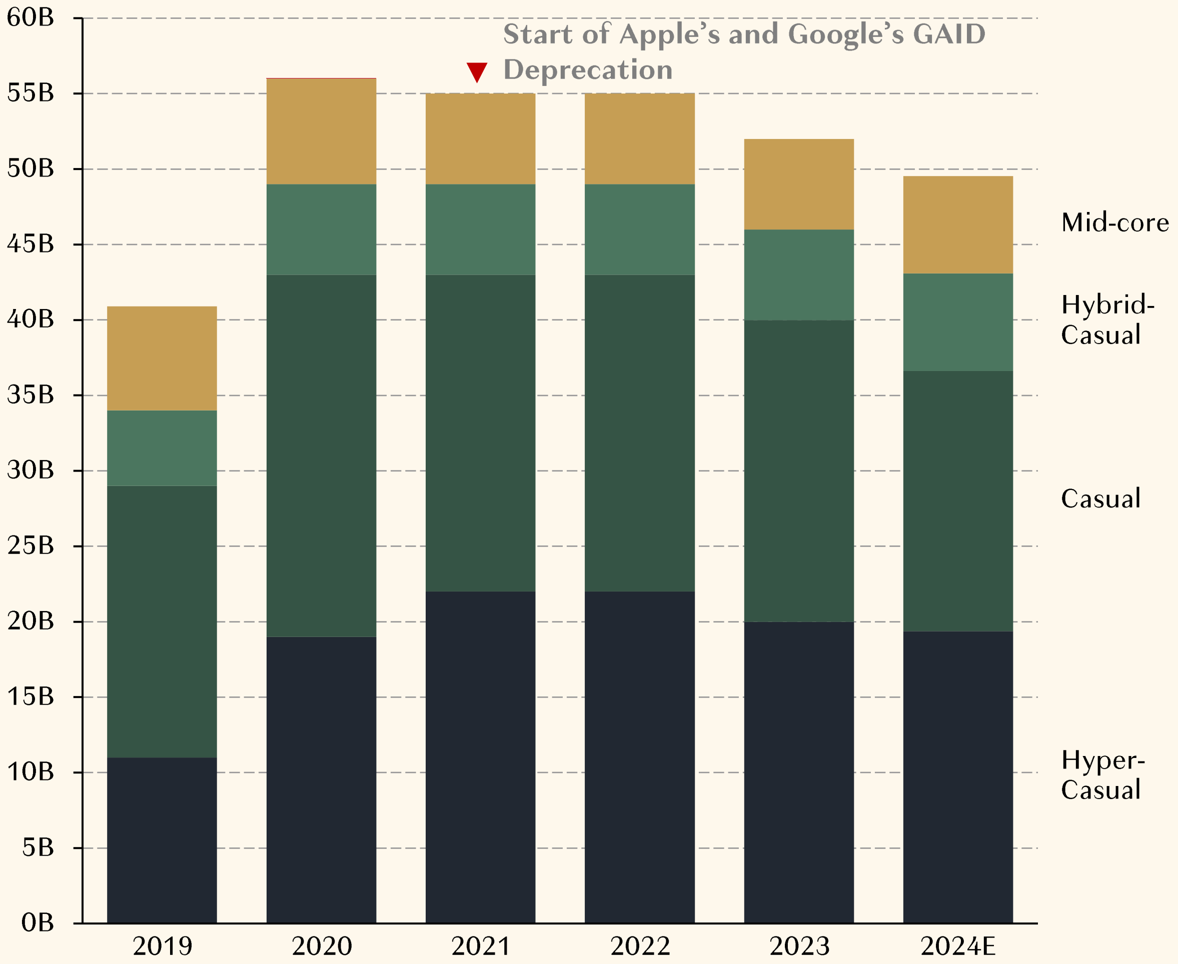


Start of Apple's and Google's GAID Deprecation

2019 Avg.

Worldwide Mobile Game Downloads by Year and Type

(Sensor Tower Measured Markets and Platforms)



Start of Apple's and Google's GAID Deprecation

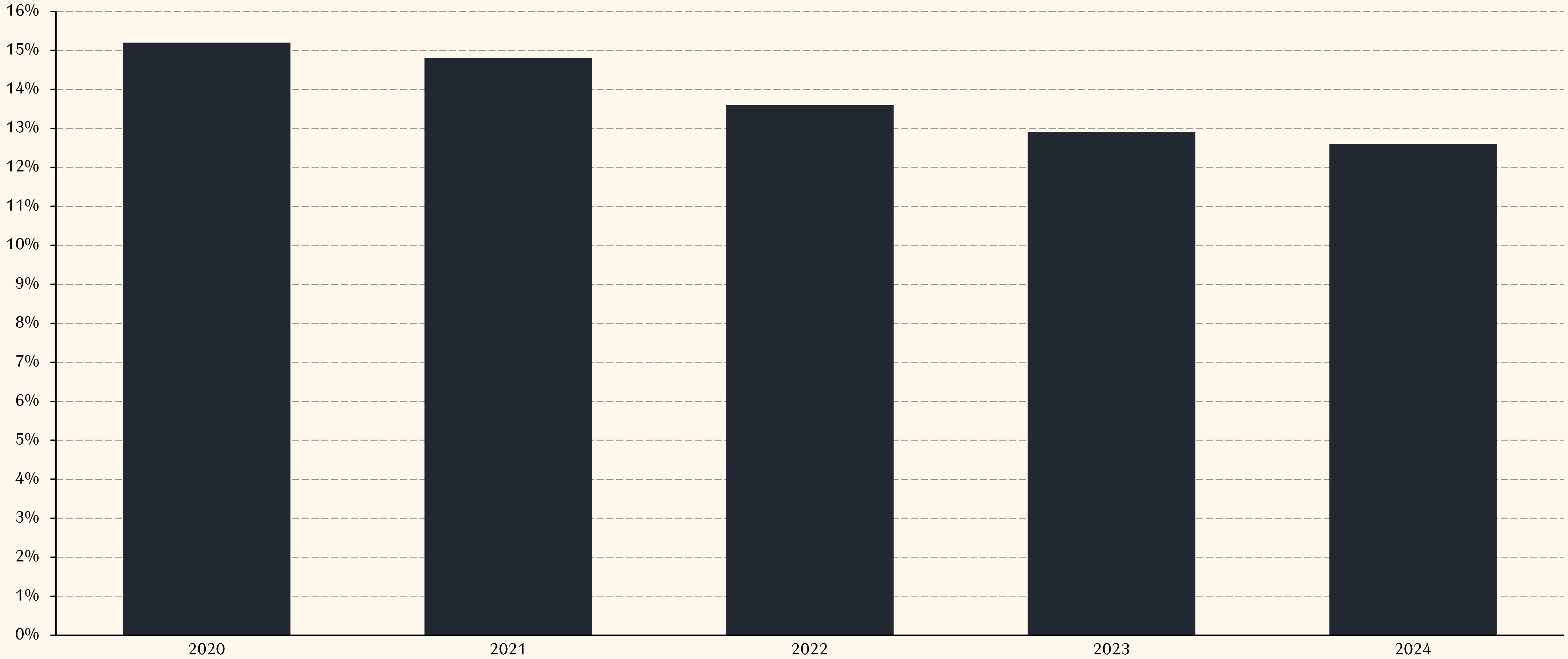
v.1/18/2025

Sources: Sensor Tower, Epyllion analysis

IDFA and social video have led mobile gaming to lose 2.6 percentage points of its share of all digital media time among U.S. adults since 2020 (a ~17% drop in time)

Epyllion
By Matthew Ball

Mobile Gaming's Share of Digital Media Time Among U.S. Adults



v.1/18/2025

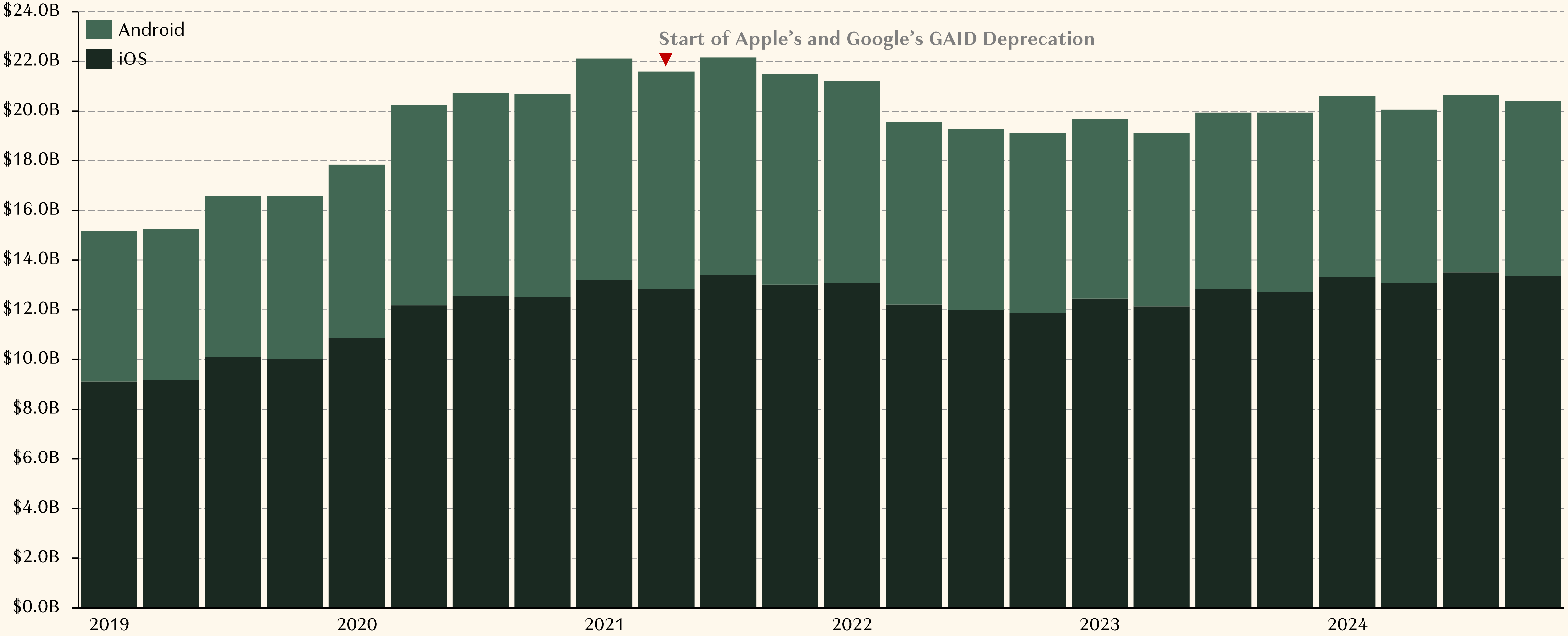
Sources: Emarketer, Epyllion analysis

After three years, global mobile gaming spending remains down 8% from its peak (*real* spending is down 23%). The competitive consequences are even greater...

EPYLLION
By Matthew Ball

Worldwide Mobile Game Revenues by Quarter

(Sensor Tower Measured Markets and Platforms)



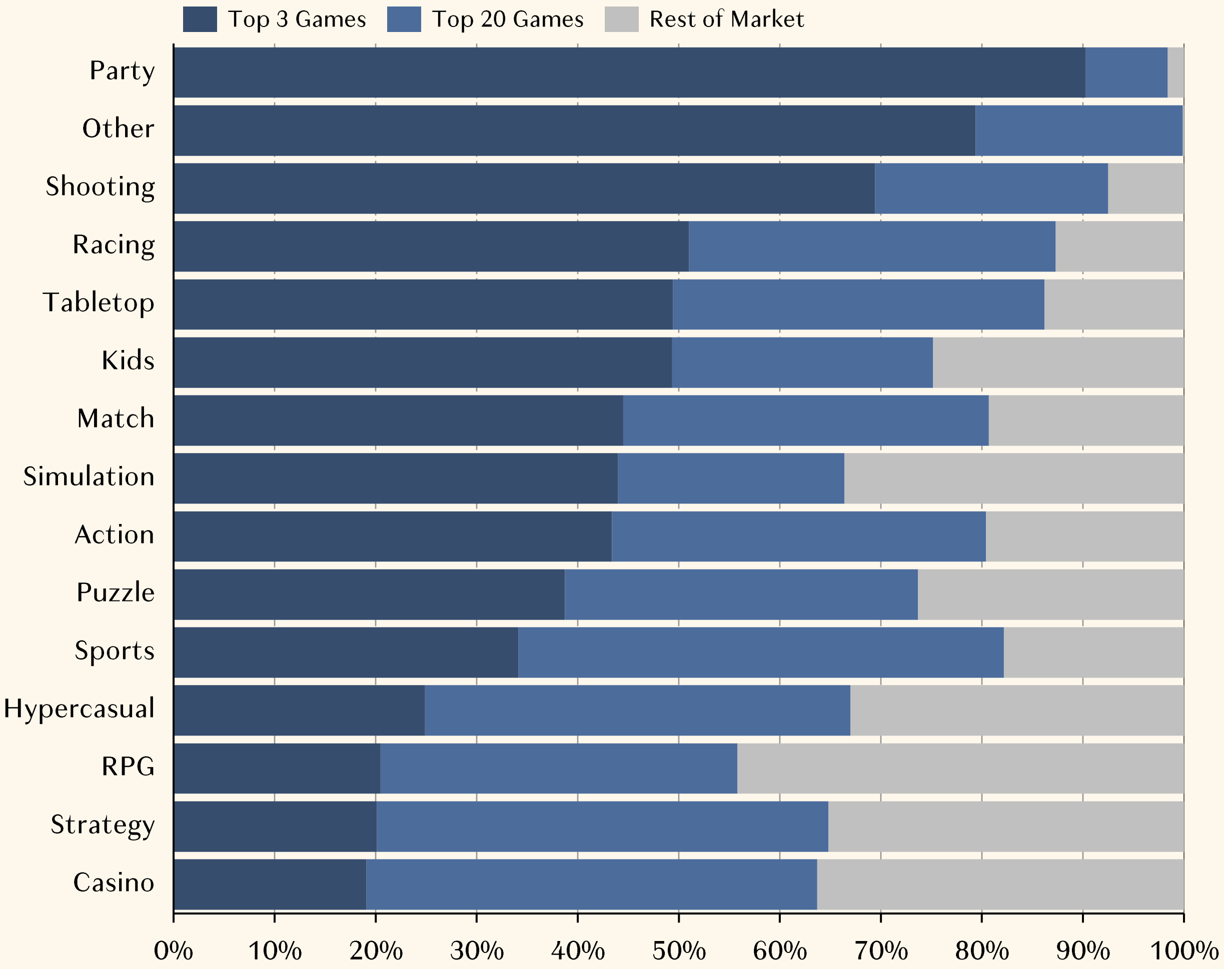
v.1/18/2025

Source: Sensor Tower

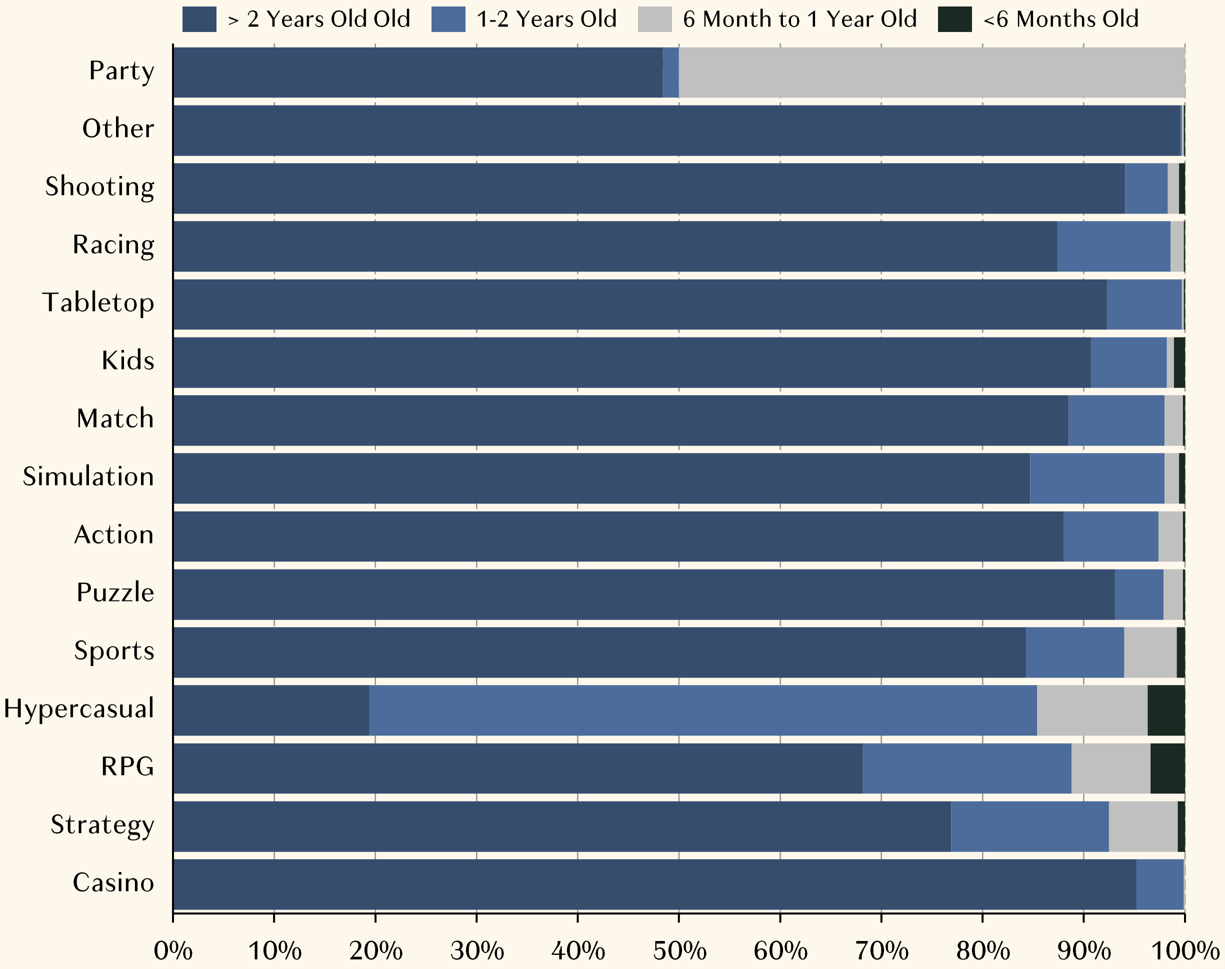
As mobile discovery, downloads, and revenues stagnated, competition ossified. The top 3 titles in the U.S. by genre are 40% of revenue; titles 2+ years old are 70%

EPYLLION
By Matthew Ball

Share of U.S. Mobile Game Revenues by Title Genre and Rank
(2023)



Share of U.S. Mobile Game Revenues by Title Genre and Age
(2023)



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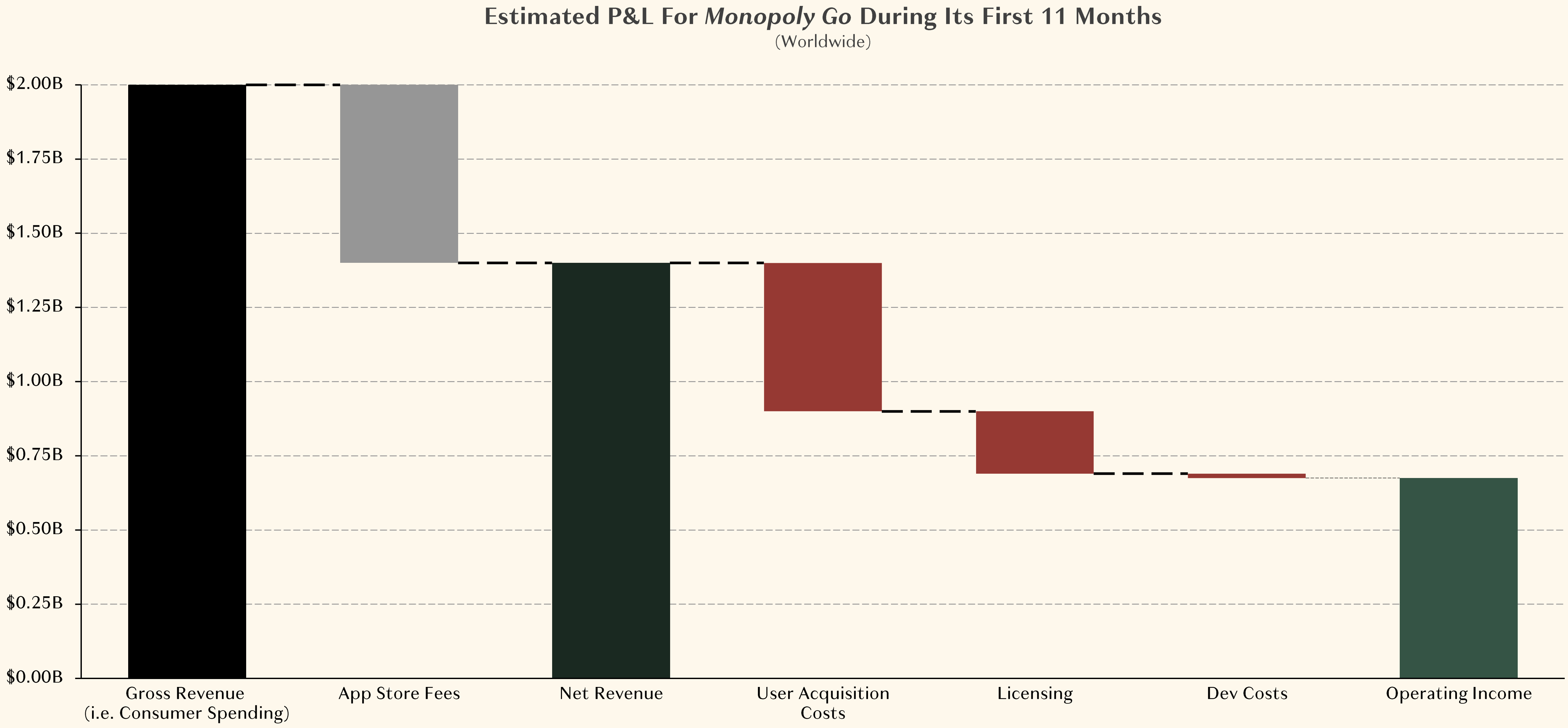
Sources: Sensor Tower / Data.ai

Consider that the biggest new game since 2020, *Monopoly Go!*, hit $2B in revenue in 11 months — but also spent $500MM on user acquisition (or 36% of net revenue)



v.1/18/2025

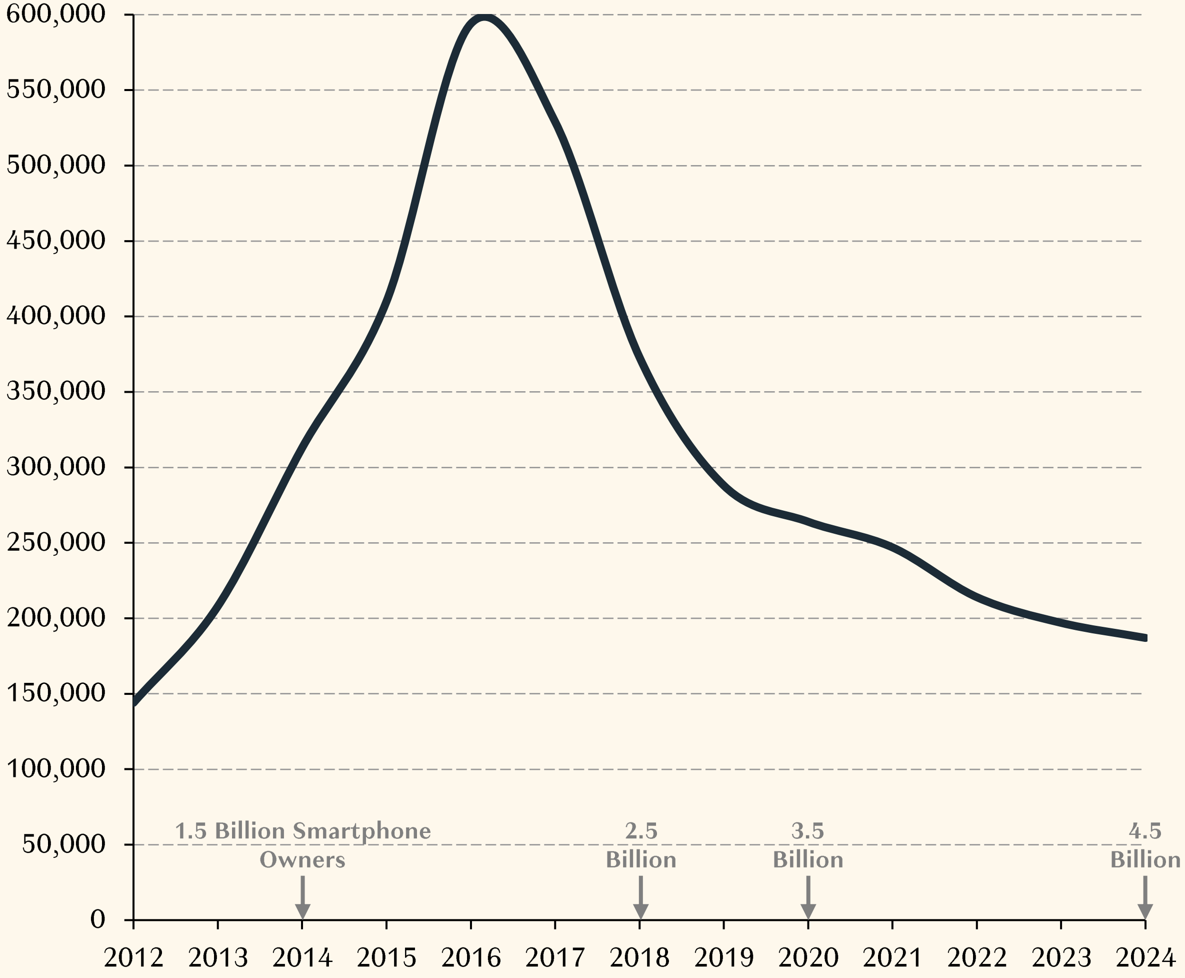
Sources: Hasbro, Game File / Stephen Totilo, Epyllion analysis

Or that while the number of smartphone owners has tripled since 2014 (1.5B to 4.5B), as has mobile gaming spend ($35B to $105B), there are *fewer* mobile games

EPYLLION
BY MATTHEW BALL

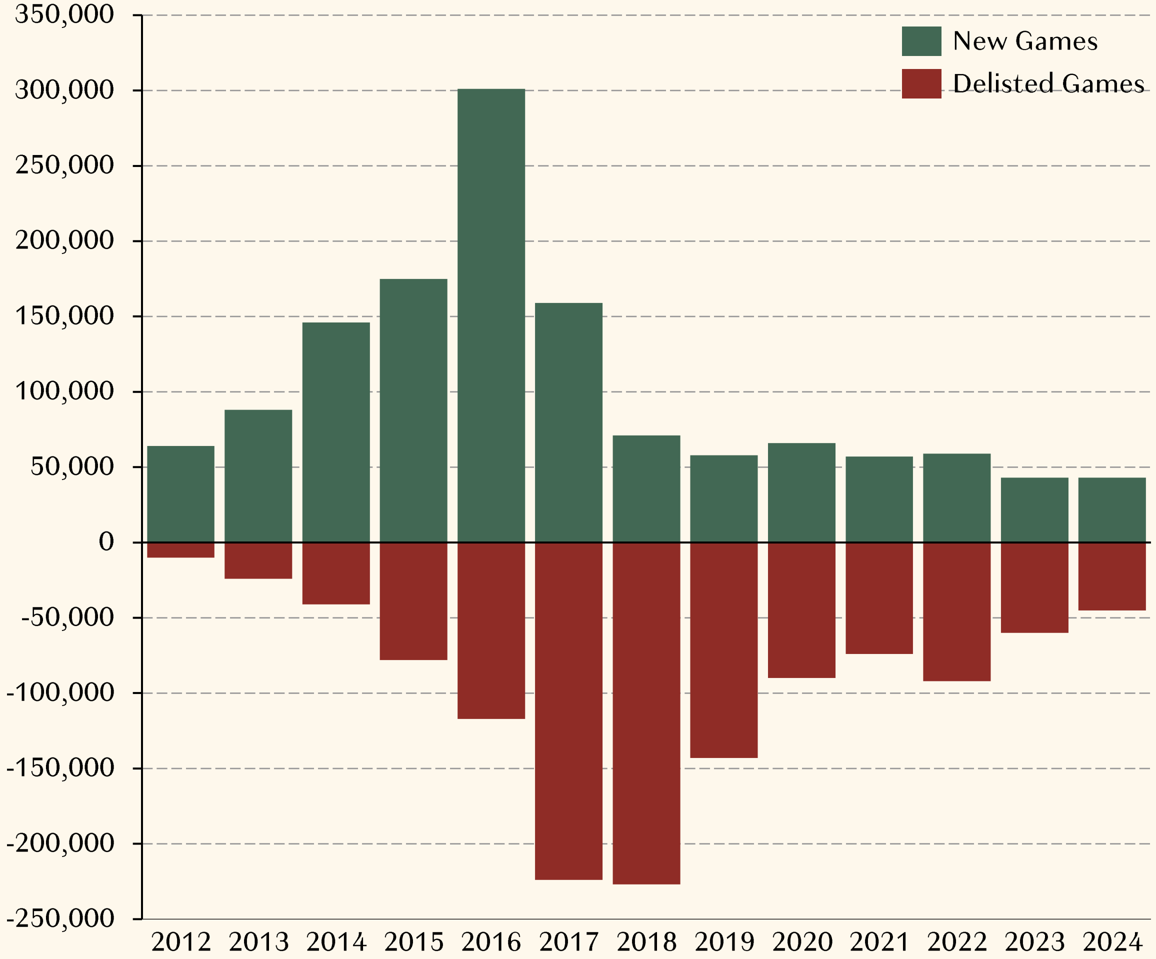
Number of Unique Mobile Games in the iOS App Store

(Worldwide; Had to Generate Any Revenue or Downloads in Year)



Annual Changes in Mobile Games on the iOS App Store

(Worldwide; Games that Generated No Revenue or Downloads in Year Counted as Delisted)

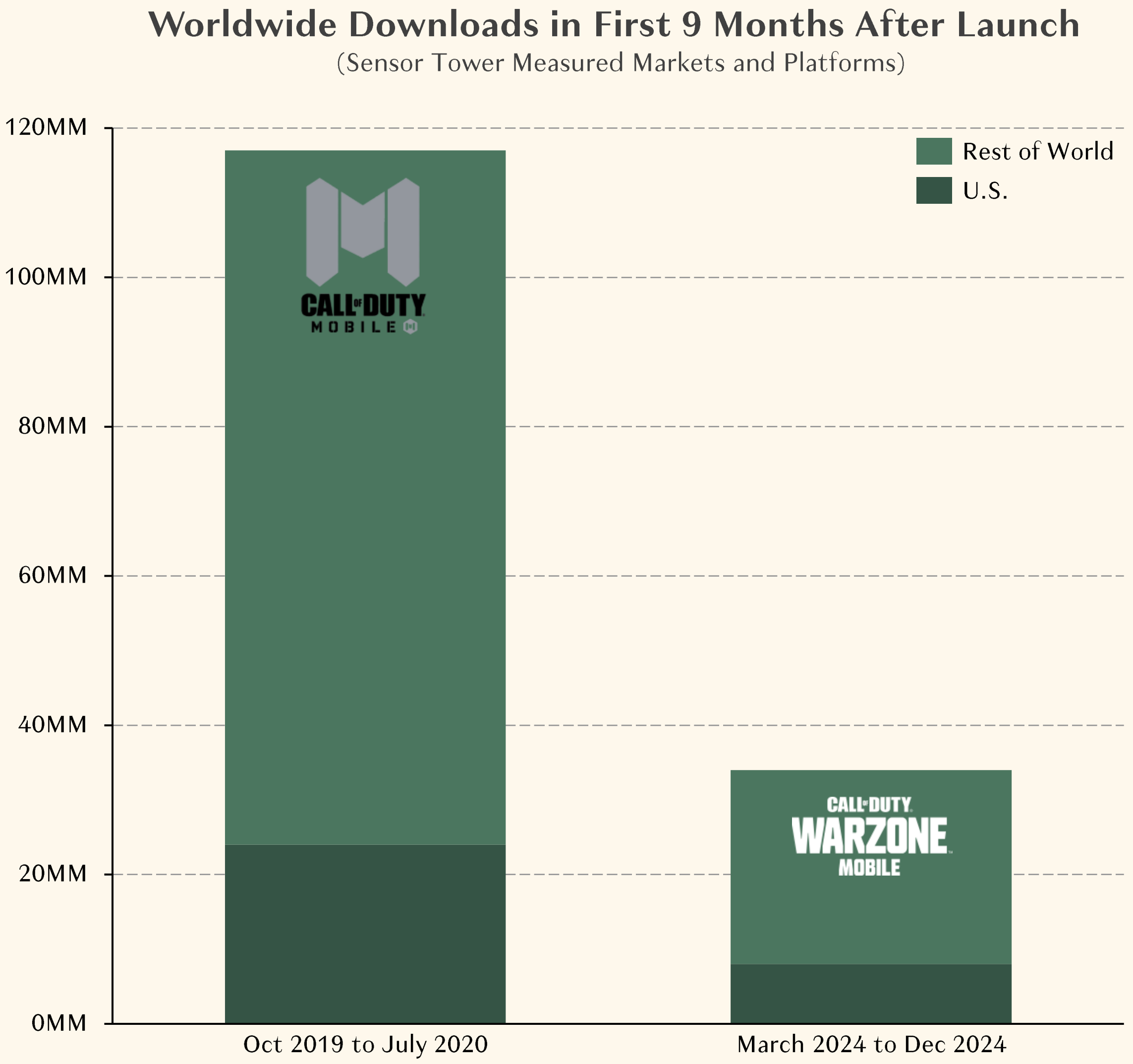


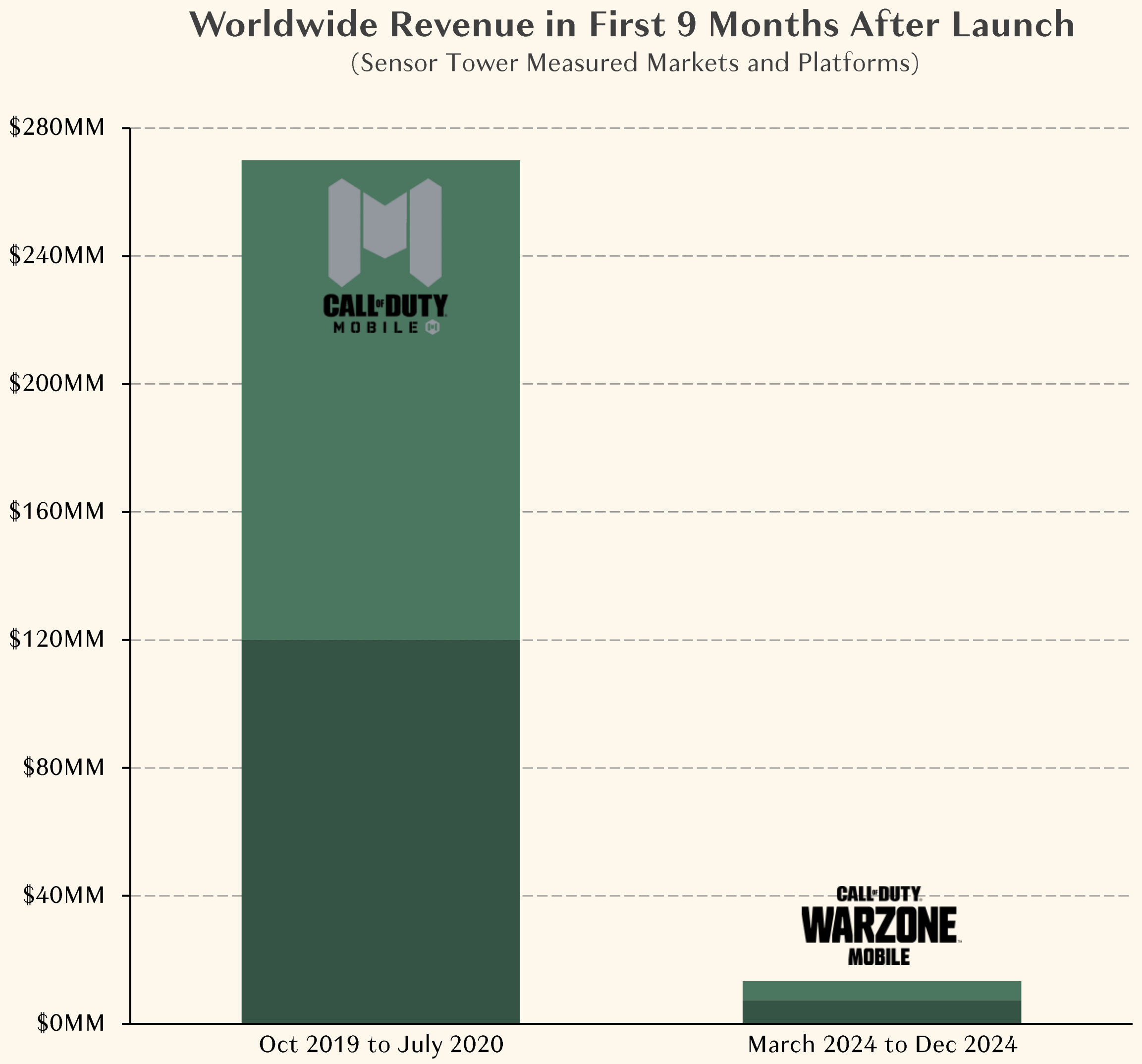
v.1/18/2025

Sources: Sensor Tower, Data.ai, Epyllion analysis

Even *Call of Duty* is struggling to launch new mobile titles. 2024's *Warzone* has only 30% of the downloads of 2019's *Mobile* after 9 months — and 5% of the spend

EPYLLION
By Matthew Ball





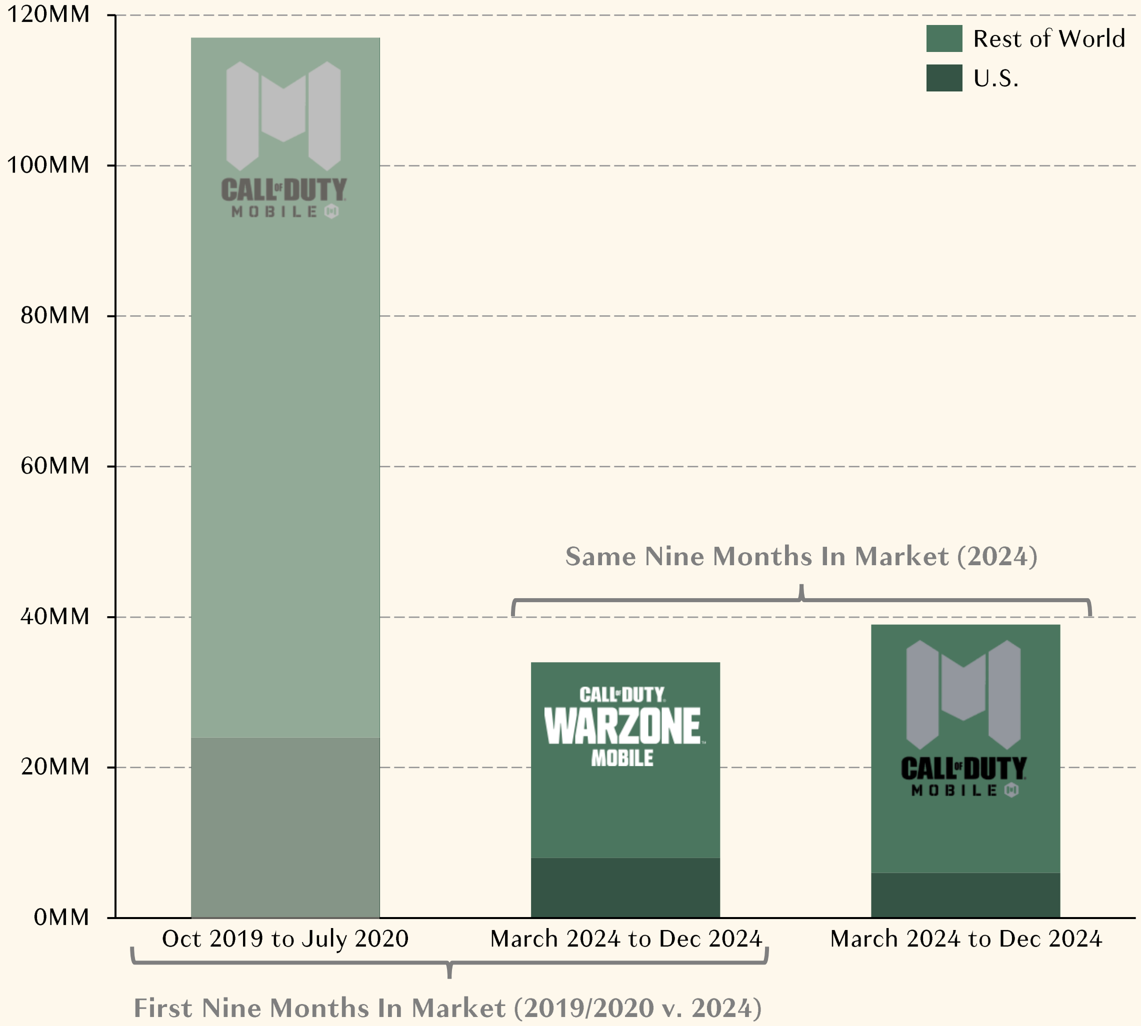
v.1/18/2025

Source: Sensor Tower

Fortunately, part of *Call of Duty: Warzone*'s challenge is that *Mobile* is still thriving. Yet this exemplifies the stickiness of aged titles versus newer, "better" substitutes

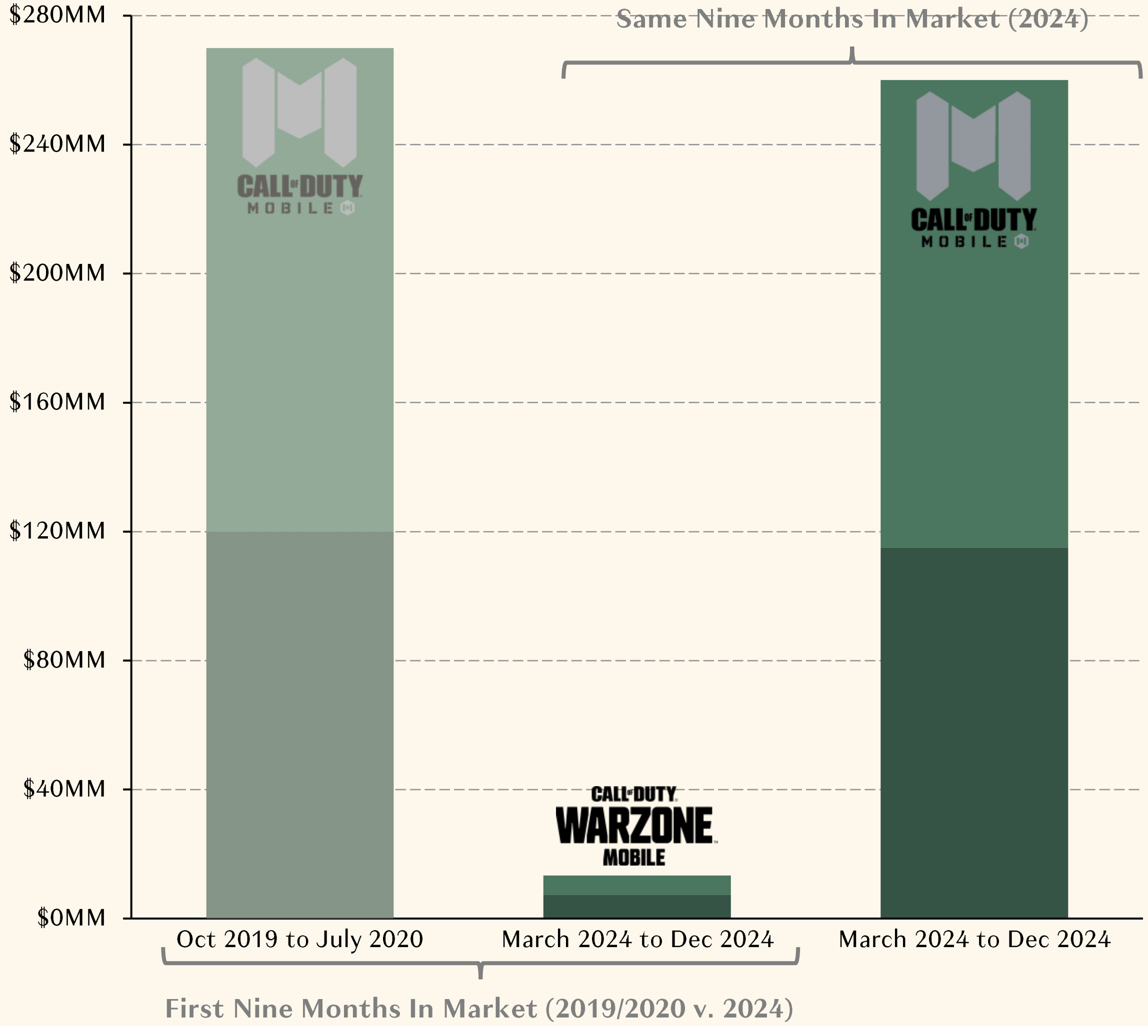
Worldwide Downloads Over Nine Months

(Sensor Tower Measured Markets and Platforms)



Worldwide Revenue Over Nine Months

(Sensor Tower Measured Markets and Platforms)



v.1/18/2025

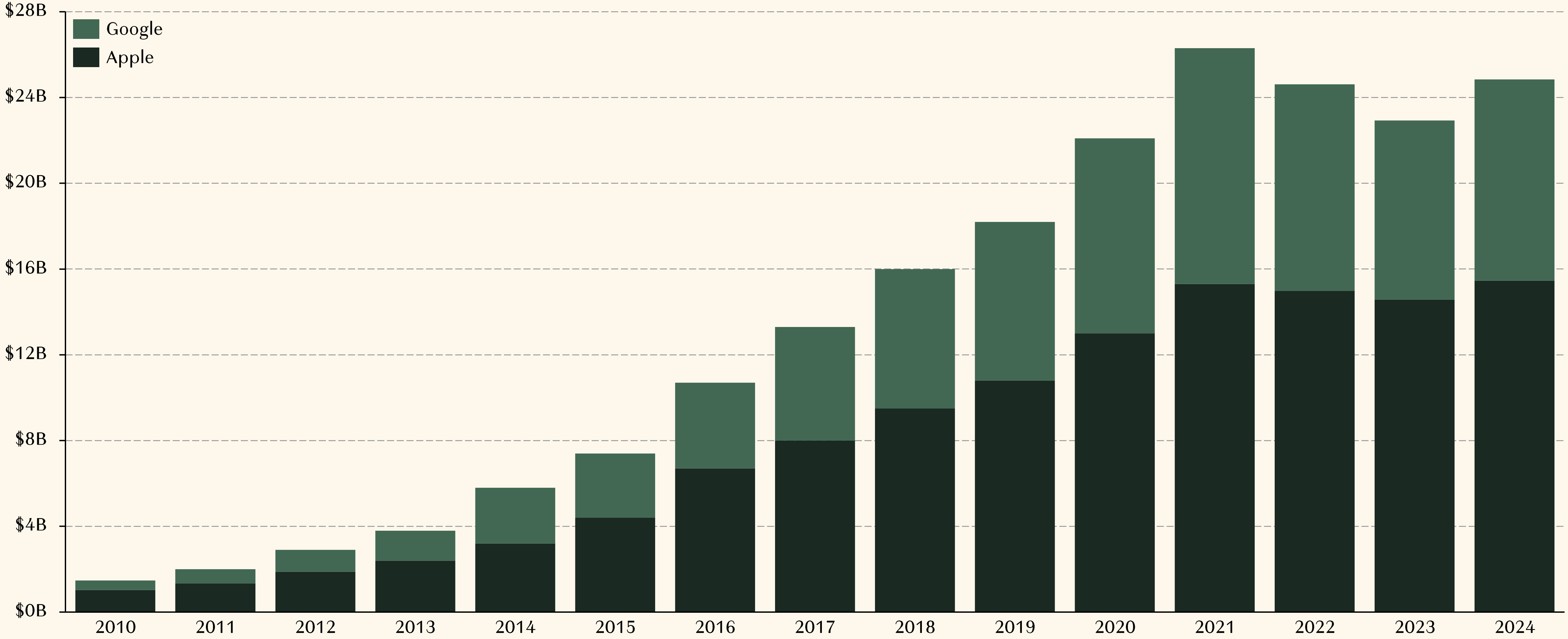
Sources: Sensor Tower, Epyllion analysis

With mobile gaming stagnated, app stores, which net $20B+ per year from mobile game developers, are facing renewed scrutiny over their commissions and policies

EPYLLION
By Matthew Ball

Total Worldwide App Store Revenue from Video Game Commissions

(Nominal Prices; Revenue Typically Estimated at 75–85% Profit Margins)



v.1/18/2025

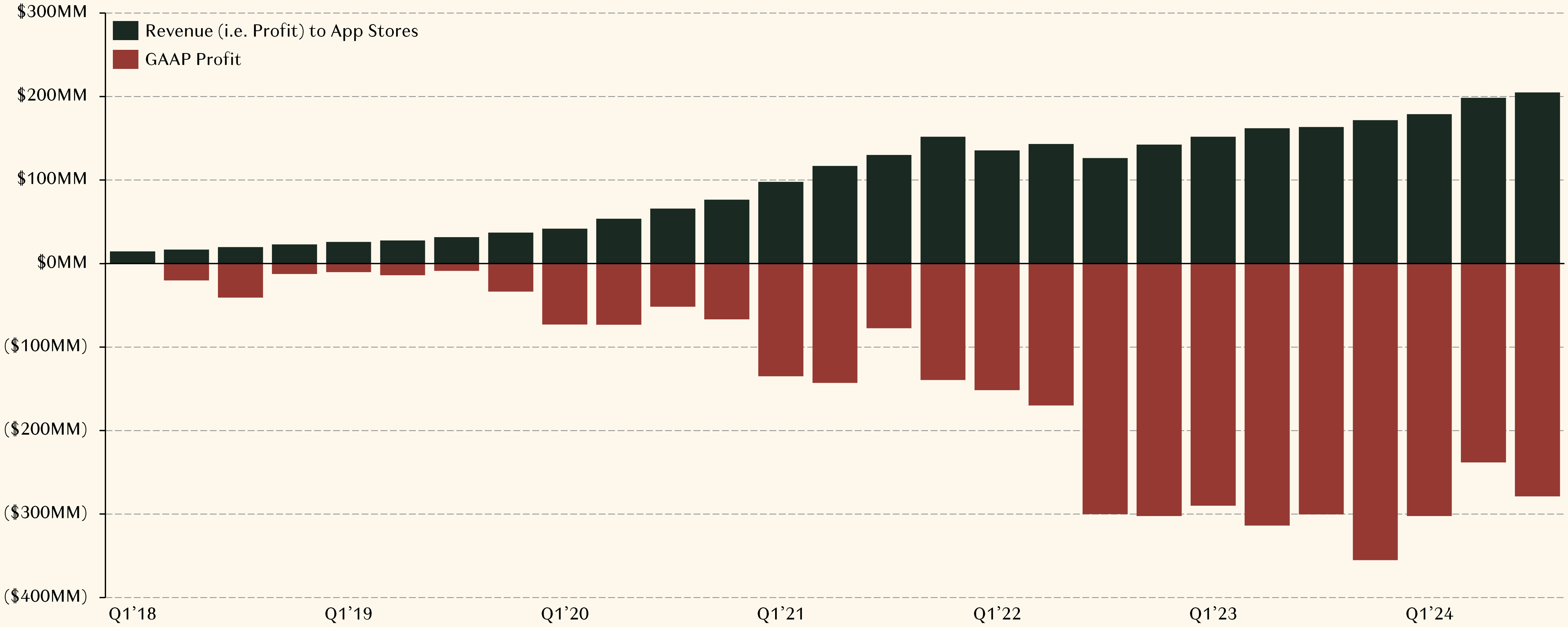
Sources: Pelham Smithers / Bloomberg, IDG, Newzoo, Meta, IDC, Epic Games, The Verge, E.U. Commission, U.S. Department of Justice, Epyllion analysis

Take Roblox, the top mobile game *ever*. For every $100 in player spend, Roblox pays app stores $22 (a sum that's nearly all profit for Apple/Google) and loses $35

EPYLLION
By Matthew Ball

Roblox Quarterly Payments to App Stores and Losses

(Blended / Based on Revenues from All Platforms)



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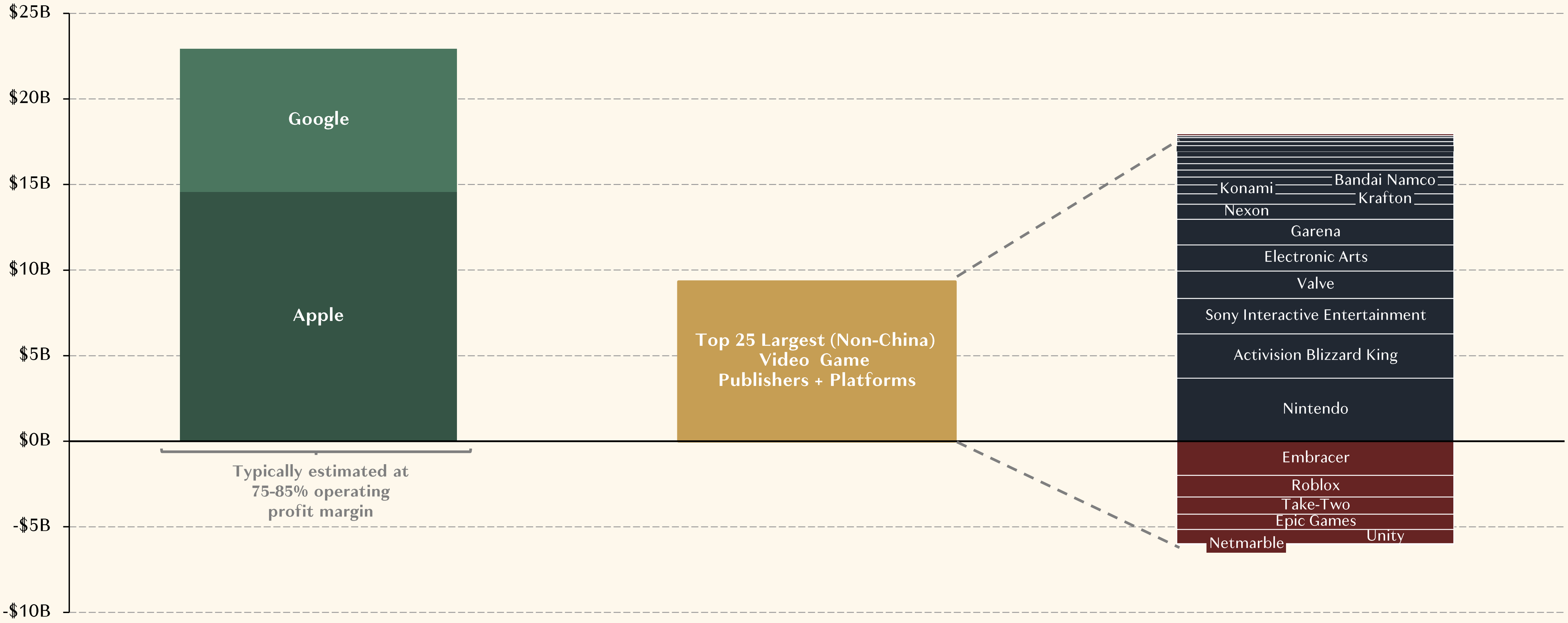
Source: Roblox, Epyllion analysis

Indeed, Apple and Google likely net more in profit from mobile game sales than all (non-China) mobile and non-mobile publishers and platforms combined

EPYLLION
By Matthew Ball

2023 App Store Commissions from Mobile Games vs. Operating Income of 25 Top (Non-China) Video Game Publishers + Platforms

(2023; Nominal Prices; Adjusted for Impairment Charges and Other Extraordinary Events)



Sources: Activision Blizzard, Bandai Namco, Capcom, CD Projekt, EA, Embracer, Epic Games, Sea, Konami, Krafton, NCSoft, Netmarble, Nexon, Nintendo, Playtika, Roblox, Sega, Sony, Square Enix, Take-Two, Ubisoft, Unity, Valve, Warner Bros. Discovery, Newzoo, Pelham Smithers / Bloomberg Sensor Tower, The Verge, E.U. Commission, U.S. Department of Justice, Epyllion analysis

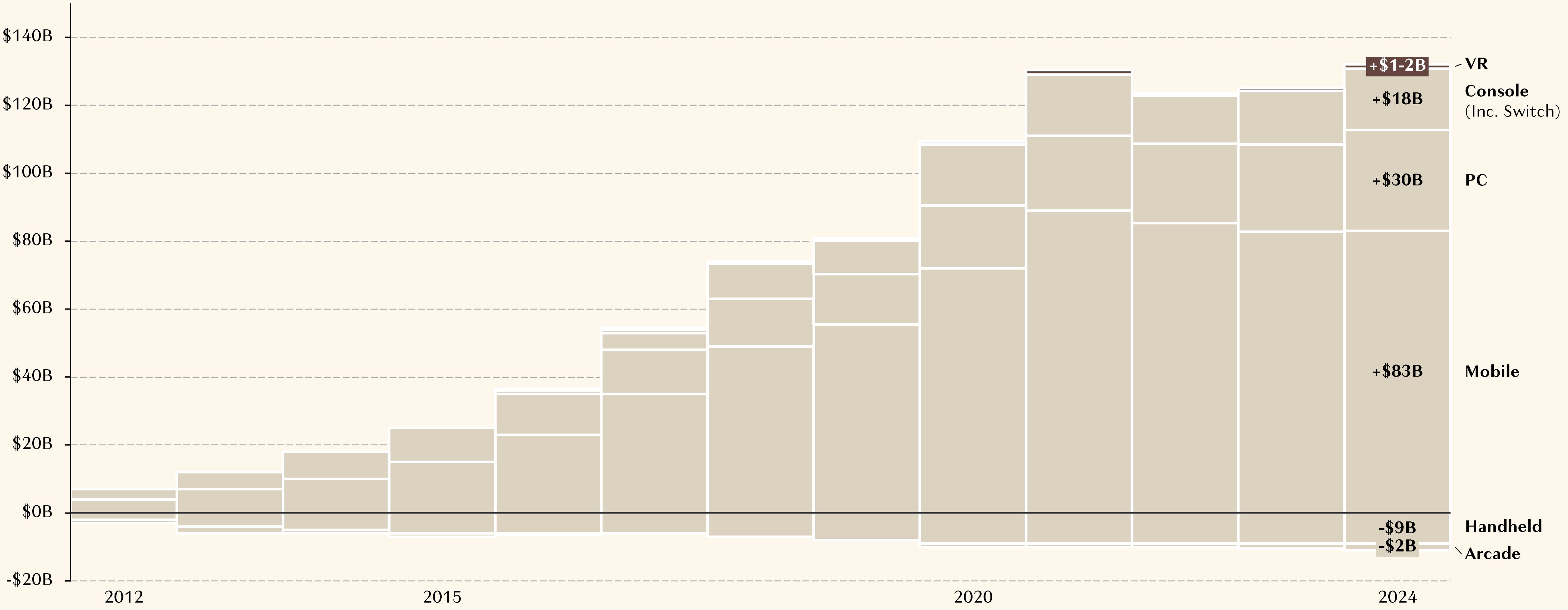
v.1/18/2025

Annual AR/VR content spend is up from $0 in 2011 to about $1–2B today, but this sum remains too small (and stagnant) to attract much gamemaker investment

EPYLLION
By Matthew Ball

Share of Growth in Worldwide Consumer Spending on Video Game Content Since 2011

(Nominal Prices; Arcade + Console + PC + Mobile + VR + Web; Excludes Hardware & Accessories; Excludes Web3/NFT)



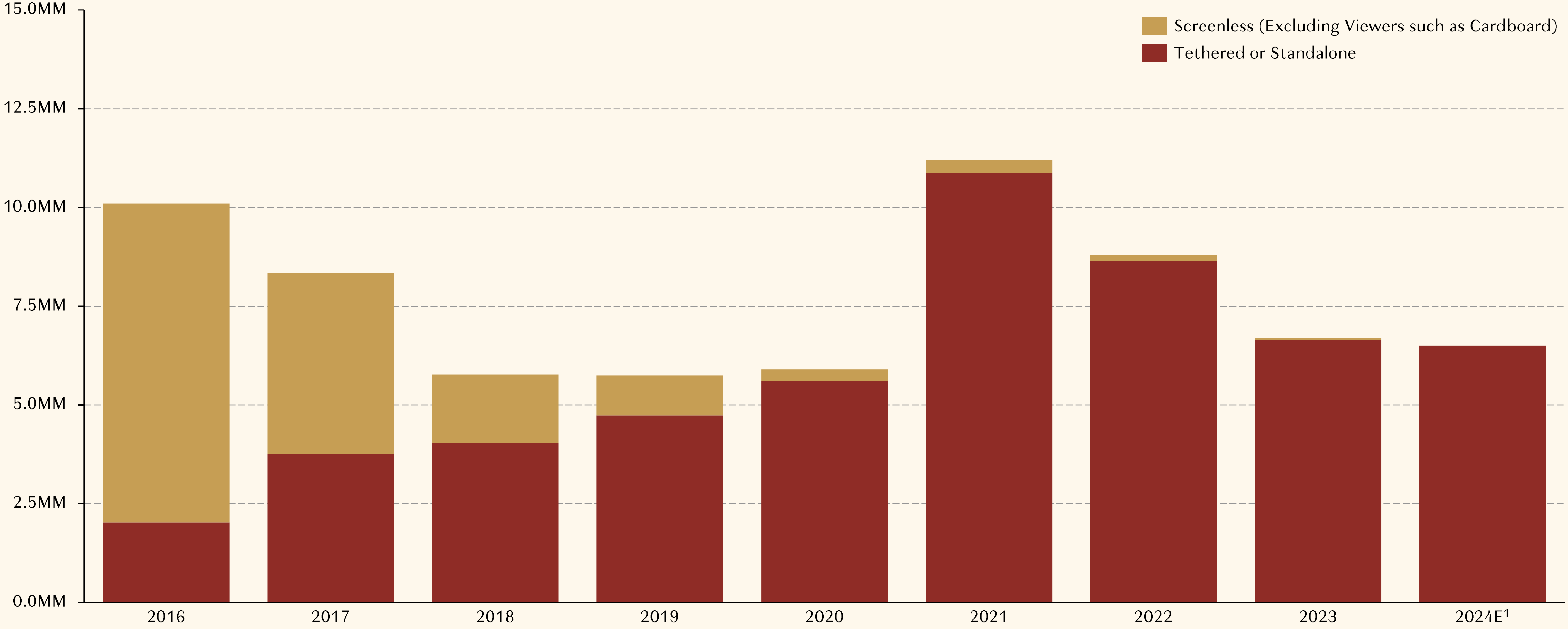
v.1/18/2025

Sources: Pelham Smithers / Bloomberg, IDG, Newzoo, Meta, IDC, Epyllion analysis

And though AR/VR devices have improved substantially in performance and form factor, sales are down-to-flat (especially after accounting for periodic upgrades)

EPYLLION
By Matthew Ball

Annual AR/VR Headset Shipments, Actuals and Forecasts by Year
(Worldwide)



v.1/18/2025 *Notes: ¹Full year estimate as of December 2024*

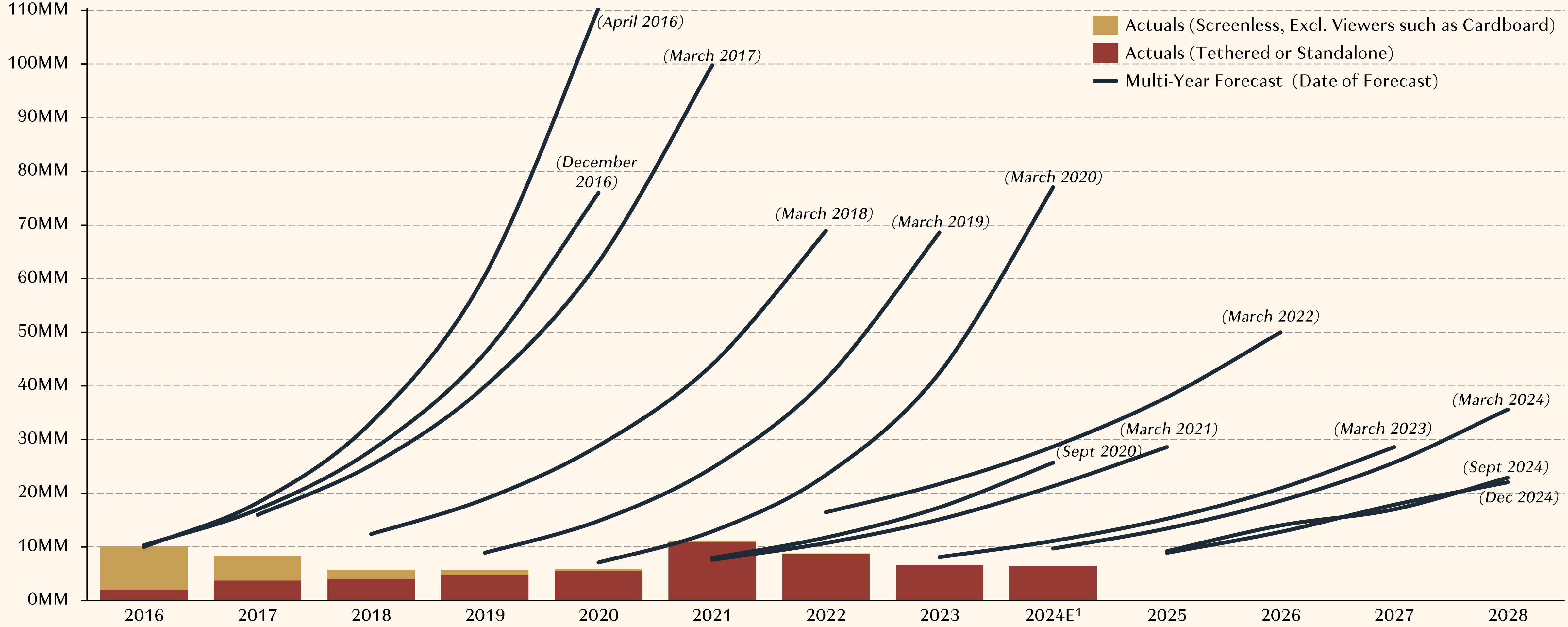
Source: IDC

AR/VR sales are also way behind forecasts. IDC now estimates 6-7MM headsets sold in 2024. Only a few years ago, IDC predicted 6-7MM per quarter (if not *month*)

EPYLLION
By Matthew Ball

Annual AR/VR Headset Shipments According to IDC, Actuals and Forecasts by Year

(Worldwide, Including MR and XR)



v.1/18/2025 Notes: ¹*Full year estimate as of December 2024*

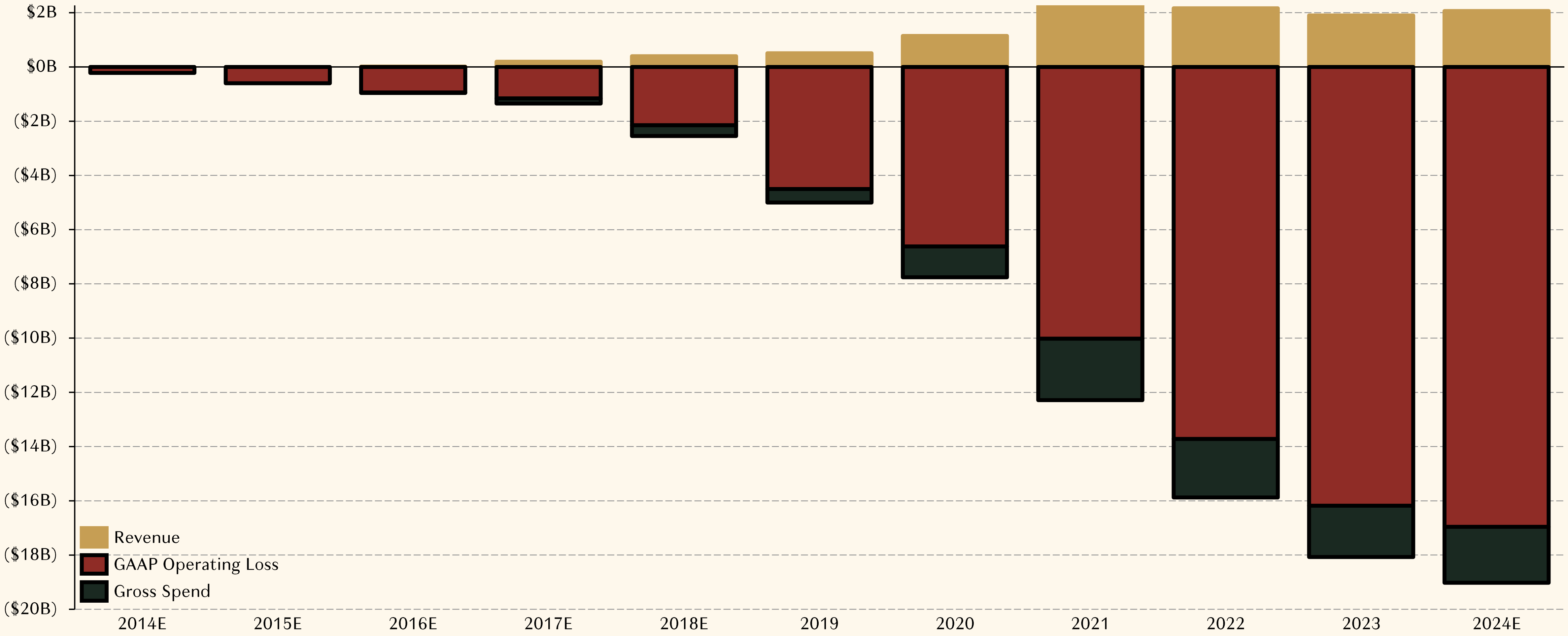
Sources: IDC, Epyllion analysis

Though focused on building a general-purpose computing platforms (vs a gaming console), Meta's Reality Labs has now spent ~$84B on AR/VR, with ~$74B in losses

EPYLLION
By Matthew Ball

Annual Meta Reality Labs Annual GAAP P&L[1]

(Worldwide)



v.1/18/2025 *Notes: [1] The total figures exceed the commonly-reported totals as Meta has only disclosed the P&L as of 2019 and on, rather than from its establishment in 2014*

Source: Meta, Epyllion analysis

EPYLLION

A Rough Three Years and the End of the 2011-2021 Growth Wave

The Mobile Marketplace in 2025

A (Brief) Review of AR/VR Forecasts and Disappointments

How Much (and Where) Console/PC Has Grown

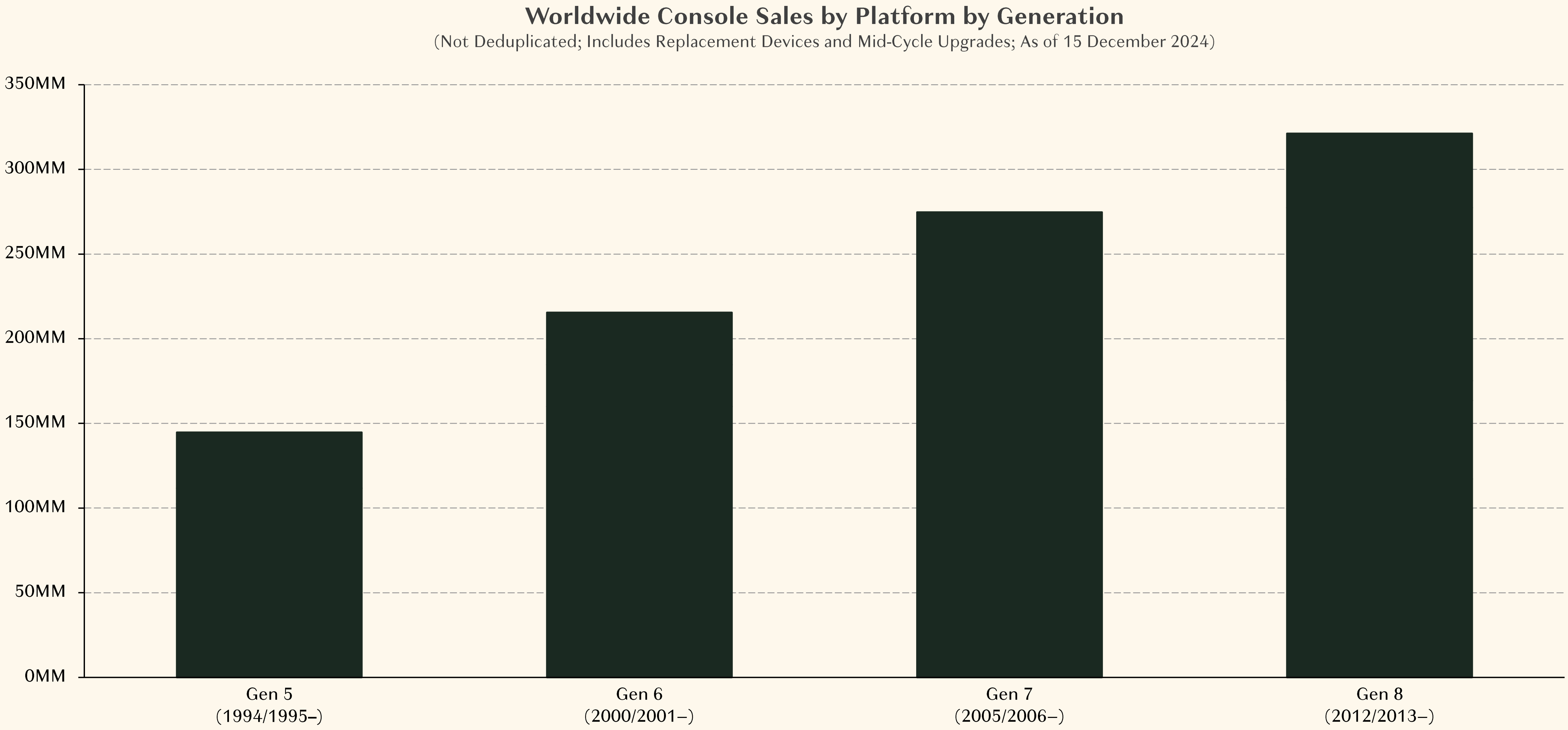
The Relevance of China (and Other Emerging Markets)

The Hostility of the Modern Console/PC Content Marketplace

How Player, Playtime, and Player Spend Might Return to Growth

The billions spent on each console generation on R&D, subsidies, content, etc., do seem to be growing penetration. Gen 8 outsold Gen 6 by over 50%

EPYLLION
By Matthew Ball



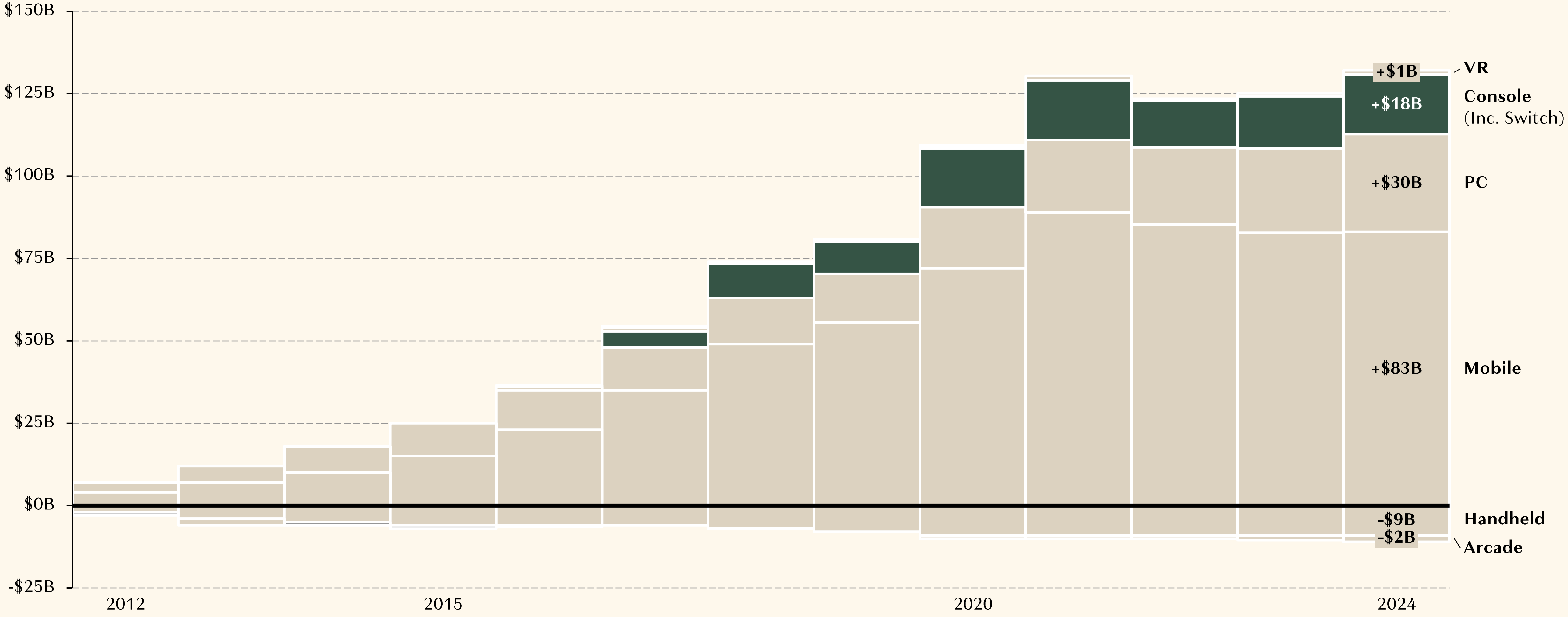
v.1/18/2025

Sources: VGChartz, Nintendo, Sony

And total console content spend is also $18B higher in 2024 than it was in 2011, a roughly 75% increase

EPYLLION
By Matthew Ball

Share of Growth in Worldwide Consumer Spending on Video Game Content Since 2011
(Nominal Prices; Arcade + Console + PC + Mobile + VR + Web; Excludes Hardware & Accessories; Excludes Web3/NFT)



v.1/18/2025

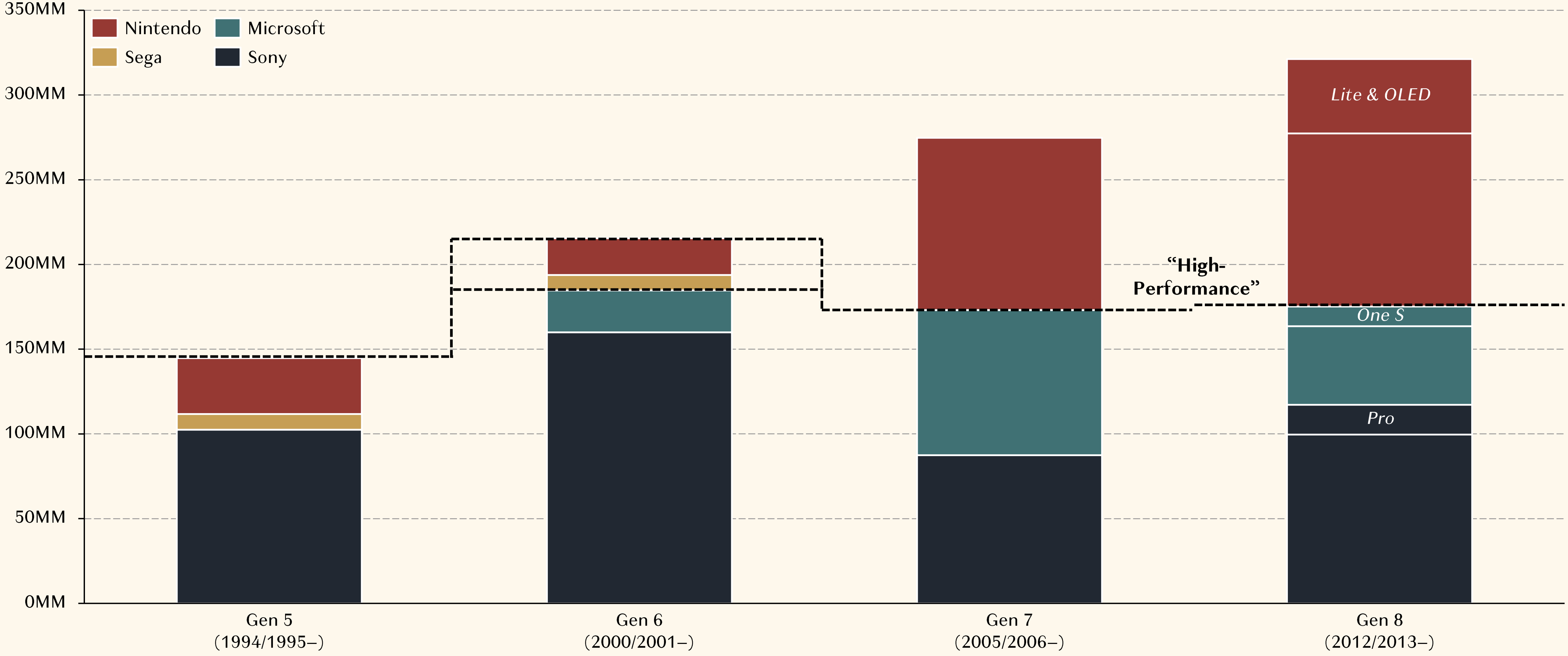
Sources: Pelham Smithers / Bloomberg, IDG, Newzoo, Meta, IDC, Epyllion analysis

Yet all Gen 7+8 growth is Nintendo. Gen 7+8 sales were also boosted by a lengthier cycle (more replacements + household growth) and Gen 8 from mid-gen upgrades

EPYLLION
By Matthew Ball

Worldwide Console Sales by Platform by Generation

(Not Deduplicated; Includes Replacement Devices and Mid-Cycle Upgrades; As of 15 December 2024)



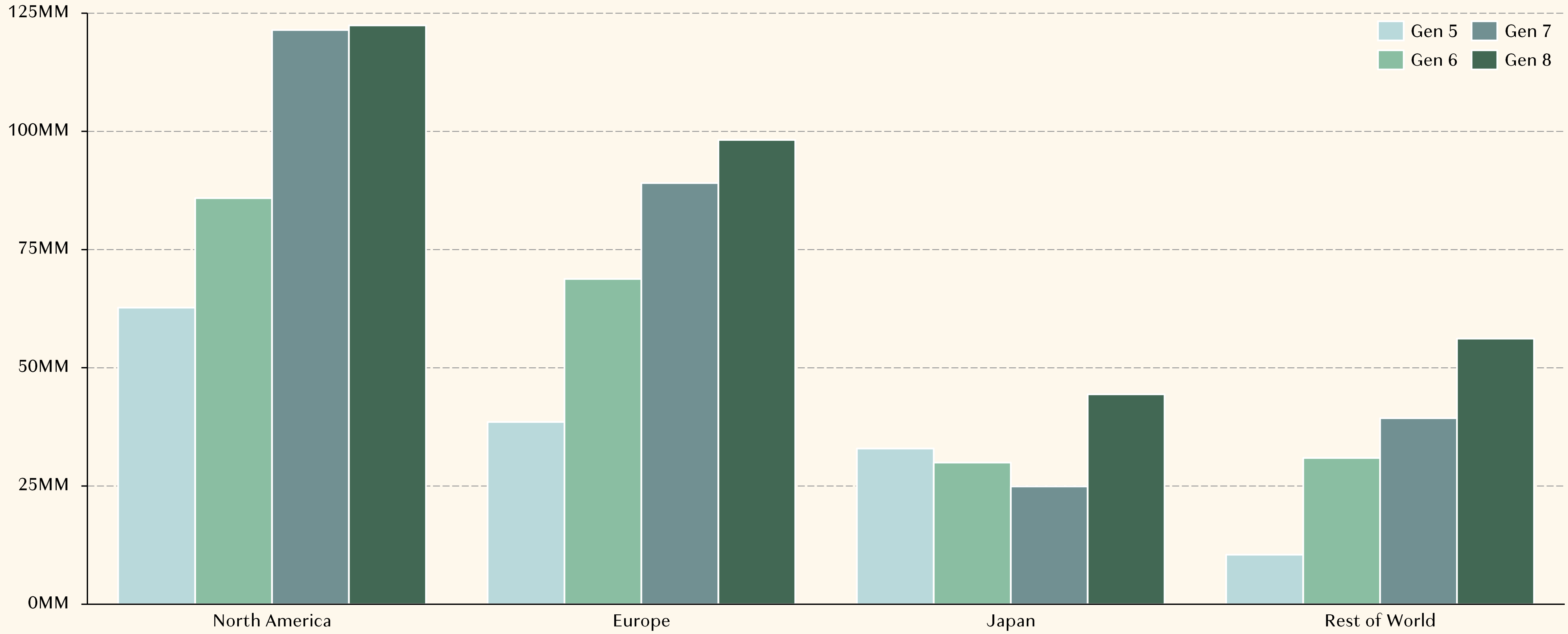
Sources: VGChartz, Nintendo, Sony, Circana, Epyllion analysis

And even with more upgrades and replacement buys, total American and European console sales are ~flat versus a decade ago. Only Japan and ROW materially grew

EPYLLION
By Matthew Ball

Regional Console Sales by Platform by Generation

(Not Deduplicated; Includes Replacement Devices and Mid-Cycle Upgrades; As of 15 December 2024)

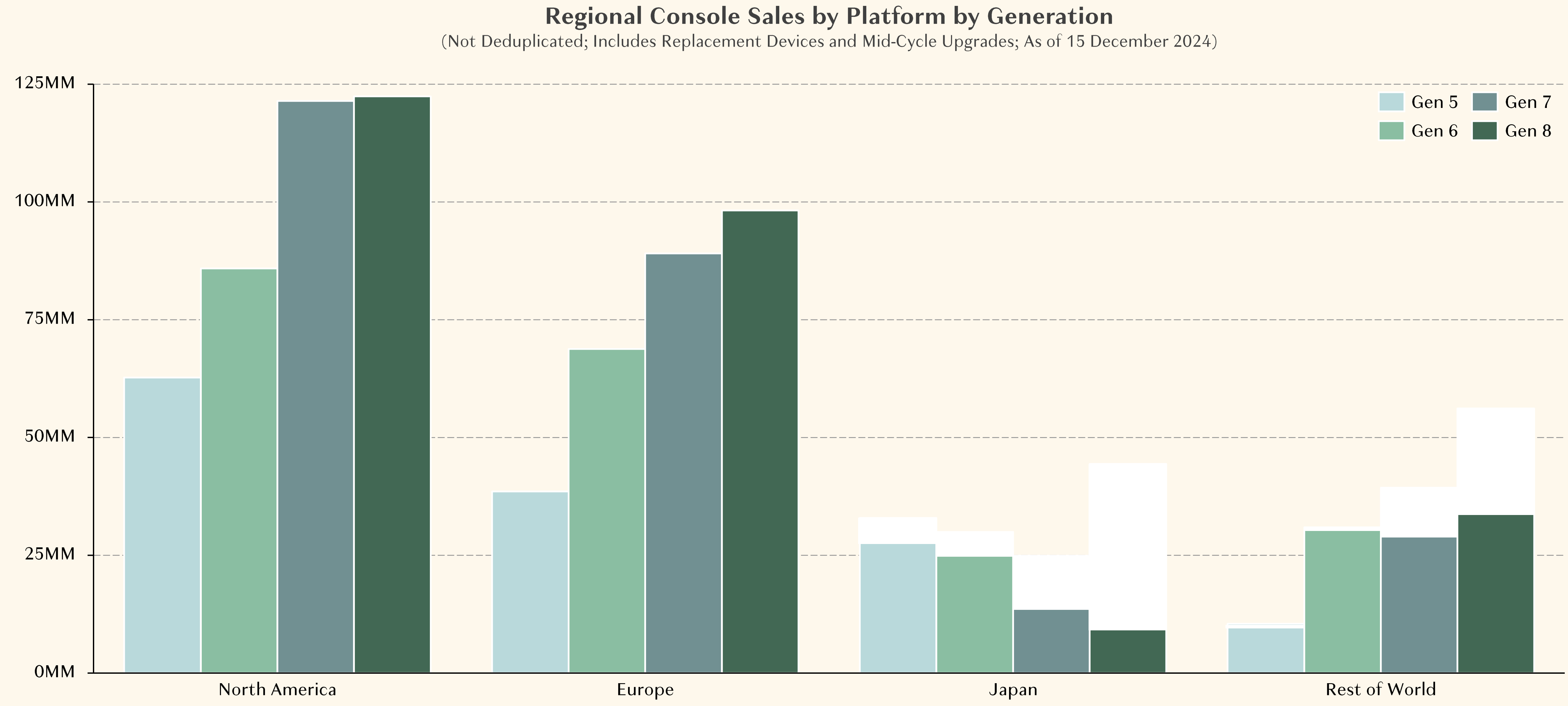


v.1/18/2025

Sources: VGChartz, Nintendo, Sony

…But the *entirety* of Gen 6–8 console growth in Japan and ROW is Nintendo. And in Japan, both PlayStation and Xbox declined in Gen 8

EPYLLION
By Matthew Ball


Regional Console Sales by Platform by Generation
(Not Deduplicated; Includes Replacement Devices and Mid-Cycle Upgrades; As of 15 December 2024)

v.1/18/2025

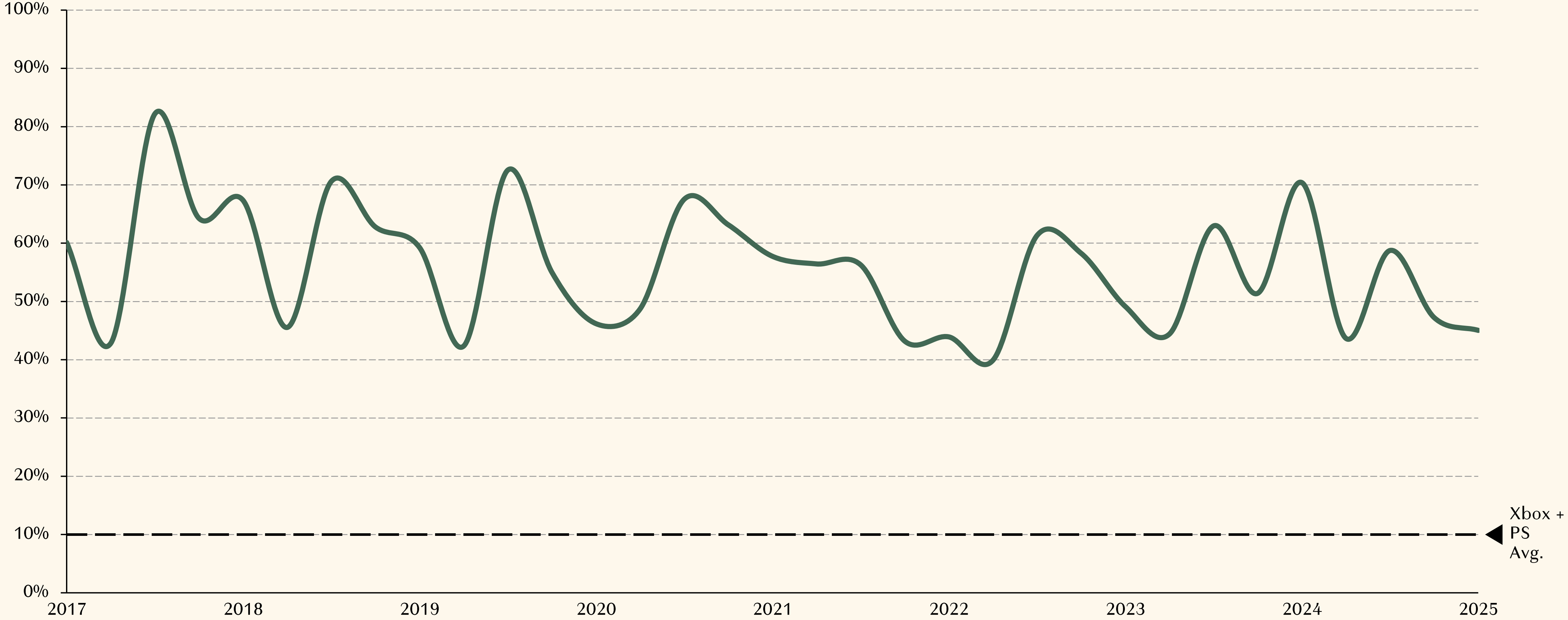
Sources: VGChartz, Nintendo, Sony

And Switch mostly benefits Nintendo. Switch users buy 25–33% fewer games than PS/Xbox owners, and over half of sales are Nintendo's games (vs. 10% on PS/Xbox)

EPYLLION
BY MATTHEW BALL

Proportion of Gross Software ("Content") Sales on the Nintendo Switch that are 1st-Party (i.e. Nintendo) Titles

(By Fiscal Year)

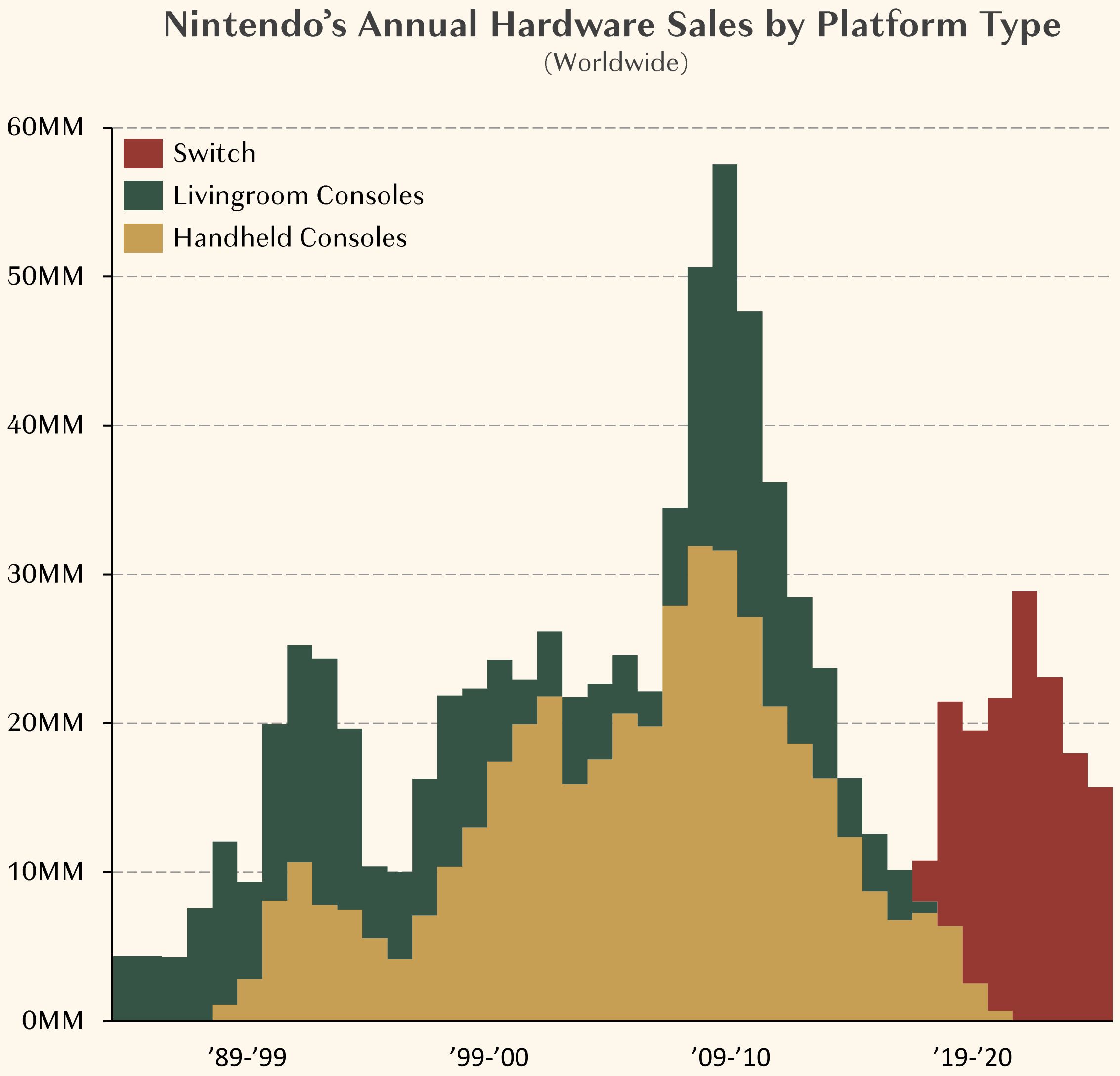


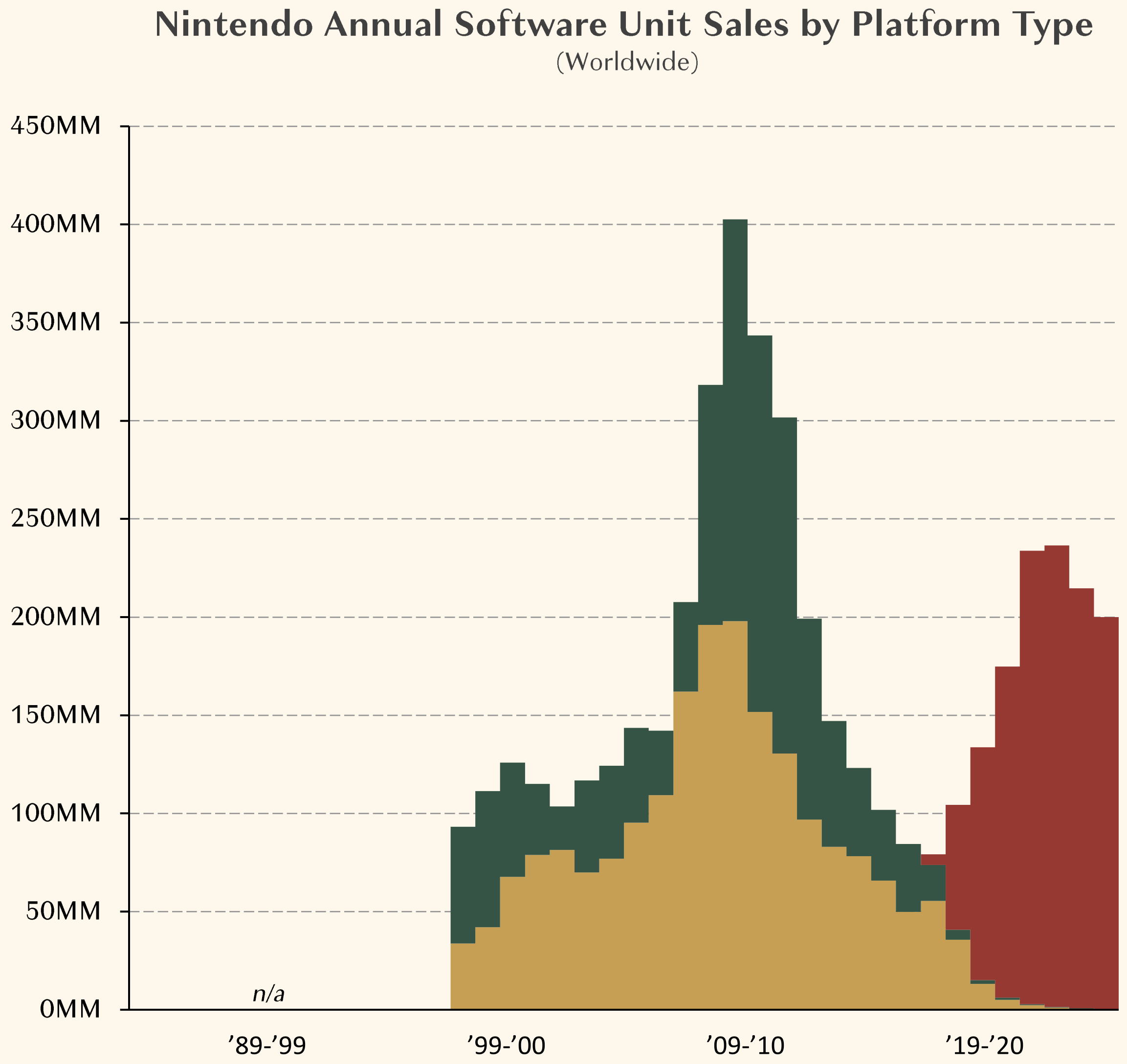
v.1/18/2025

Sources: VGChartz, Nintendo, Niko Partners & Daniel Ahmad, Epyllion analysis

Switch's extraordinary sales are, for the most part, not from net new players but from the cannibalization of two console form factors (livingroom and handheld)

EPYLLION
By Matthew Ball





v.1/18/2025

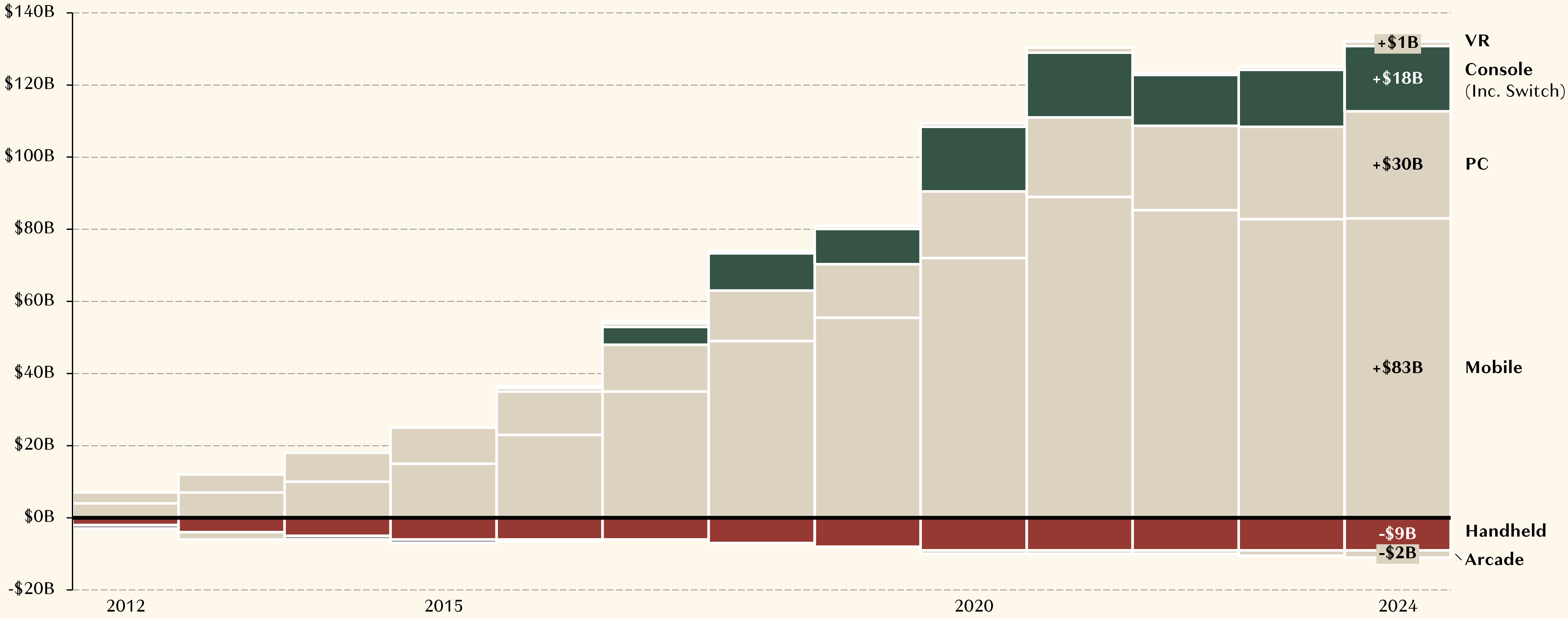
Source: Nintendo

The decline of handheld revenues (-$9B since 2011) also offsets roughly half livingroom growth ($18B). Combined console is up a more modest $9B, or 28%

EPYLLION
By Matthew Ball

Share of Growth in Worldwide Consumer Spending on Video Game Content Since 2011

(Nominal Prices; Arcade + Console + PC + Mobile + VR + Web; Excludes Hardware & Accessories; Excludes Web3/NFT)



v.1/18/2025

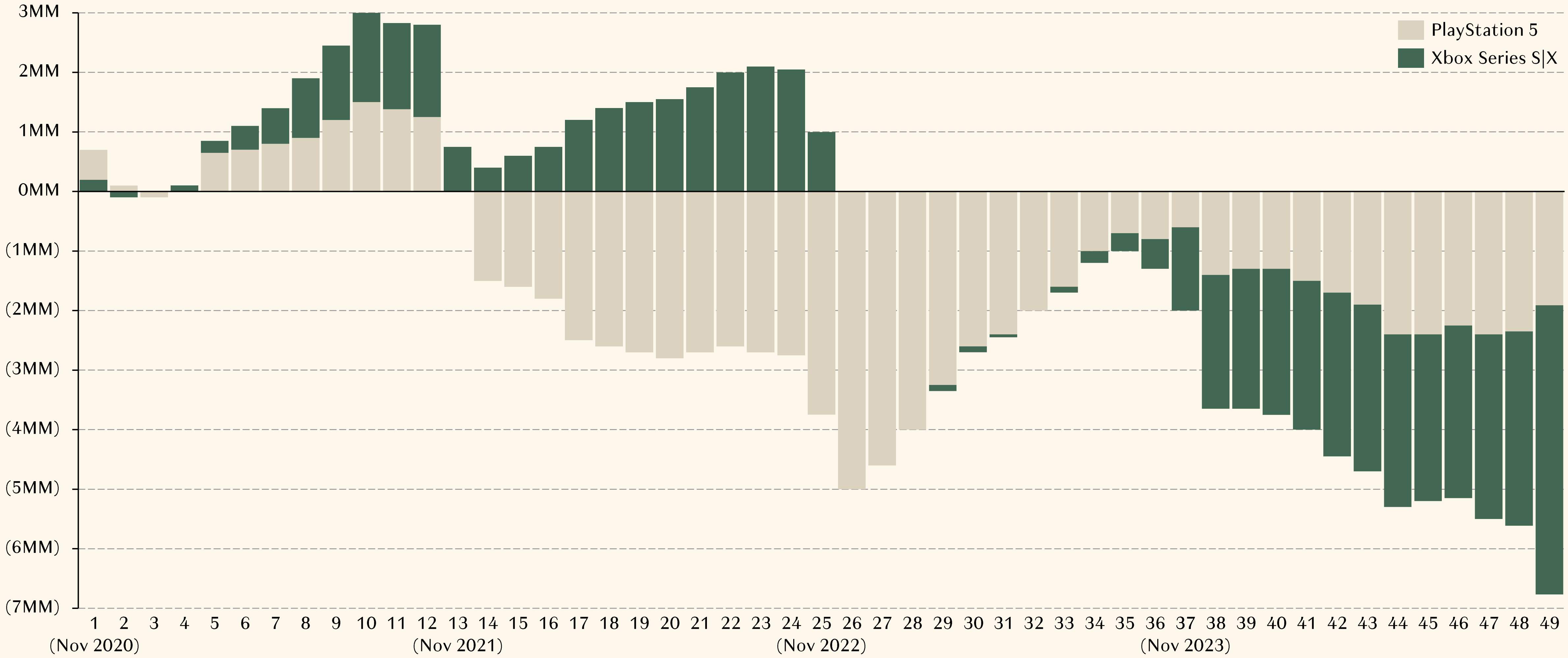
Sources: Pelham Smithers / Bloomberg, Newzoo, data.ai / Sensor Tower, IDG, Epyllion analysis

And while Switch 2 is a likely mega-hit, Gen 9 PlayStation & Xbox sales are both down versus Gen 8 after 49 months — now a combined 6.8MM shortfall (or -6.4%)

EPYLLION
By Matthew Ball

Net Sales Delta of Generation 9 Platform Console Sales Compared to Generation 8 by Month Since Release

(Worldwide)



v.1/18/2025

Sources: VGChartz, Epyllion analysis

PC is a big bright spot, adding 65% more content spend than livingroom console since 2011 and 225% more than combined console, or $30B in total

EPYLLION
By Matthew Ball

Share of Growth in Worldwide Consumer Spending on Video Game Content Since 2011

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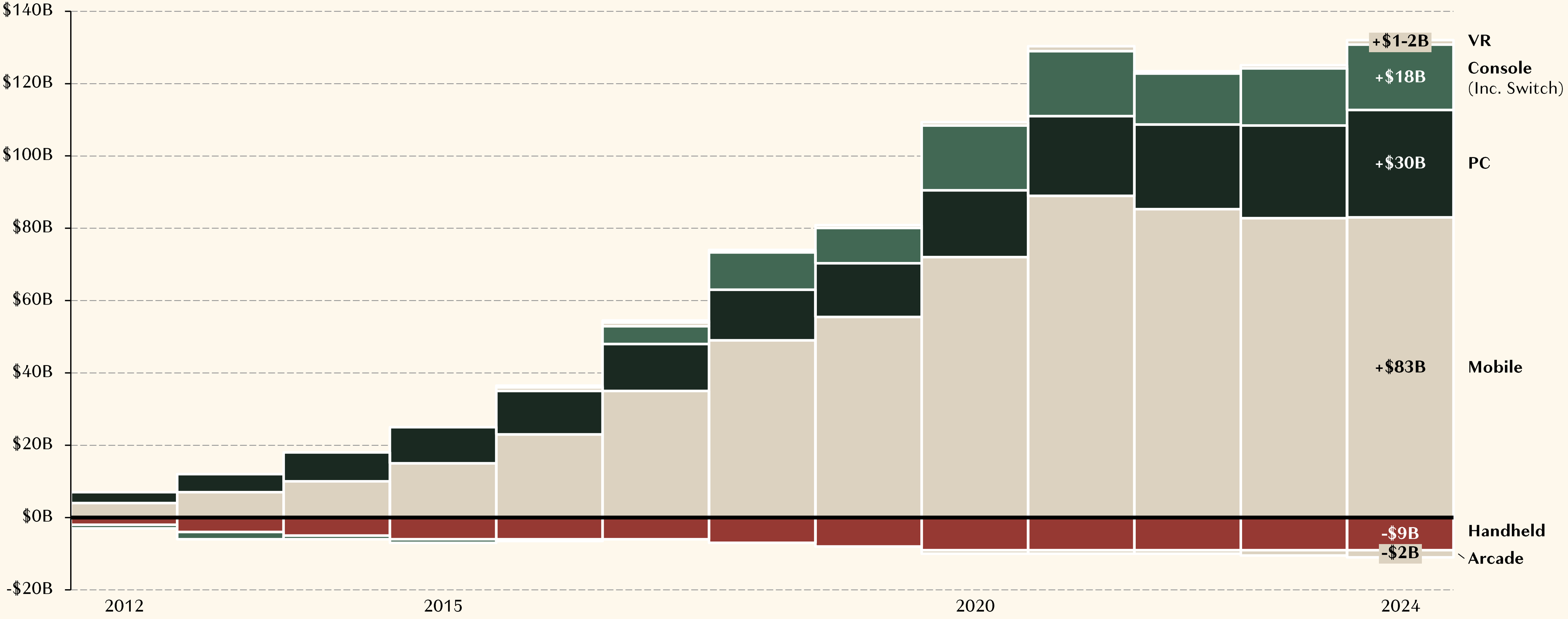
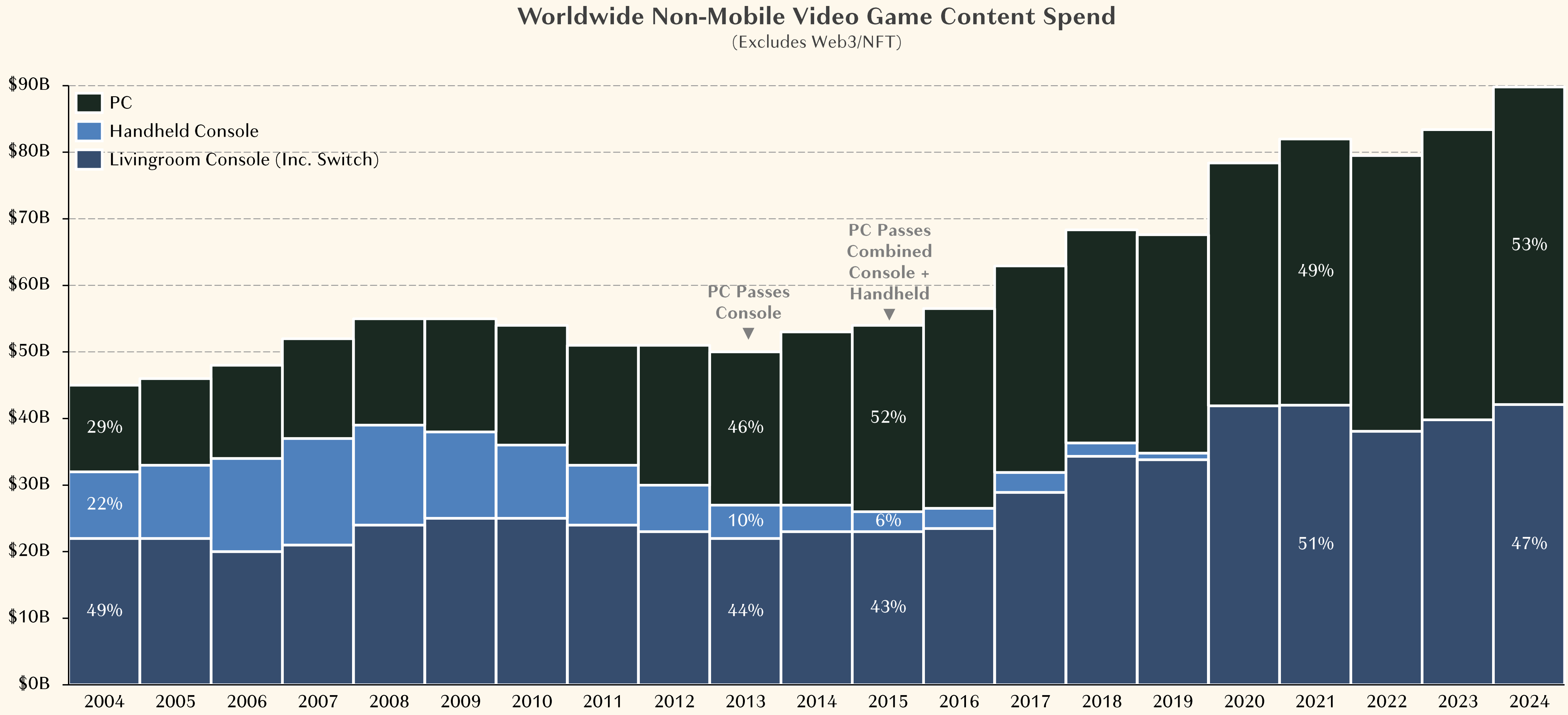


v.1/18/2025

Sources: Pelham Smithers / Bloomberg, IDG, Newzoo, Meta, IDC, Epyllion analysis

Twenty years ago, PC's share of non-mobile content spend was 29%. It's now ~53%. And while console has stagnated since 2021, PC has grown 20%

EPYLLION
By Matthew Ball



v.1/18/2025

Sources: Pelham Smithers / Bloomberg, IDG, Newzoo, IDC, Epyllion analysis

The PC ecosystem benefits from many compounding advantages over the console ecosystem — and its momentum is still growing

Existing PC Advantages

- Much larger library than any one console (or all consoles combined), and with near full backwards compatability
- Much larger social graph than any one console (and often reaching into consoles)
- Ability to multi-task (e.g. Alt-Tab to YouTube for tips and tricks, read Game Guides, use WhatsApp, etc.), run full Discord natively, livestream with full OBS/editing suites, etc.
- Lower entry price point than consoles and higher top-range of performance than high-performance consoles
- Greater competitive capability (i.e. keyboard/mouse)
- Ability to play nearly every Early Access title in "Early Access"

Intensifying PC Advantages

- More annual game releases (thus a compounding library advantage)
- PlayStation now releases its "exclusives" on PC (albeit in second window), as Xbox now does with all titles
- Premium Roblox games can only be bought on PC
- Hundreds of millions of children growing up on Roblox are unlikely to ask for a $500 console to play AAA games
- Portable Windows-based gaming devices are growing in popularity and have access to full Steam/PC catalogues and entitlements

v.1/18/2025

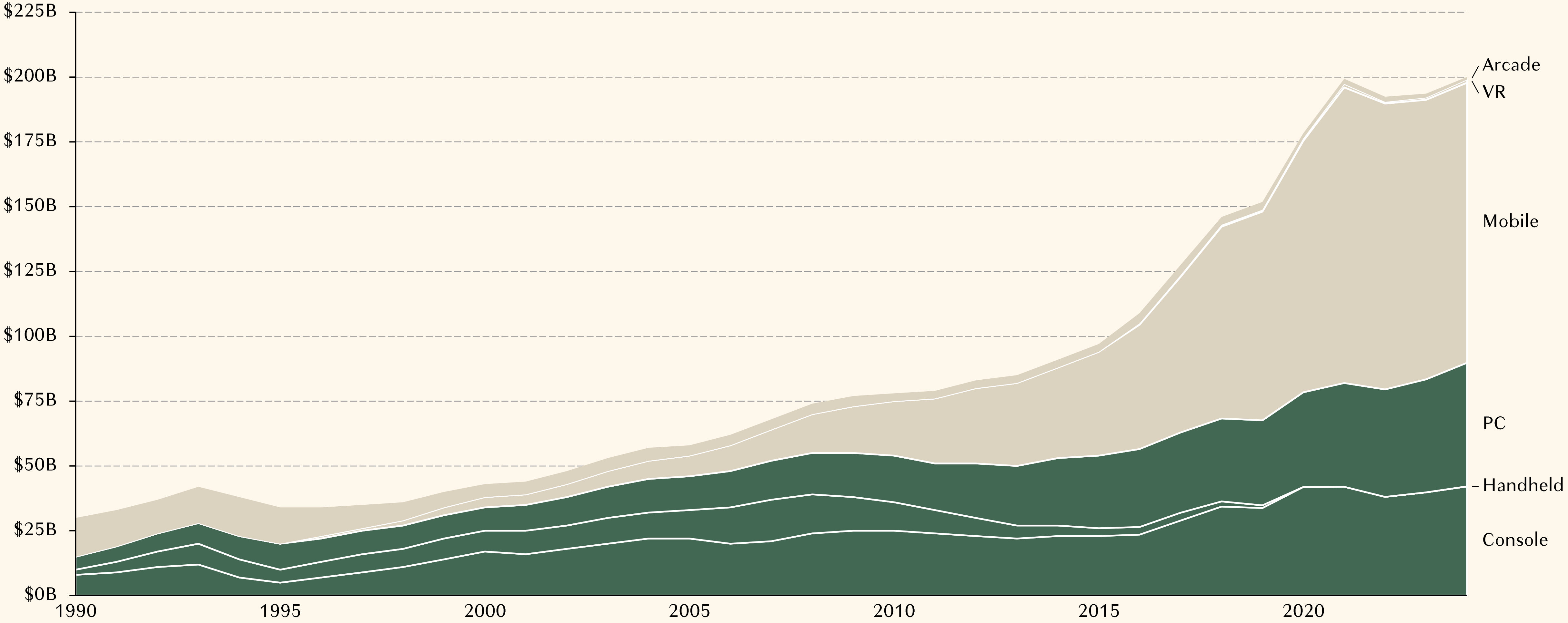
Source: Epyllion analysis

Even with the 2021 to 2024 stall, Console/PC spend grew 4.4% annually — short of mobile's 12%, which was powered by *billions* of new players — but still healthy

EPYLLION
By Matthew Ball

Worldwide Consumer Spending on Video Game Content

(Nominal Prices; Arcade + Console + PC + Mobile + VR + Web; Excludes Hardware & Accessories; Excludes Web3/NFT)

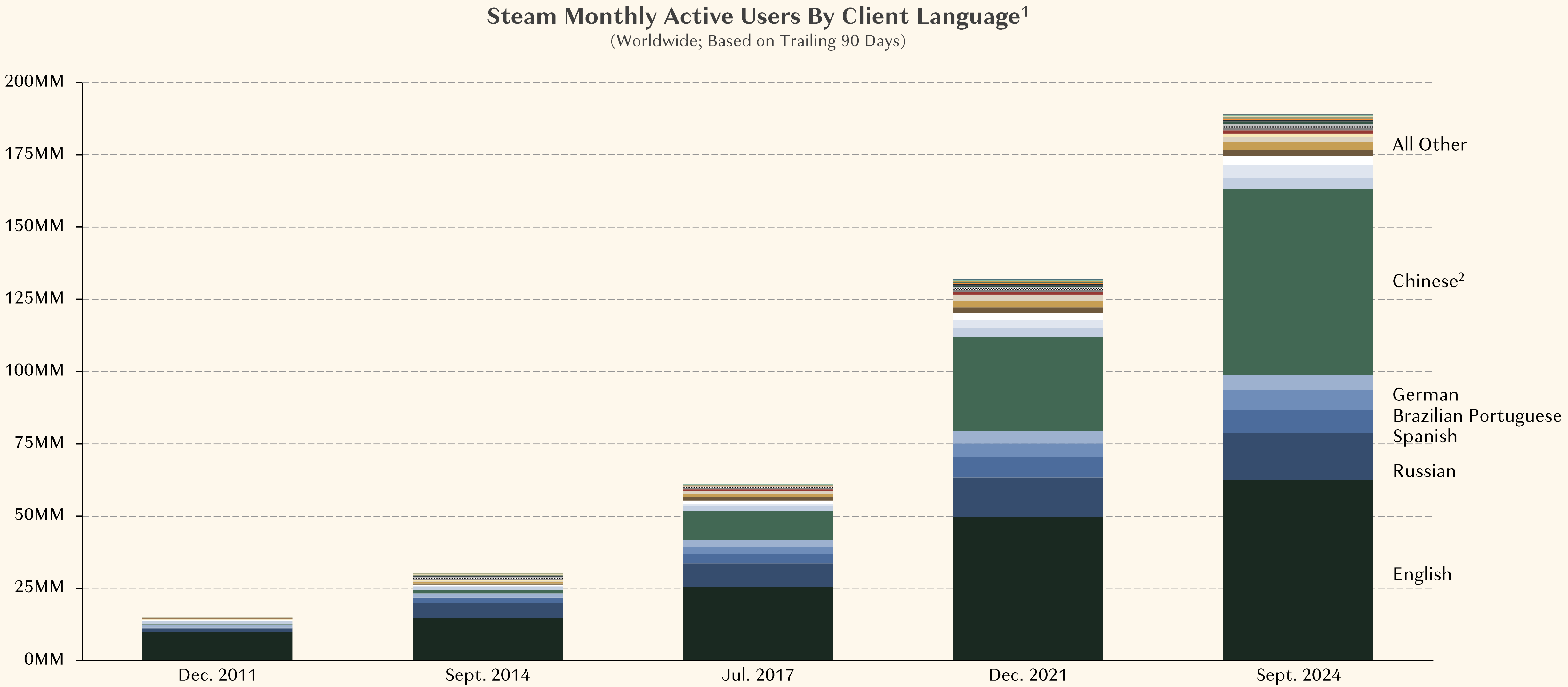


v.1/18/2025

Sources: Pelham Smithers / Bloomberg, IDG, Newzoo, Meta, IDC, Epyllion analysis

But Steam's consolidation of the PC gamers provides insight into *who* is driving the category growth. In 2024, Steam's APAC MAU exceeds its total MAU in 2017

EPYLLION
By Matthew Ball



Notes: ¹Valve's hardware survey collects data based on the language the user has set their Steam client to, rather than the user's first or preferred language. As such, it's likely that, as an example, many Chinese users choose to use Steam in English, thereby exaggerating English's share; ²Includes all registered Sinitic languages and dialects

v.1/18/2025

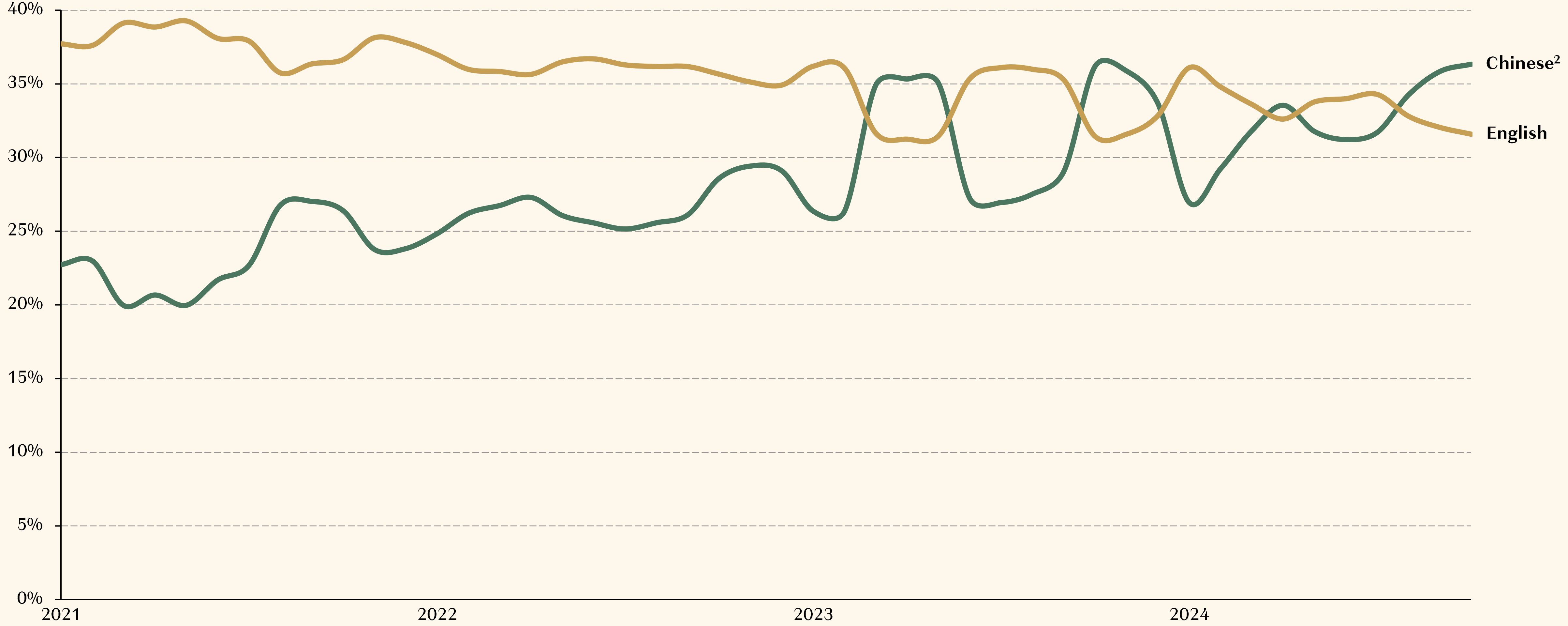
Sources: Valve, Epyllion analysis

The *largest* share of Steam users now use Chinese as their default client language (which probably *underrepresents* China's total share of Steam users)

EPYLLION
By Matthew Ball

Top Two User Languages on Steam[1]

(Worldwide; Trailing 90 Days)



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Source: Valve

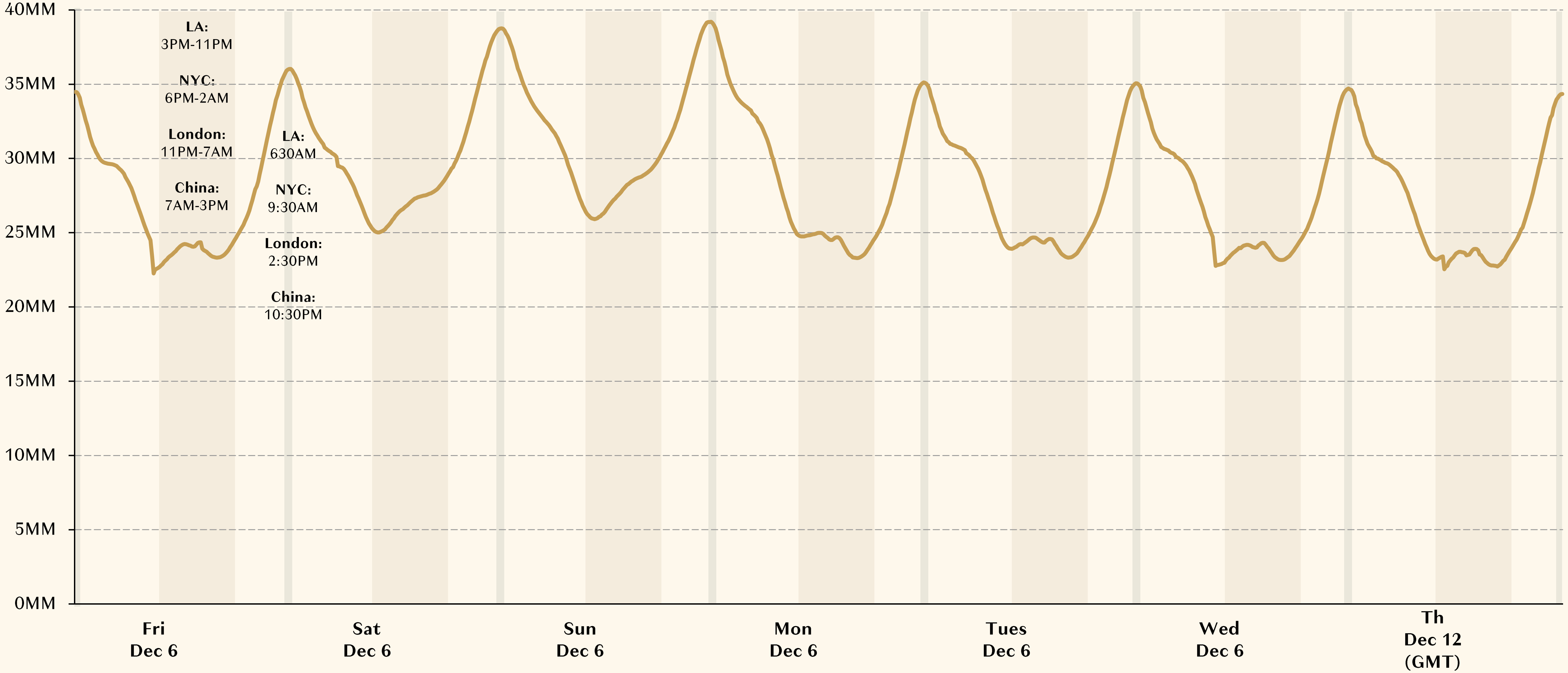
v.1/18/2025

CCUs affirm APAC's role in Steam user growth: CCUs peak when America sleeps and China gets home and bottom when America is *off* work but China is *at* work

EPYLLION
By Matthew Ball

Steam Concurrent Users (CCUs) by 10-Minute Intervals from 5 December 2024 to 12 December 2024

(Worldwide; GMT Dateline)



v.1/18/2025

Source: SteamDB

EPYLLION

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The Relevance of China (and Other Emerging Markets)

The Hostility of the Modern Console/PC Content Marketplace

How Player, Playtime, and Player Spend Might Return to Growth

Since 2011, consumer video game spend in China has grown by $39B — roughly a third of global growth (and to 22% of the total market)

EPYLLION
By Matthew Ball

Consumer Spending on Video Game Content in China

(Nominal Prices; Arcade + Console + PC + Mobile + VR + Web; Excludes Hardware & Accessories; Excludes Web3/NFT)

Consistent with worldwide contraction, exacerbated by regulatory action and 4% RMB:USD decline

v.1/18/2025

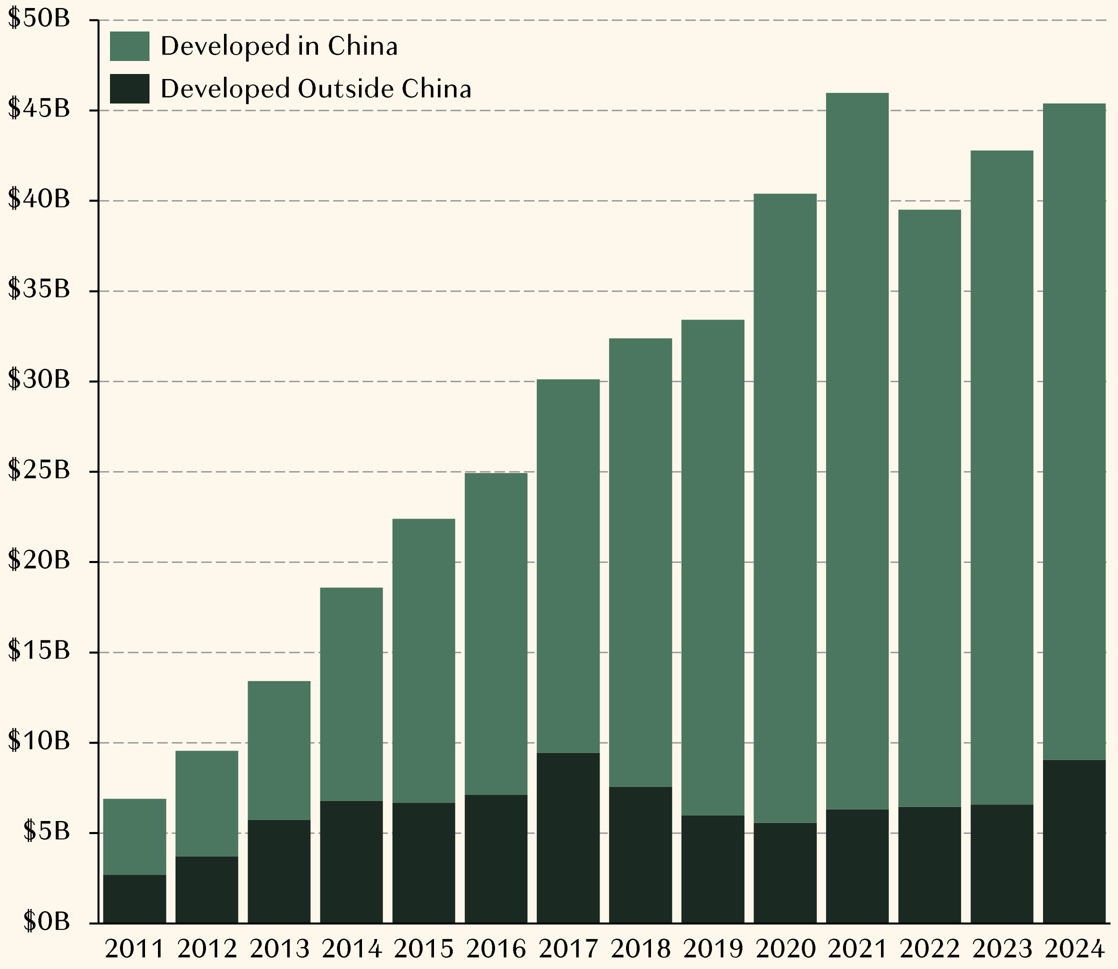
Source: China Audio-Video and Digital Publishing Association, Newzoo, Capcom, VGChartz, Epyllion analysis

But only 20% of China's domestic spend goes to foreign titles (many of which are banned). Total spend is up 50% since 2017 alone, yet imported spend is down 5%

EPYLLION
By Matthew Ball

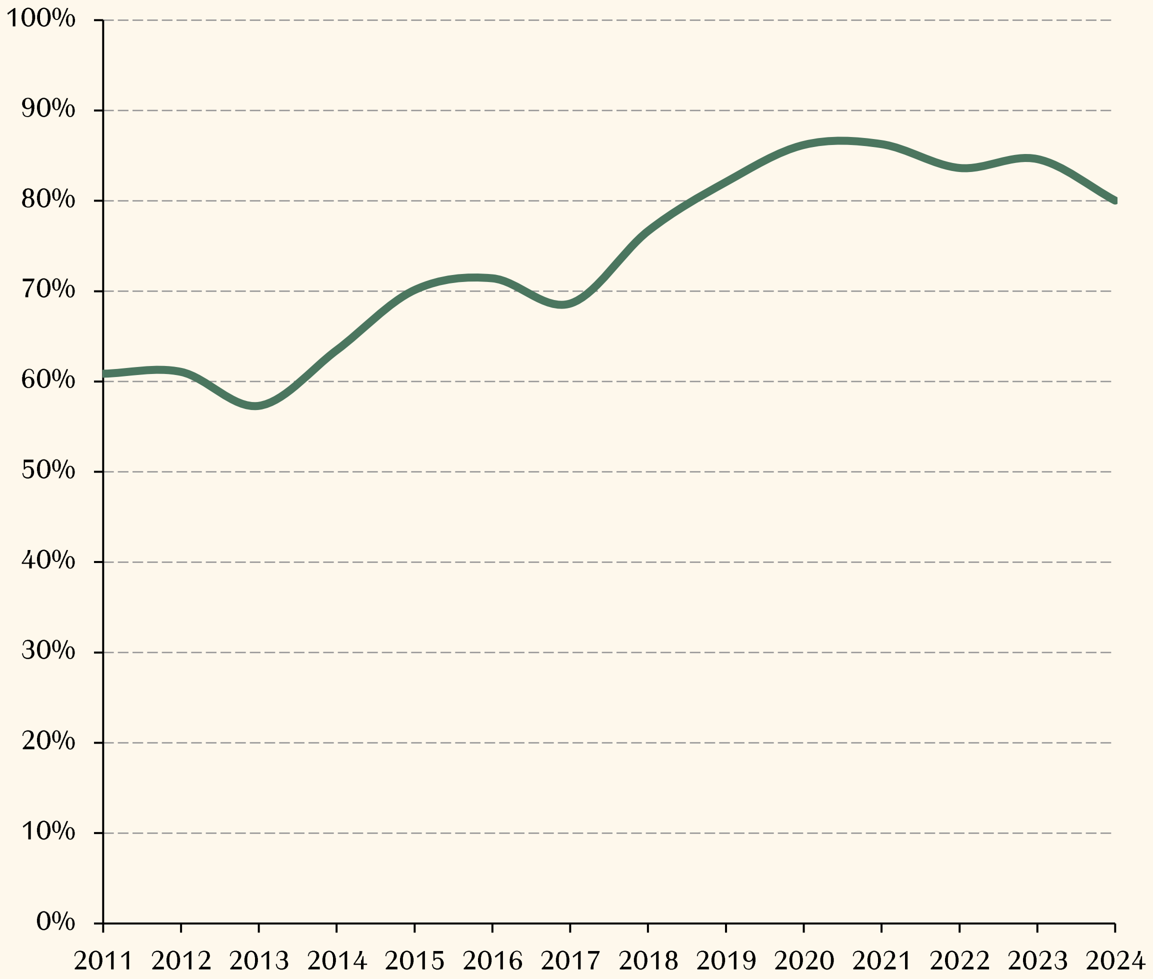
China Spend on Video Game Content by Country of Origin

(USD; Console + PC + Mobile + VR + Web; Excludes Hardware, Excludes Web3/NFT)



China-Made Games' Share of China Video Game Content Spend

(Console + PC + Mobile + VR + Web; Excludes Hardware, Excludes Web3/NFT)



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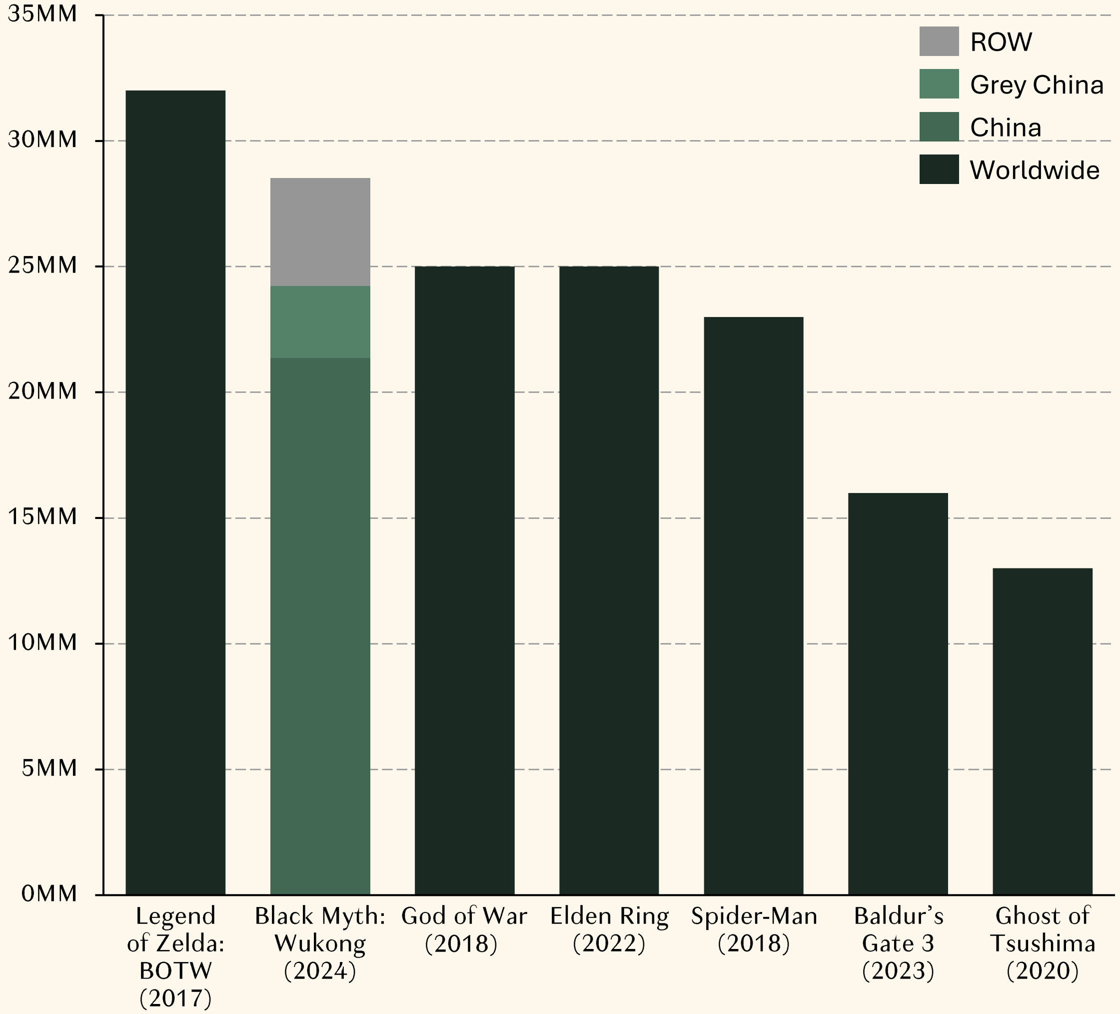
Sources: China Audio-Video and Digital Publishing Association, Pelham Smithers / Bloomberg, IDG, Newzoo, Meta, IDC, Epyllion analysis

And AAA games from China and *for* China are now achieving sales figures *in* China that challenge the *worldwide* sales of the most acclaimed Western AAA titles

Unit Sales for Major 1P AAA Titles
(Worldwide)



***Black Myth: Wukong**, made by Chinese developer Game Science, is based on the 16th-century Chinese folktale of the Monkey King Wukong, and is set a world of gods from the Chinese pantheon, intermixed with famous real-world Chinese landmarks and locations.*

THE GAME AWARDS

- **Winner: Best Action Game**
- **Winner: Game of the Year (Players' Voice)**
- Nominee: Game of the Year
- Nominee: Best Direction
- Nominee: Best Art Direction

GOLDEN JOYSTICK AWARDS

- **Winner: Game of the Year**
- **Winner: Best Visual Design**

PlayStation Partner Awards 2024 SPECIAL AWARD

- **Winner: Grand Award**
- **Winner: Best Visual Design**

STEAM AWARDS

- **Winner: Game of the Year**
- **Winner: Best Game You Suck At**
- **Winner: Best Story-Rich Game**

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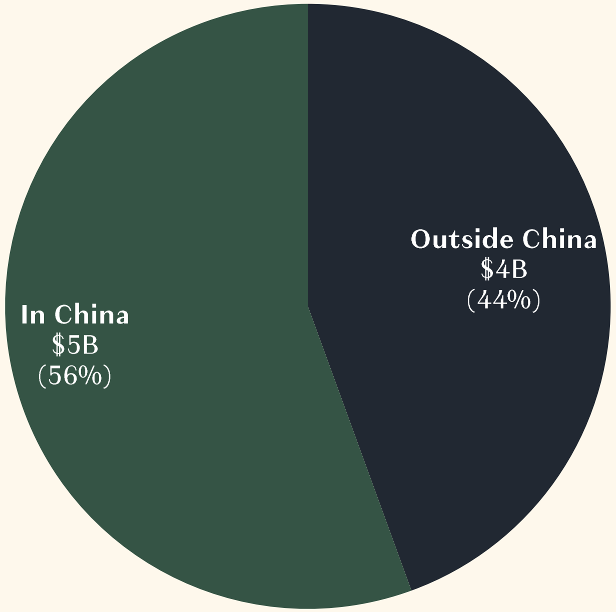
Sources: VGChartz, Sony, Nintendo, FromSoftware, Larian, Epyllion analysis

China's exports are soaring, too. *Genshin* is one of few titles to gross over $9B — almost half was *outside* China; *Marvel Rivals* is one of the biggest releases in years

EPYLLION
By Matthew Ball

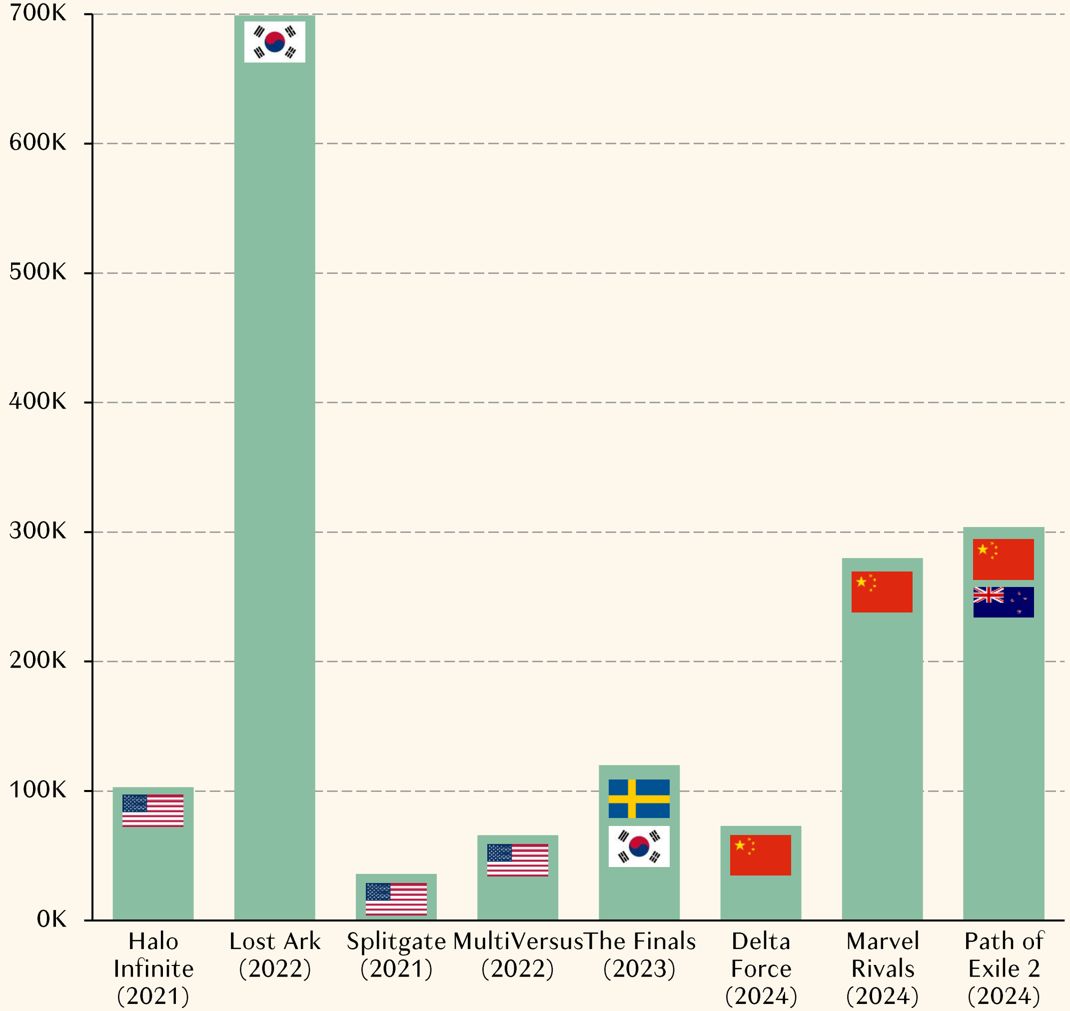
Consumer Spend on *Genshin Impact*

(Worldwide through September 2024)



Debut Avg. Steam CCUs, Select FTP Multiplayer Titles

(Does not reflect all players, only Steam players, which has an unequal effect per title)



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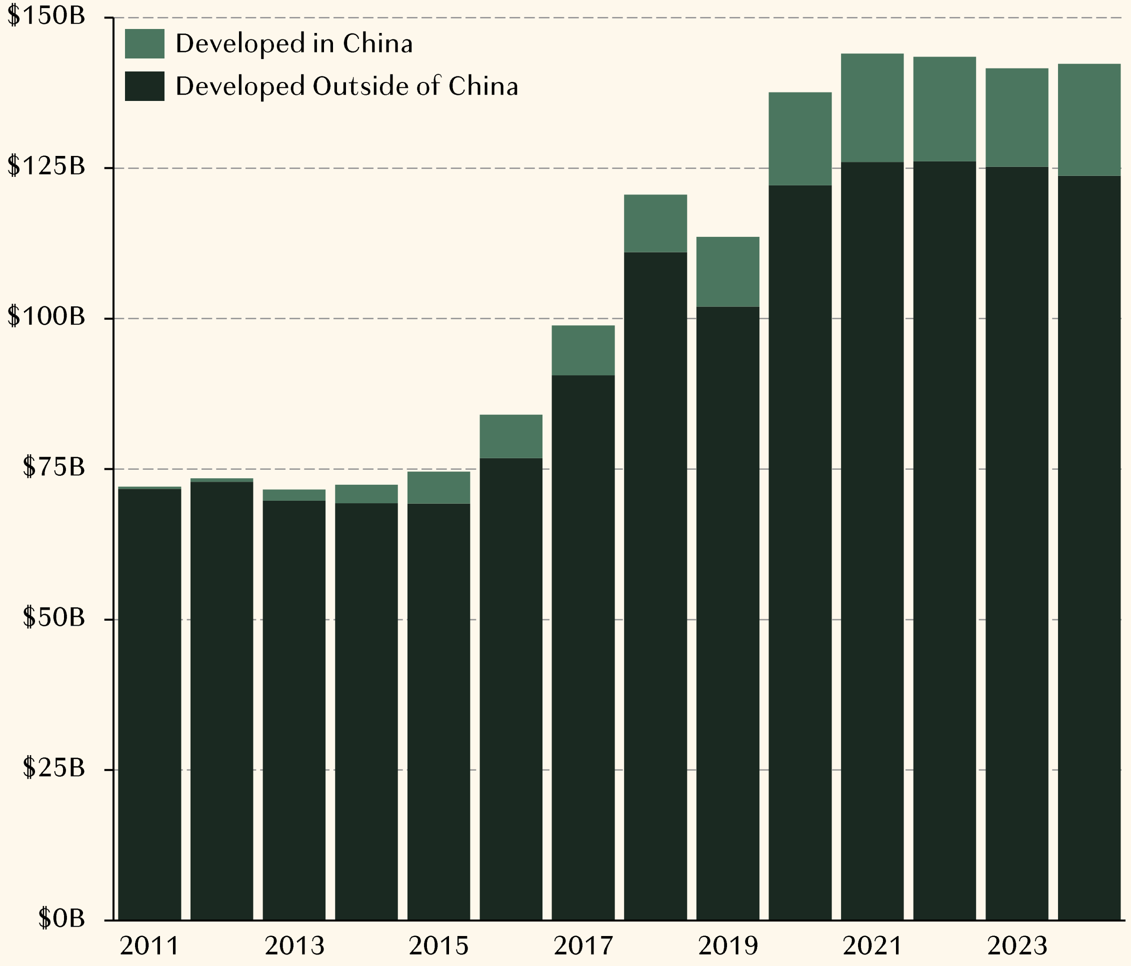
Sources: Niko Partners, Steam Charts, Epyllion analysis

Altogether, China's developers have grown their share of *non*-China content spend from 0.5% to 13% in 13 years, or from $360MM a year to $19B

EPYLLION
By Matthew Ball

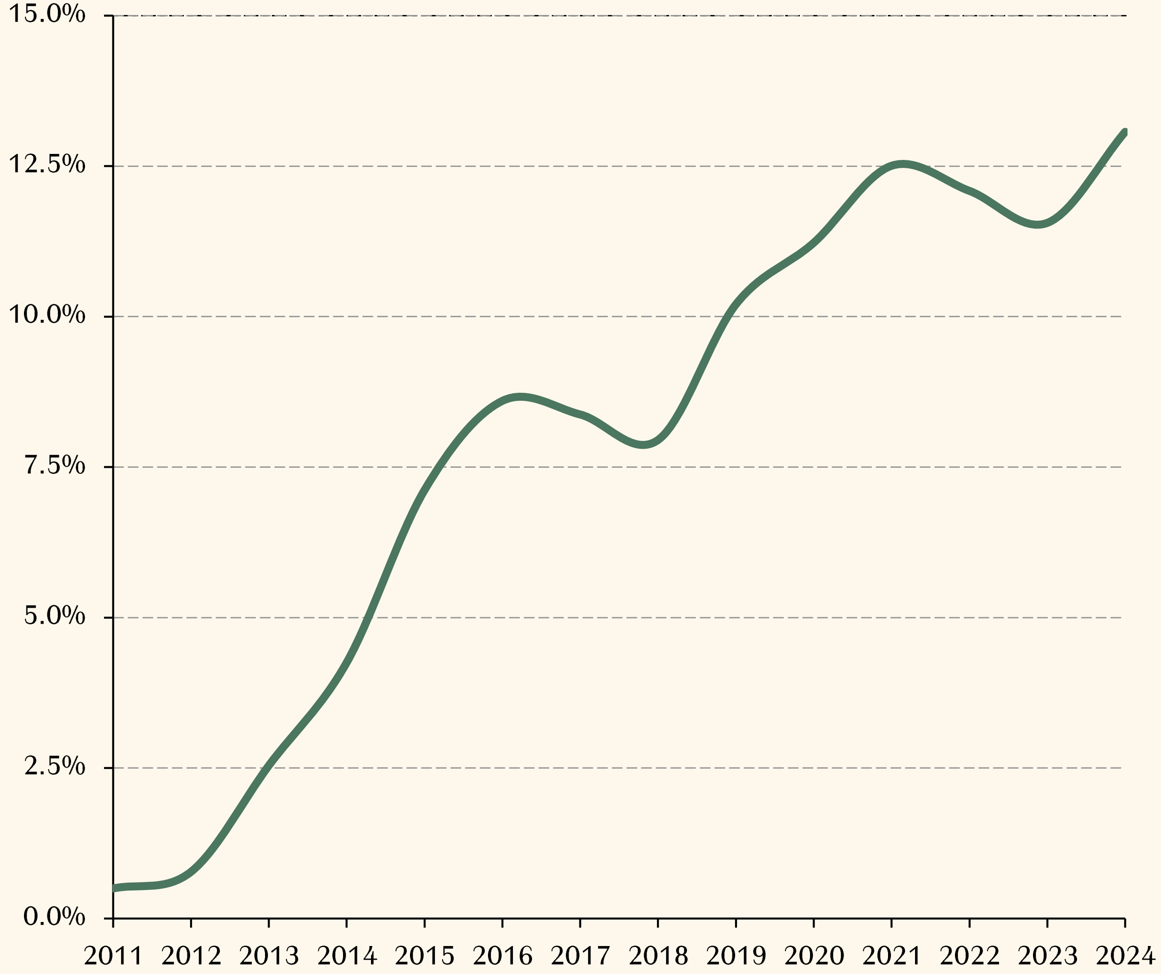
Total Video Game Content Spending Outside of China

(USD; Console + PC + Mobile + VR + Web; Excludes Hardware, Excludes Web3/NFT)



Chinese Video Games' Share of Non-China Content Spend

(USD; Console + PC + Mobile + VR + Web; Excludes Hardware, Excludes Web3/NFT)



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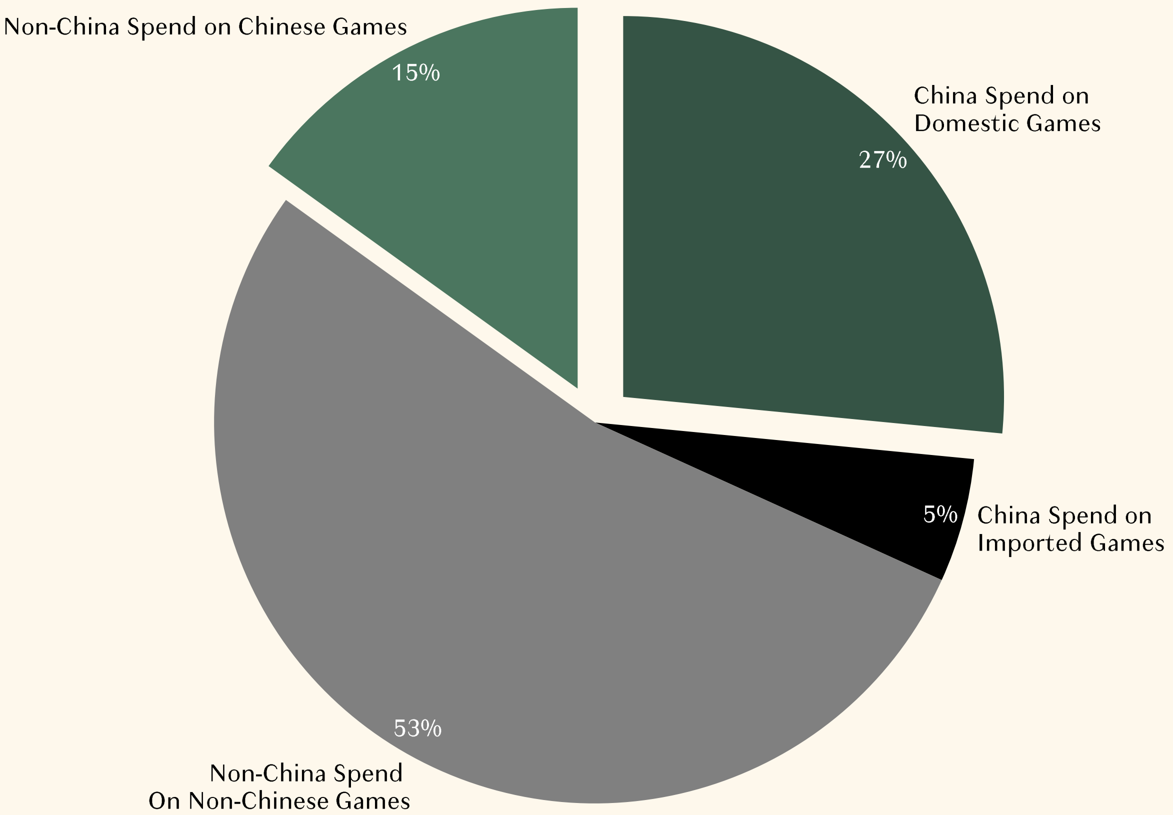
Sources: China Audio-Video and Digital Publishing Association, Pelham Smithers / Bloomberg, IDG, Newzoo, Meta, IDC, Epyllion analysis

In total, 42% of worldwide consumer spending growth since 2011 went to Chinese developers (split 2:1 on domestic spend on Chinese titles v. exports of them)

EPYLLION
By Matthew Ball

Worldwide Consumer Spending on Video Game Content

(Nominal Prices; Arcade + Console + PC + Mobile + VR + Web; Excludes Hardware & Accessories; Excludes Web3/NFT)



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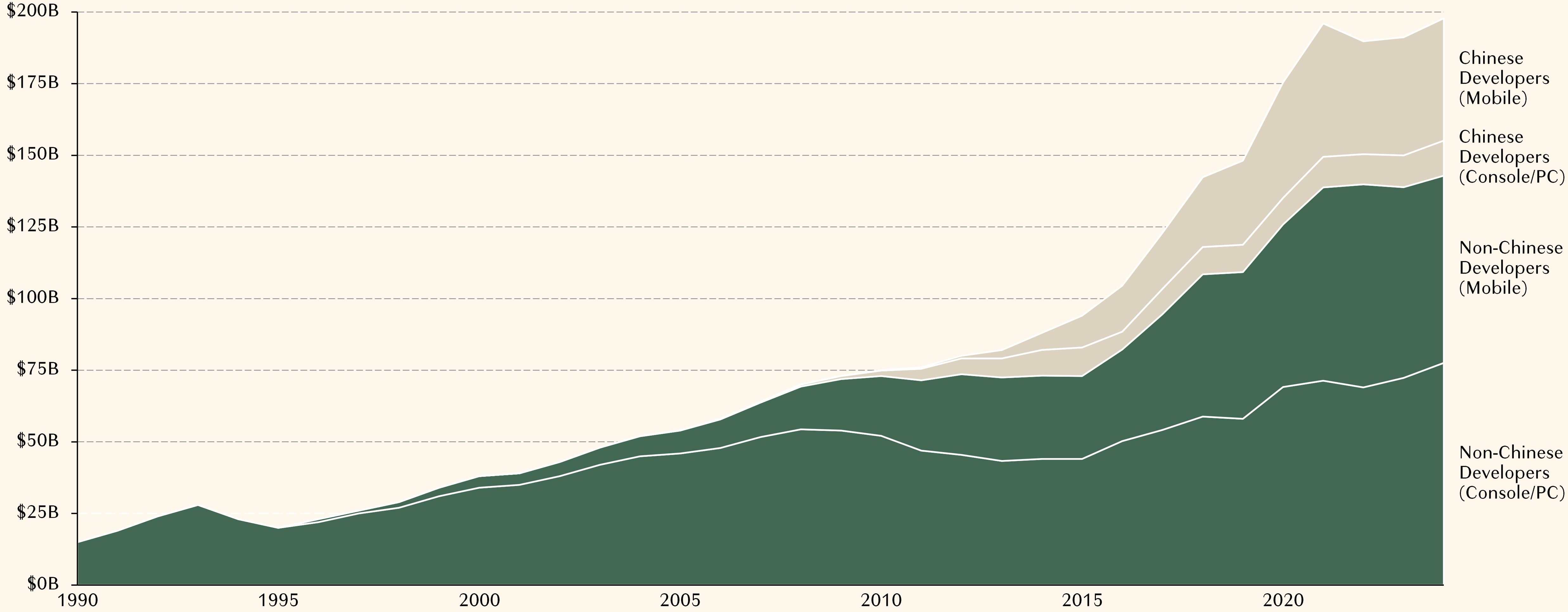
Sources: China Audio-Video and Digital Publishing Association, Pelham Smithers / Bloomberg, IDG, Newzoo, Meta, IDC, Epyllion analysis

And so total growth for non-Chinese developers since 2011 is less than headlines suggest. Mobile added $41B (not $83B), while Console/PC grew $31B (not $39B)

EPYLLION
By Matthew Ball

Worldwide Consumer Spending on Video Game Content

(Nominal Prices; Arcade + Console + PC + Mobile + VR + Web; Excludes Hardware & Accessories; Excludes Web3/NFT)



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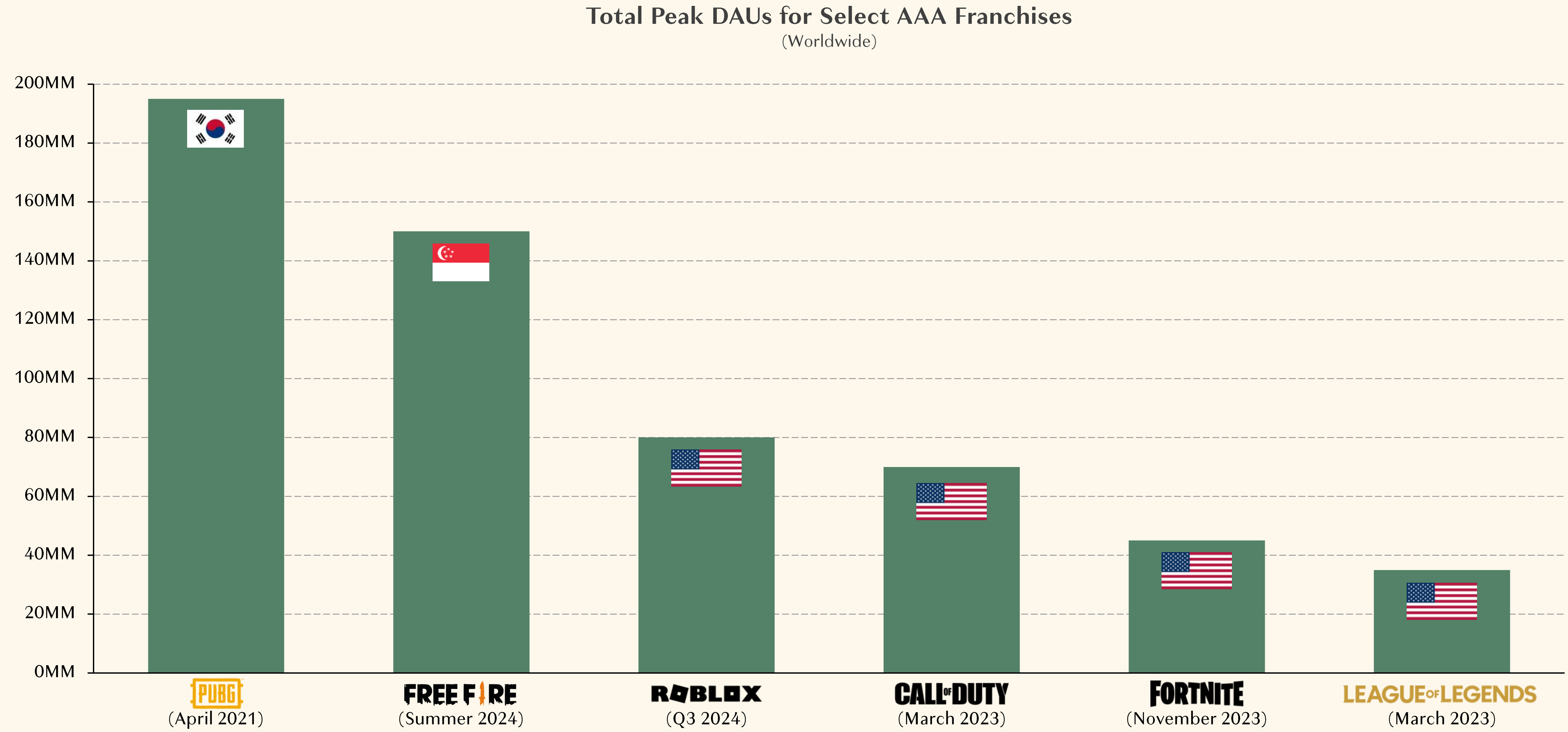
Sources: China Audio-Video and Digital Publishing Association, Pelham Smithers / Bloomberg, IDG, Newzoo, Meta, IDC, Epyllion analysis

And while China is the largest, most mature, and regulated non-Western market, it's no outlier. The most played AAA titles worldwide are Korean and Singaporean

EPYLLION
BY MATTHEW BALL



Total Peak DAUs for Select AAA Franchises
(Worldwide)

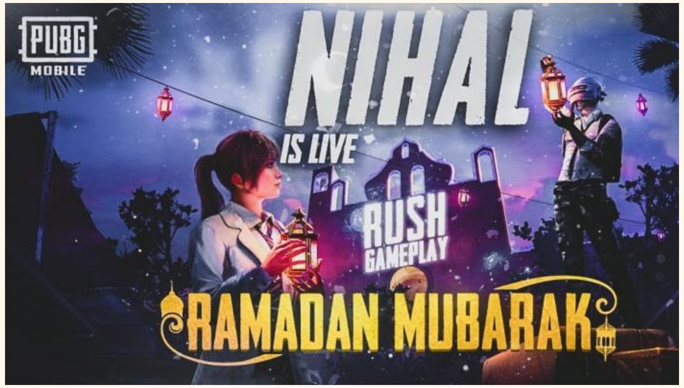
v.1/18/2025

Sources: Krafton, JP Morgan, Garena, Roblox, Activision, Epic Games, Epyllion analysis

These non-Western titles thrive partly by focusing on lower device specifications, but also by investing in and *prioritizing* different cultural events and tones

Fortnite Battle Royale Events
(Selection)

PUBG Battle Royale Events
(Selection)



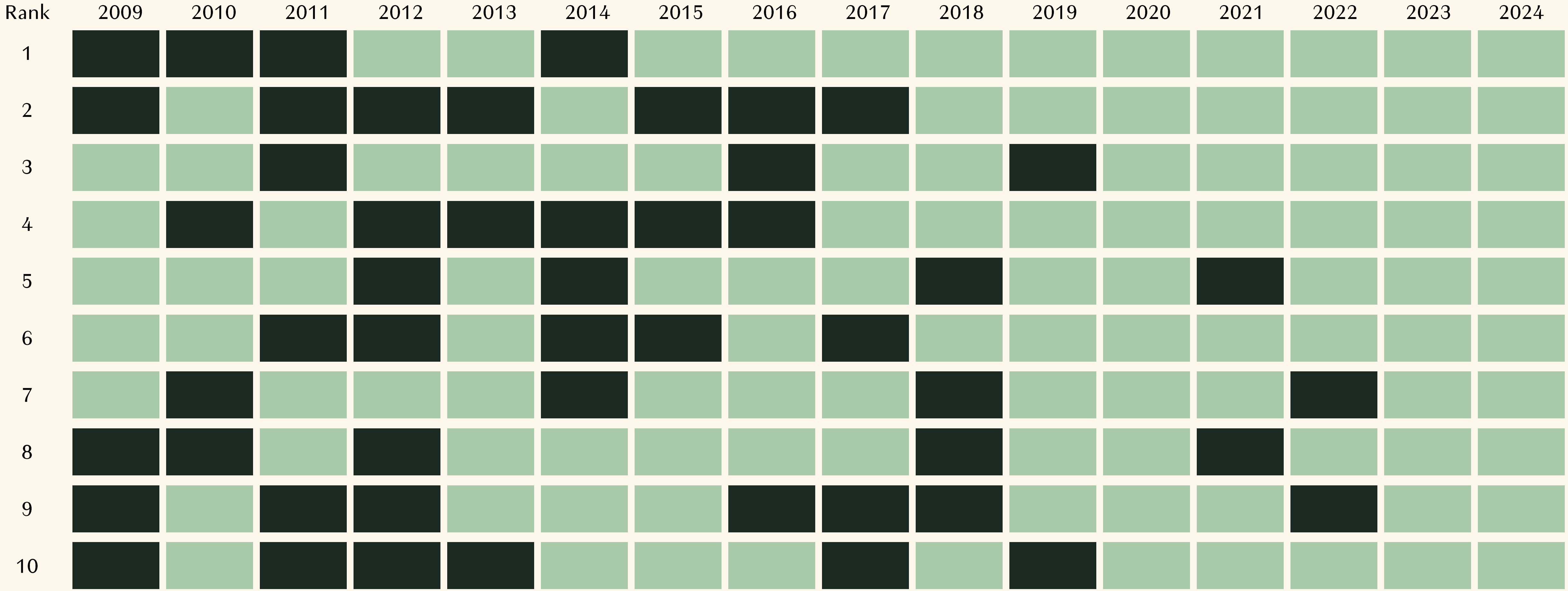
Free Fire Battle Royale Events
(Selection)

Sources: Epic Games, Krafton, Garena

As foreign markets grow, their domestic production capabilities and supply grow, too, and this always results in national preferences then shifting to local product

EPYLLION
By Matthew Ball

10 Highest-Grossing Films in China per Year by Country of Origin



Rank	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
1	⬛	⬛	⬛	🟩	🟩	⬛	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩
2	⬛	🟩	⬛	⬛	⬛	🟩	⬛	⬛	⬛	🟩	🟩	🟩	🟩	🟩	🟩	🟩
3	🟩	🟩	⬛	🟩	🟩	🟩	🟩	⬛	🟩	🟩	⬛	🟩	🟩	🟩	🟩	🟩
4	🟩	⬛	🟩	⬛	⬛	⬛	⬛	⬛	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩
5	🟩	🟩	🟩	⬛	🟩	⬛	🟩	🟩	🟩	⬛	🟩	🟩	⬛	🟩	🟩	🟩
6	🟩	🟩	⬛	⬛	🟩	⬛	⬛	🟩	⬛	🟩	🟩	🟩	🟩	🟩	🟩	🟩
7	🟩	⬛	🟩	🟩	🟩	⬛	🟩	🟩	🟩	⬛	🟩	🟩	🟩	⬛	🟩	🟩
8	⬛	⬛	🟩	⬛	🟩	🟩	🟩	🟩	🟩	⬛	🟩	🟩	⬛	🟩	🟩	🟩
9	⬛	🟩	⬛	⬛	🟩	🟩	🟩	⬛	⬛	⬛	🟩	🟩	🟩	⬛	🟩	🟩
10	⬛	🟩	⬛	⬛	⬛	🟩	🟩	🟩	⬛	🟩	⬛	🟩	🟩	🟩	🟩	🟩

v.1/18/2025

⬛ United States 🟩 China

Sources: Box Office Mojo, New York Times, Epyllion analysis

The films that now top the Chinese box office are not just "made in China" — they are fundamentally *of China* and *for Chinese* audiences

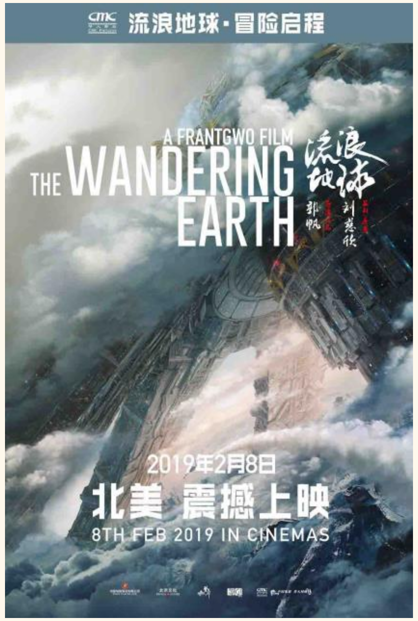
Wolf Warrior II

(2017, $875MM)

A *Rambo-style* action film in which the muscled and jaded Chinese hero rescues Africa from American imperialism and bioterror. The bad guy is played by New York–born Frank Grillo (previously an evil mercenary in Captain America) and is scolded by the hero for America's role in the slave trade. The hero also announces Chinese frailty to be a thing of the past, while asserting its role as global protector

Wandering Earth

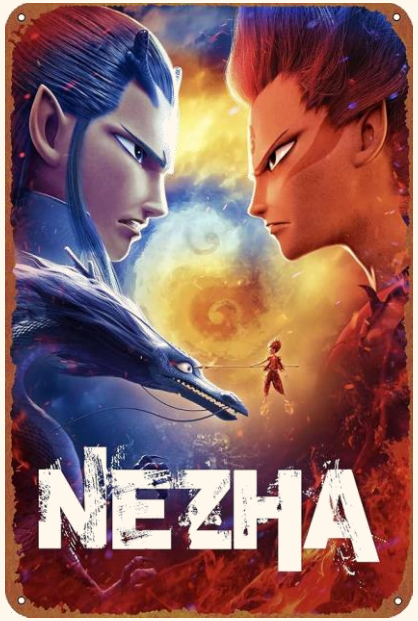
(2019, $700MM)



A metaphor for climate change in which Chinese scientists leading the nations of the world — with the notable absence of the U.S. — to save the planet, which will soon be engulfed by the sun. The film takes the virtues of collectivism as self-evident and is sharply critical of selfishness.

Ne Zha

(2019, $743MM)



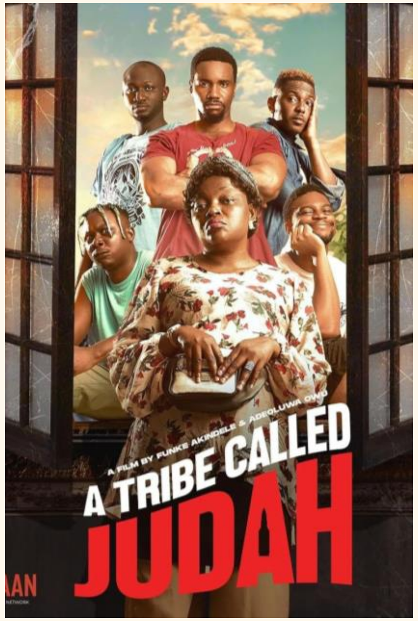
A family-oriented film that resembles animated Disney hits, particularly *Frozen*. Like *Wukong*, *Ne Zha* focuses on 16th-century Chinese folklore about a mischievous but misunderstood boy born from a powerful spirit pearl. *Ne Zha* is a rousing story in the shenmo (gods and demons) genre, with humor that is decidedly non-Western

Source: *Epyllion analysis*

As Nollywood has developed, Nigerian-made films (including those released during COVID!) toppled former chart toppers like *Avengers: Endgame* and *Avatar*

A Tribe Called Judah

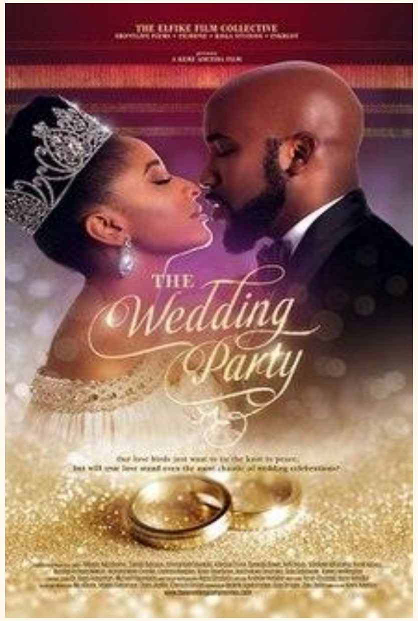
(2023, 1.2x Avengers: Endgame)



Centers on Jedidah Judah, a single mother of five sons from different fathers and tribes. Facing financial strain due to her chronic kidney disease, her sons plan a heist to fund her treatment, leading to unforeseen complications.

The Wedding Party

(2016, 1.1x Avengers: Endgame)



Classic "romcom" focused on the extravagant and chaotic wedding of Dunni and Dozie as they navigate meddling families, uninvited exes, and unexpected drama.

Omo Ghetto 2: The Saga

(2019, 1.1x Avengers: Endgame)

A gangster comedy that focuses on a tough ghetto leader caught between her gangster crew and her affluent family. Chaos ensues when a heist goes wrong, putting Lefty (the protagonist) in-between law enforcement and rival gangs, while forcing her to confront her complex identity and loyalties.

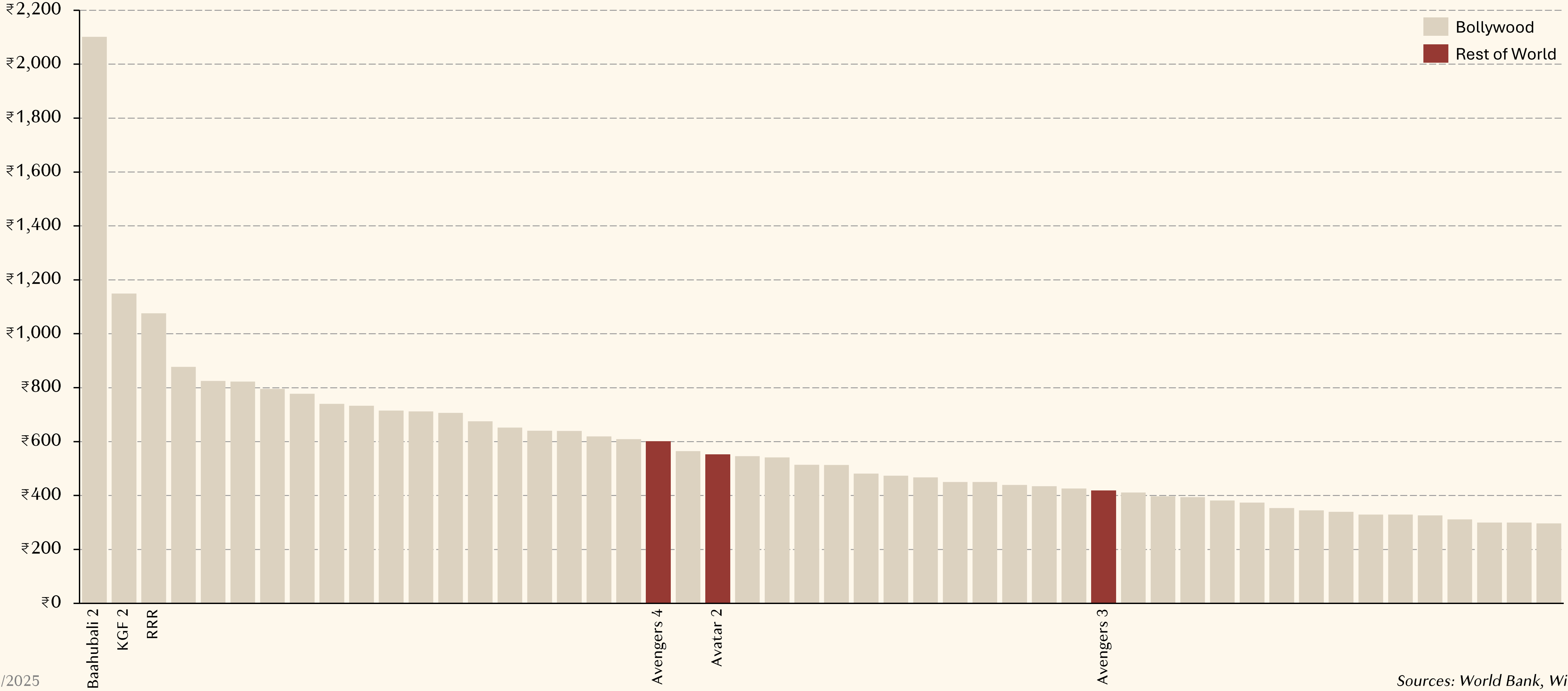
Source: Epyllion analysis

India has always had a strong domestic film industry. As a result, only 3 of the 50 highest-grossing films of all time come from outside Bollywood

EPYLLION
BY MATTHEW BALL

Top 50 Highest-Ever Grossing Films at the Indian Box Office by Home Market

(Crore; Inflation Adjusted to 2024 Prices; All Films from 2013 to 2024)



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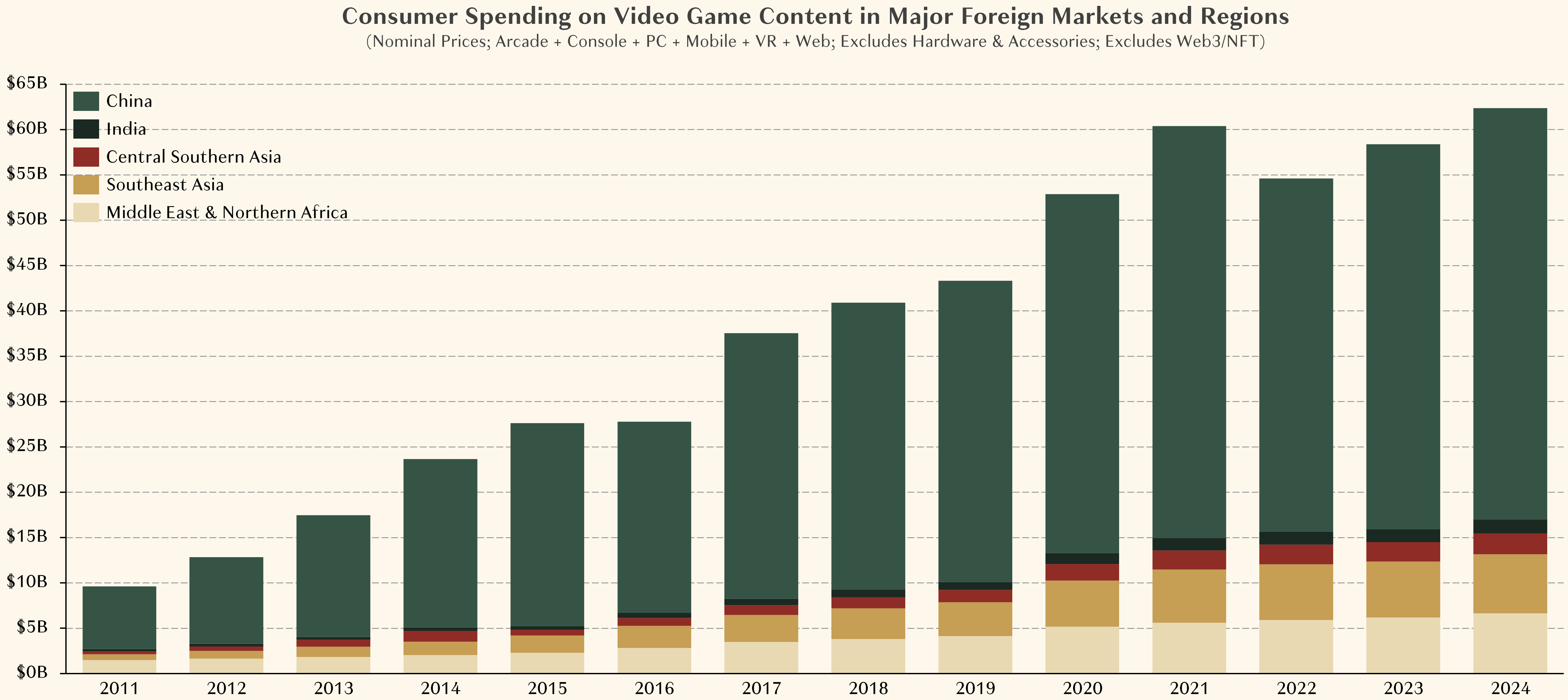
Sources: World Bank, Wikipedia

And so, as Console/PC continue to grow primary through APAC/ROW, there will be more Garenas, Game Sciences, MiHoYos — and they'll take share in the West, too

EPYLLION
By Matthew Ball



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Source: China Audio-Video and Digital Publishing Association, Newzoo, Capcom, Niko Partners, Research & Markets, Epyllion analysis

EPYLLION

A Rough Three Years and the End of the 2011-2021 Growth Wave

The Mobile Marketplace in 2025

A (Brief) Review of AR/VR Forecasts and Disappointments

How Much (and Where) Console/PC Has Grown

The Relevance of China (and Other Emerging Markets)

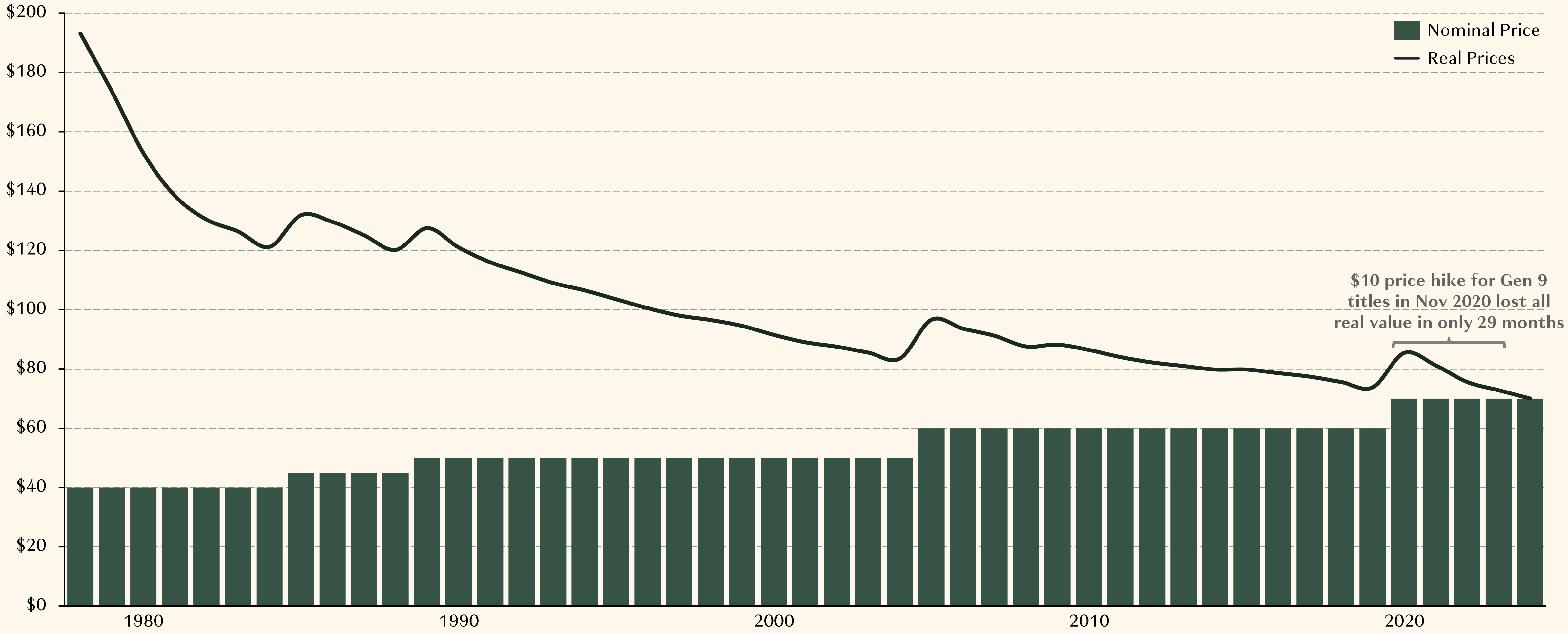
The Hostility of the Modern Console/PC Content Marketplace

How Player, Playtime, and Player Spend Might Return to Growth

Without many new players, Console/PC growth relies on pricing — yet publishers struggles to keep them. Each decade, packaged prices fall 10–20% in real terms

EPYLLION
By Matthew Ball

Standard U.S. Prices for Packaged Video Games, Initial Release



$10 price hike for Gen 9 titles in Nov 2020 lost all real value in only 29 months

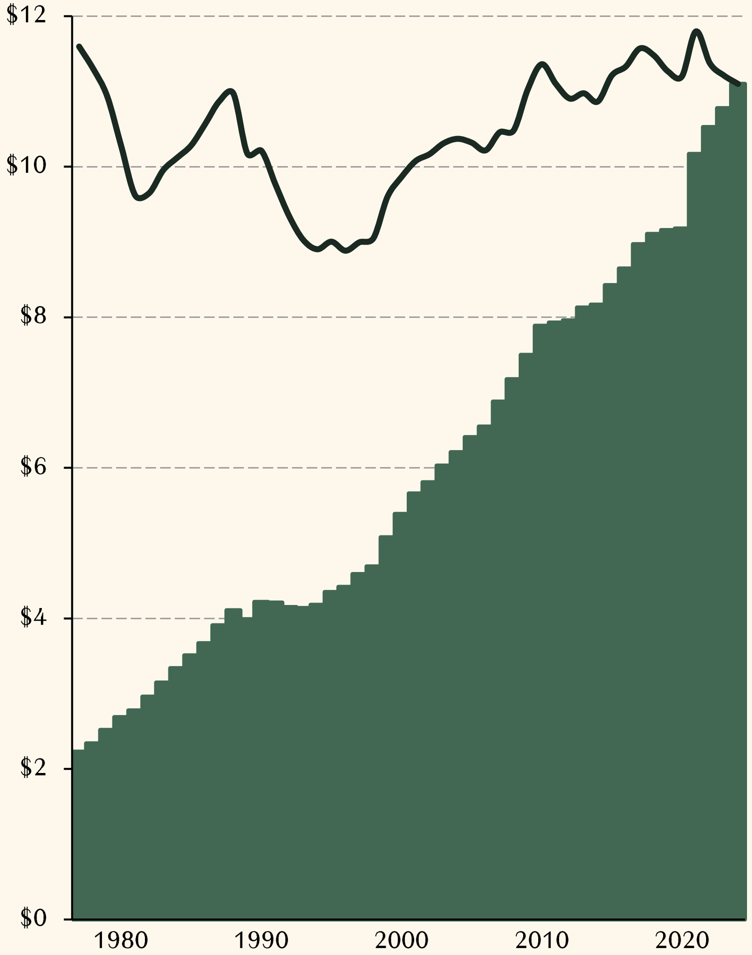
v.1/18/2025

Sources: Wikipedia, Bureau of Labor Statistics

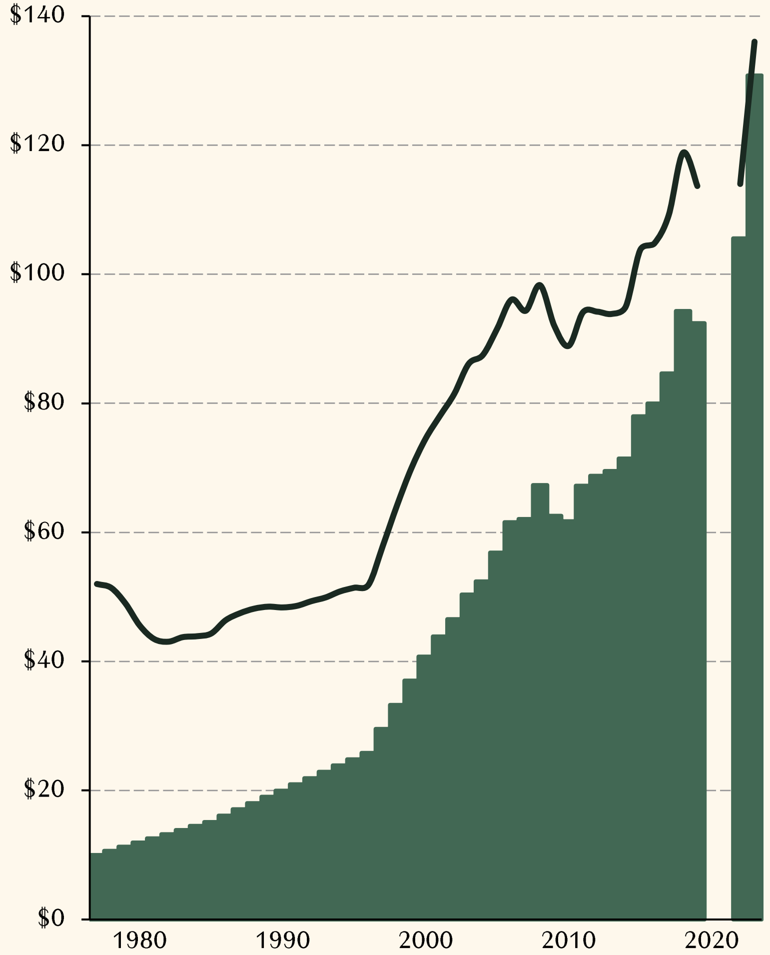
In nearly all media categories, consumers expect (and digest) annual inflation adjustments. Several categories have massively *increased* real pricing over time

EPYLLION
By Matthew Ball

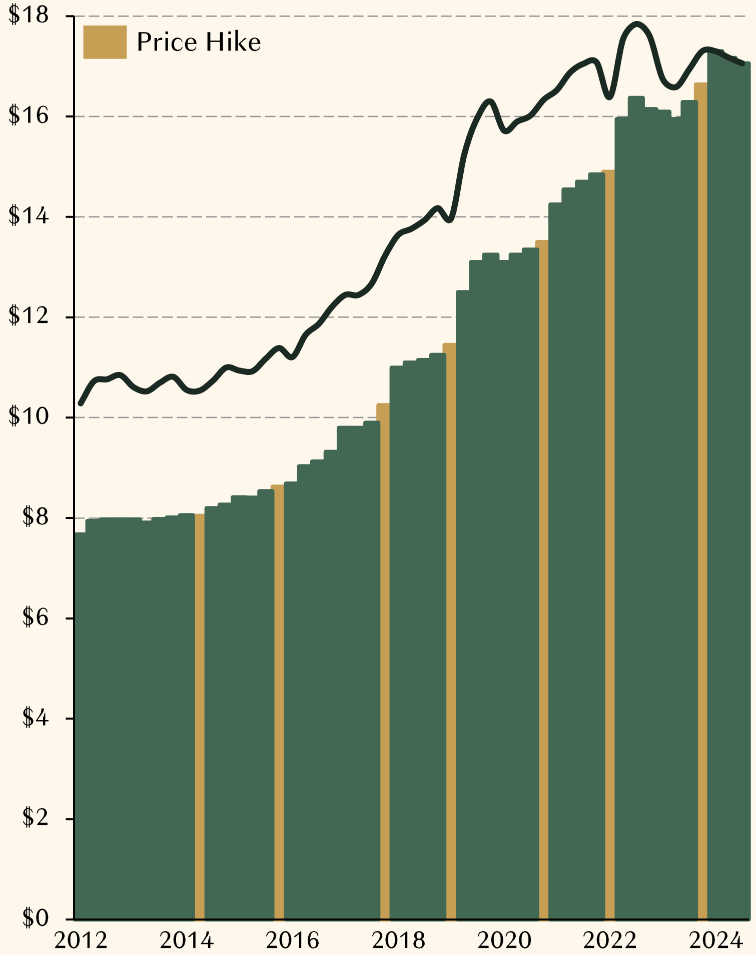
Average Movie Ticket Price
(US Only)



Average Concert Ticket Price
(US Only; Top 100 Tours)



Netflix APRU
(US Only)



v.1/18/2025 🟩 Nominal Price — Inflation-Adjusted Price (2024 Dollars)

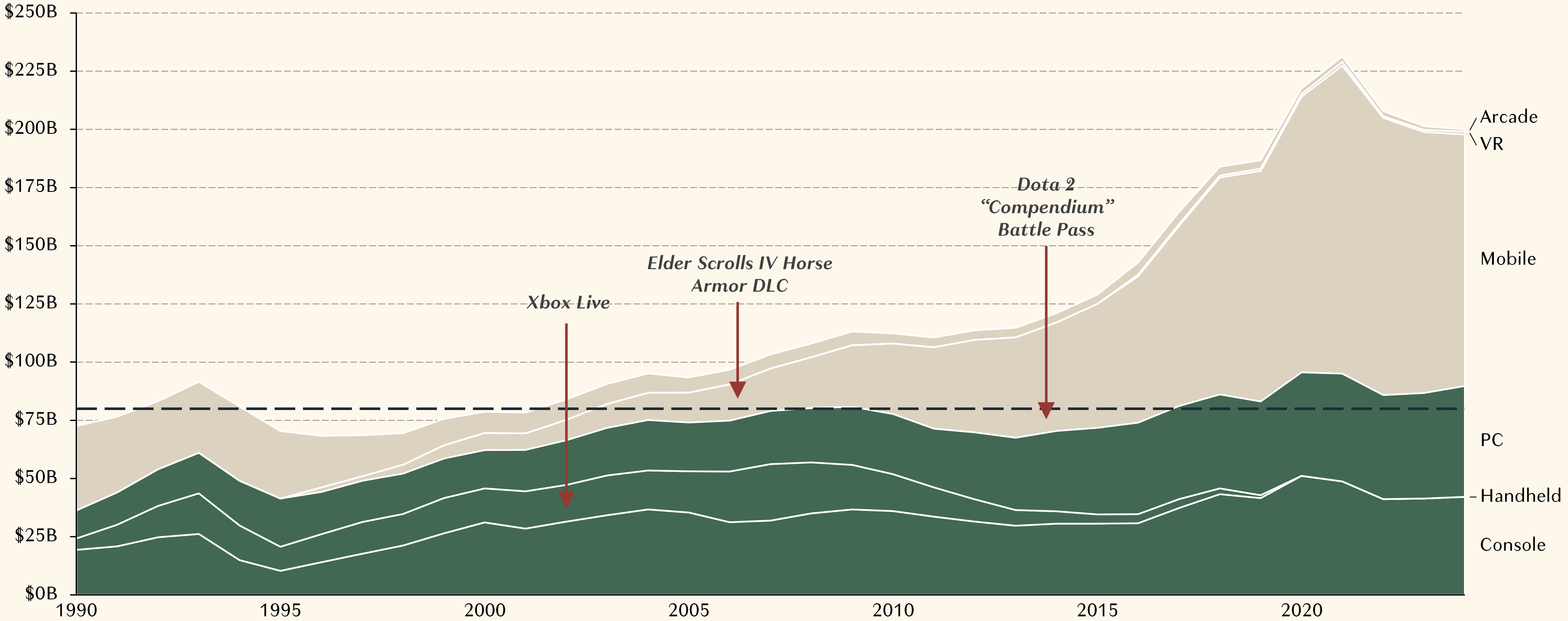
Sources: MPA, NATO, Pollstar, AARP, Netflix, Bureau of Labor Statistics, Epyllion analysis

Packaged prices matter less given DLC/MTX/Live Services, which raise the spend ceiling. Yet *real* spending has grown only modestly despite these innovations

EPYLLION
BY MATTHEW BALL

Worldwide Consumer Real Spending on Video Game Content

(2024 Prices; Arcade + Console + PC + Mobile + VR + Web; Excludes Hardware & Accessories; Excludes Web3/NFT)



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Sources: Pelham Smithers / Bloomberg, IDG, Newzoo, Meta, IDC, World Bank, Epyllion analysis

There are a few explanations for video gaming’s inability to maintain inflation-adjusted prices, let alone grow them — and many are unique to the category

Challenge #1: Anchored Expectations	After forty years with $10 increases every other generation (~15 years), game prices (and customer expectations for them) are quite “sticky” and heavily scrutinized.
Challenge #2: Grey Market & Piracy	Publishers lose billions annually in private game trades, sales, and piracy – and know that any price hike on packaged sales will spark more of this behavior, thereby cannibalizing the benefit of the price hike
Challenge #3: Free-to-Play Dynamics	The most popular and profitable games globally are typically free-to-play. This makes it difficult for rival games to push up pricing, while reducing the incentives of the market leaders (which have the most pricing power) to do the same. FTP also constrains consumer perceptions on what a great game should cost
Challenge #4: Maximizing DLC Funnels	DLC tends to have far better economics than the “base game,” but requires upfront sales first. As such, publishers are reluctant to hike the “base games” price. Yet the price of DLC, which tends to offer fewer player hours than the base game, is also affected by the price of the base game
Challenge #5: Sale-Only Buyers	Reports suggest that between 33-50% AAA gamers (skewing to PC gamers) wait until games are on sale before purchasing, offsetting the benefit of price increases and constraining value perceptions
Challenge #6: Strategic Underpricing	While movies, albums, books, TV series, et al, do not have variable pricing by title or budget, many games do release at $20-50 (versus $60-70) to help drive sales, which again constrains the size of the market

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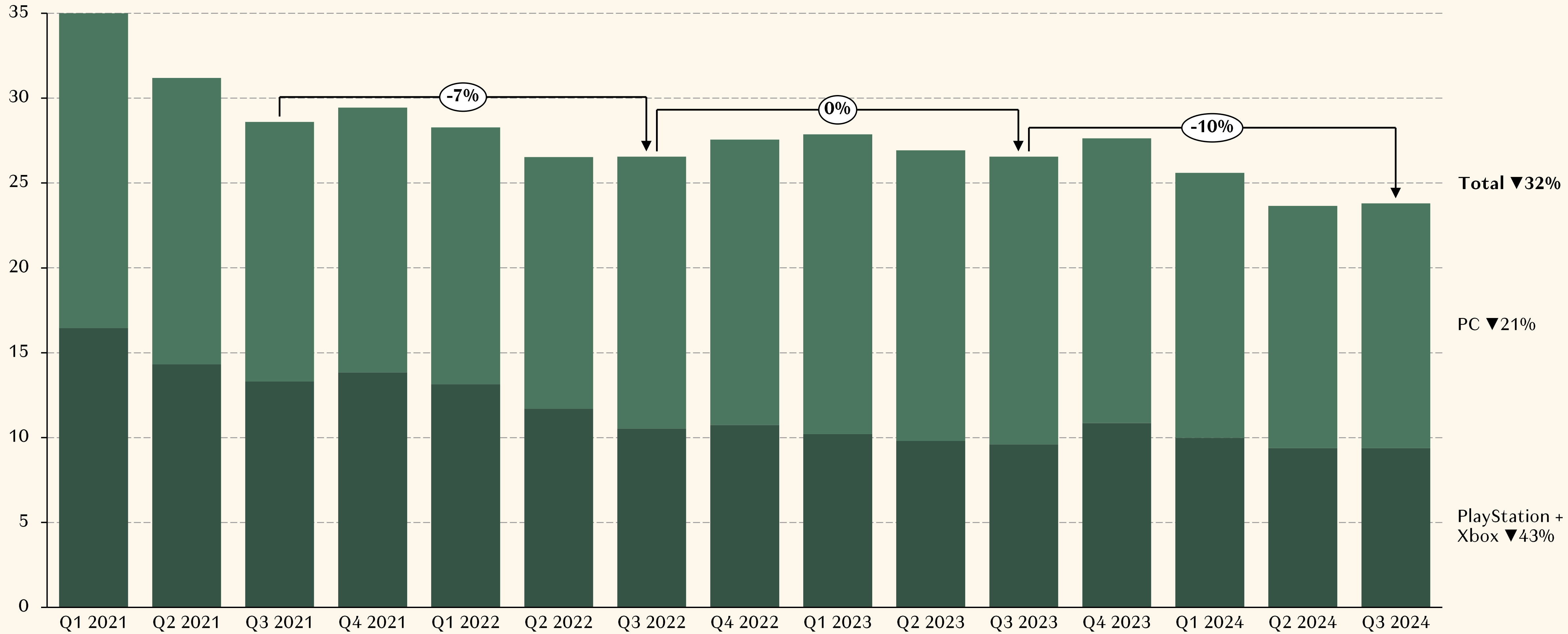
Sources: Ultra Market / Atomik Research, NPD Group, Epyllion analysis

Worse, Console + PC is experiencing ongoing engagement decreases; even so-called "hardcore" gamers are increasingly shifting time to other forms of leisure

EPYLLION
By Matthew Ball

Billions of Hours Played Per Quarter Among Adult PC, PlayStation, and Xbox Users

(Worldwide; 37 Markets Total and Excludes India and China; Excludes Nintendo Switch)



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Source: Newzoo

The AA/AAA segment's player, playtime, and pricing struggles are a surprise. Who wouldn't have bet on high-fidelity gaming if they'd seen the games of 2024 in 1994?

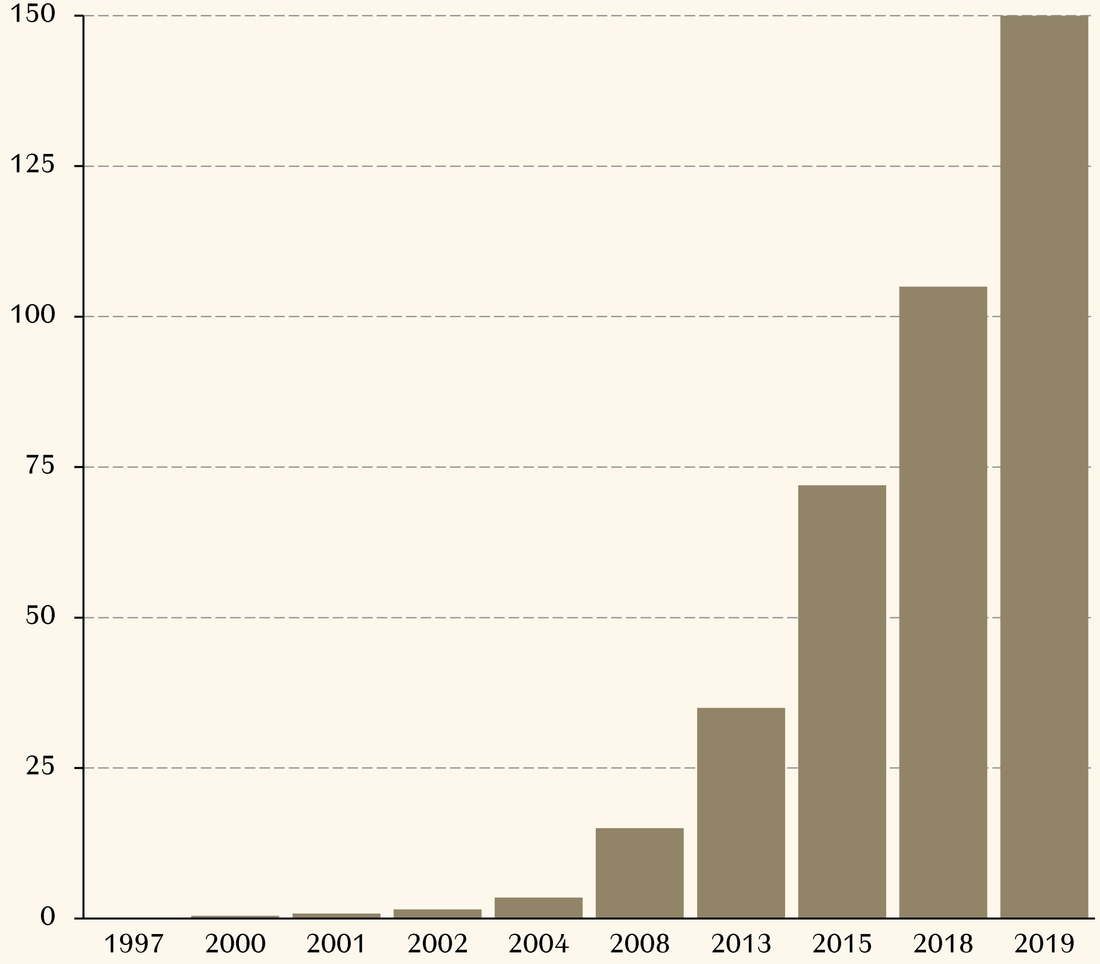
WATCH: https://www.youtube.com/watch?v=WU0gvPcc3jQ or https://tinyurl.com/StateofVideoGaming2025-Matrix

Source: Epic Games

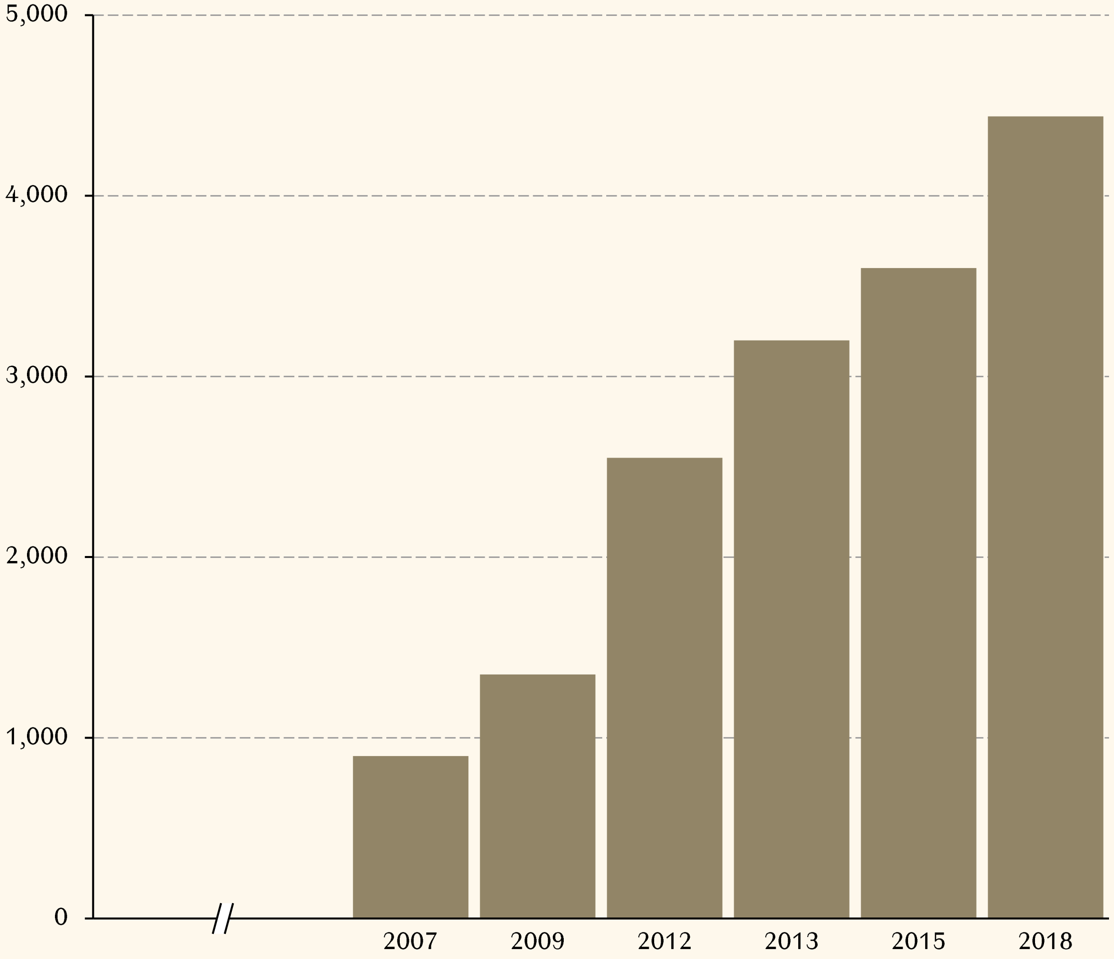
Unfortunately, improvements in game fidelity, scale, and capability have led to a massive increase in the resources required to build such a game

EPYLLION
By Matthew Ball

Avg. Filesize per AAA Open World Action Game
(GB)



Avg. Credits per AAA Open World Action Game
(Does Not Include Uncredited Staff or Support)



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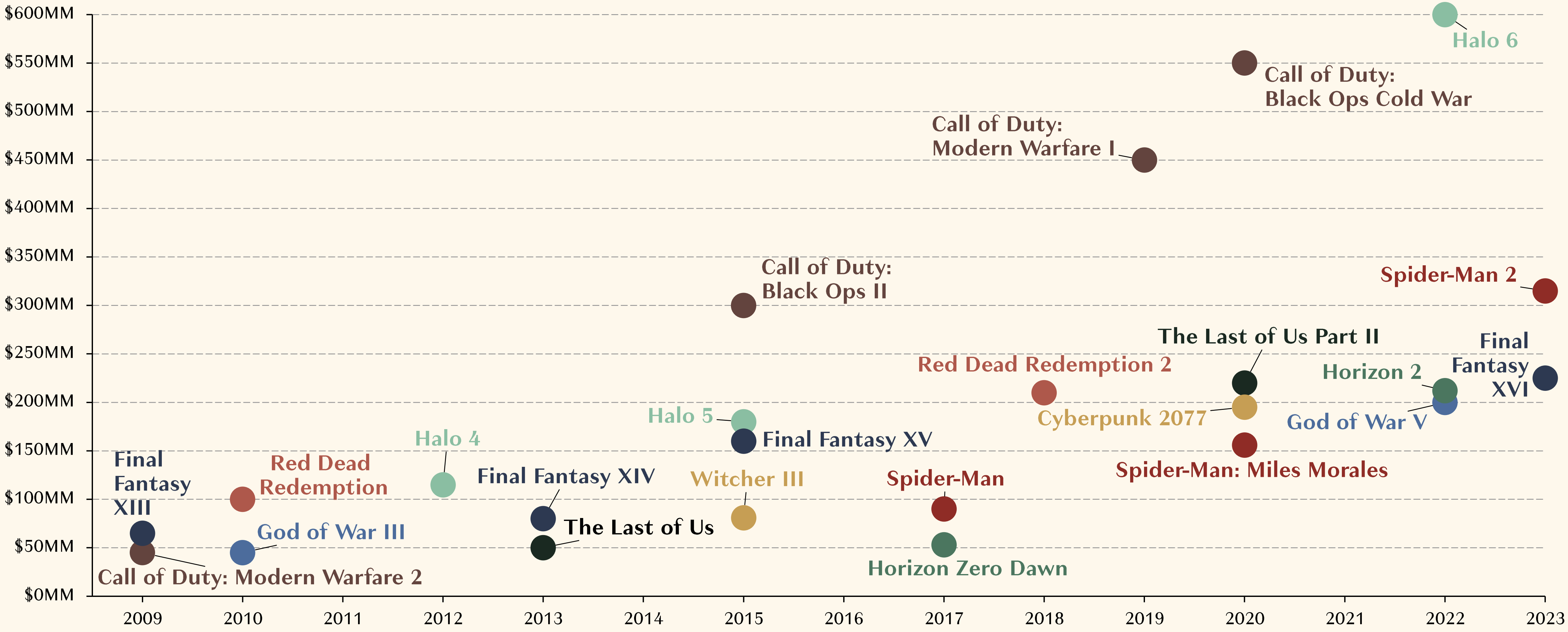
Source: Nexon

Franchises that cost $50 million per title only 15 years ago, now run $200–$500 million or more to develop — and costs are still growing

EPYLLION
By Matthew Ball



Confirmed and Independently Reported Production Budgets for Select Franchise Releases, Excluding Live Service Content/Support

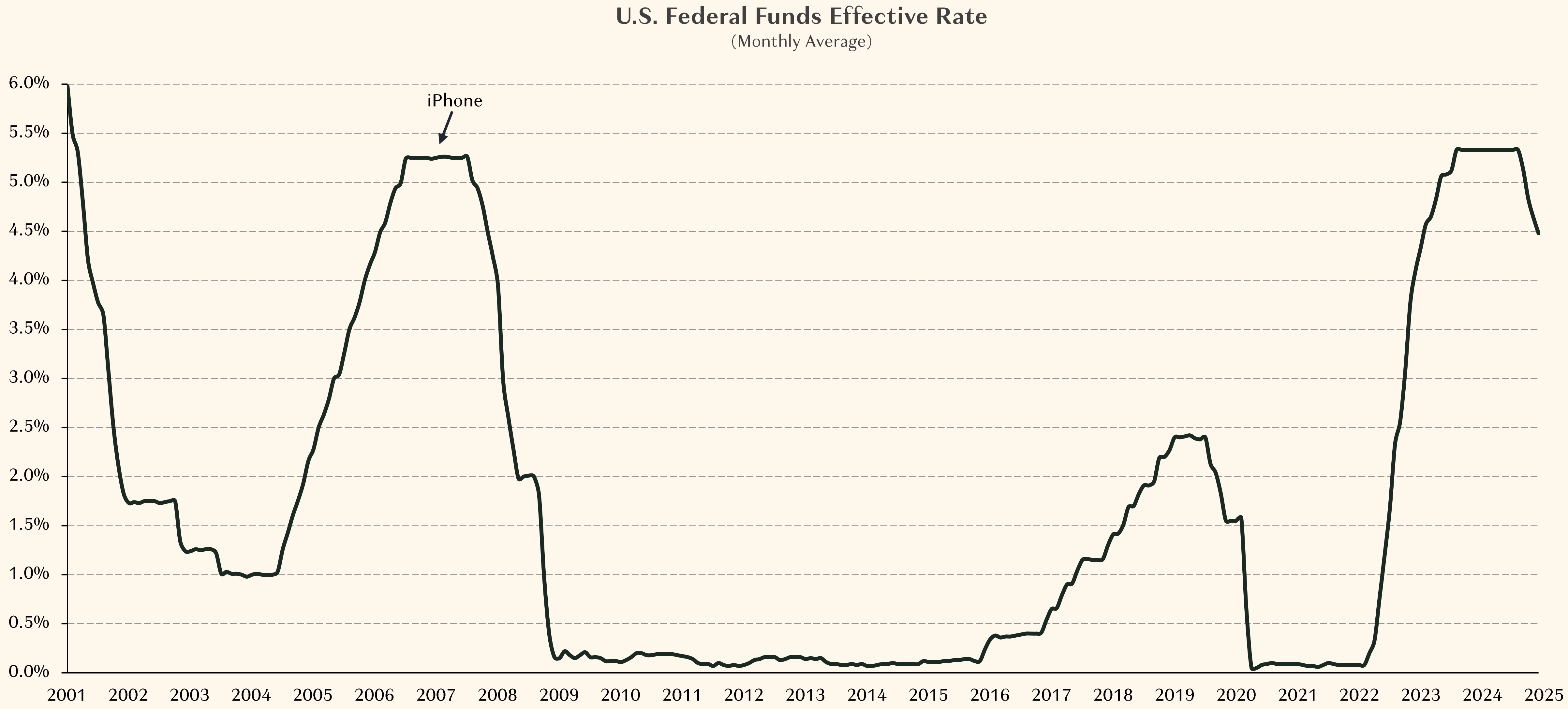
(USD, Excludes Marketing and Publishing Costs)

v.1/18/2025

Sources: Sony, Insomniac, Wedbush, CMA / IDC, LA Times, CD Projekt, NRC, Keywords, GameFile, Epyllion analysis

Inflation also hit 20+ year highs and surged at a pace not seen in 40+ years, leading to unanticipated debt costs and COLAs that have grown budgets another 10%+

EPYLLION
By Matthew Ball



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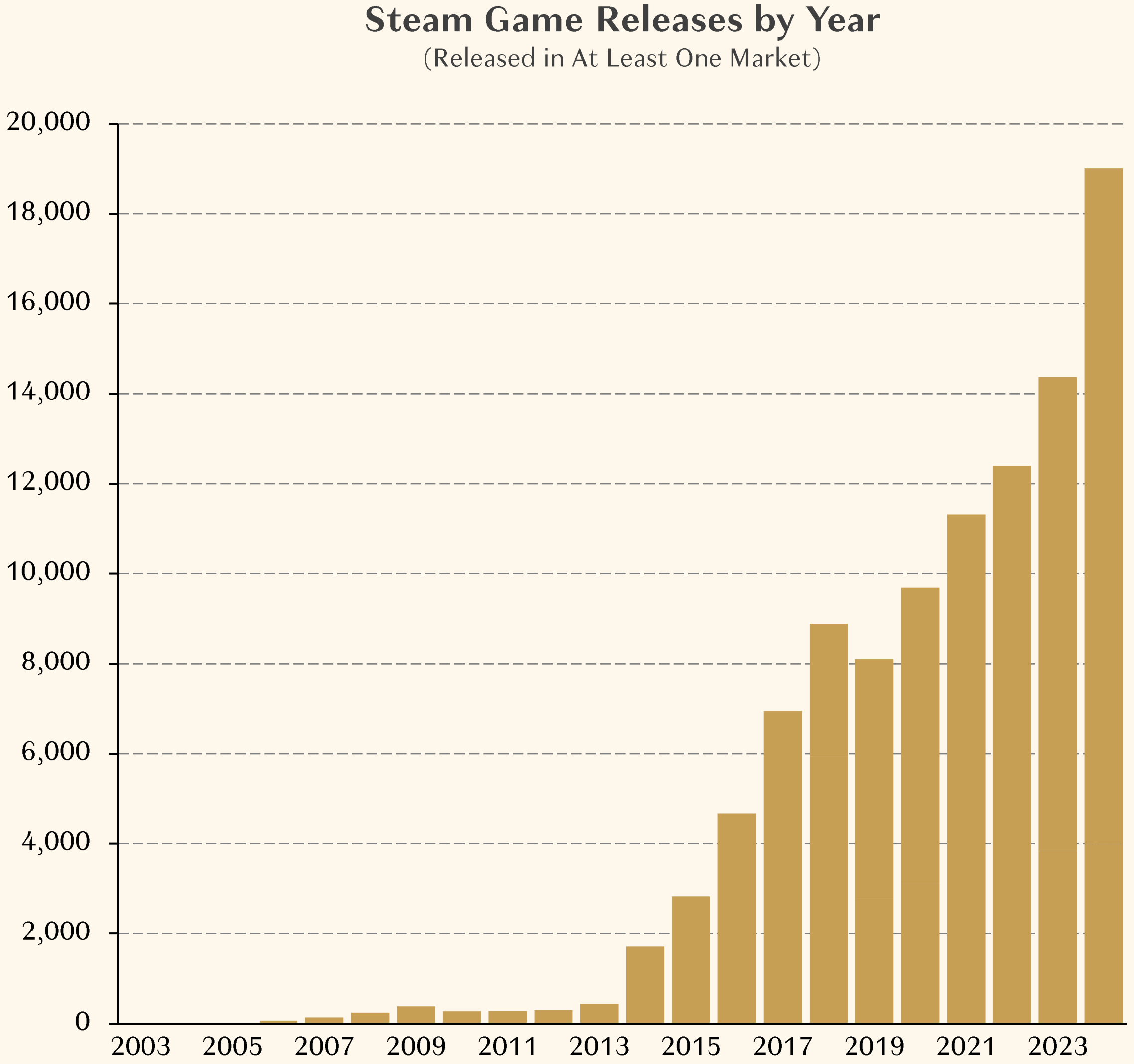
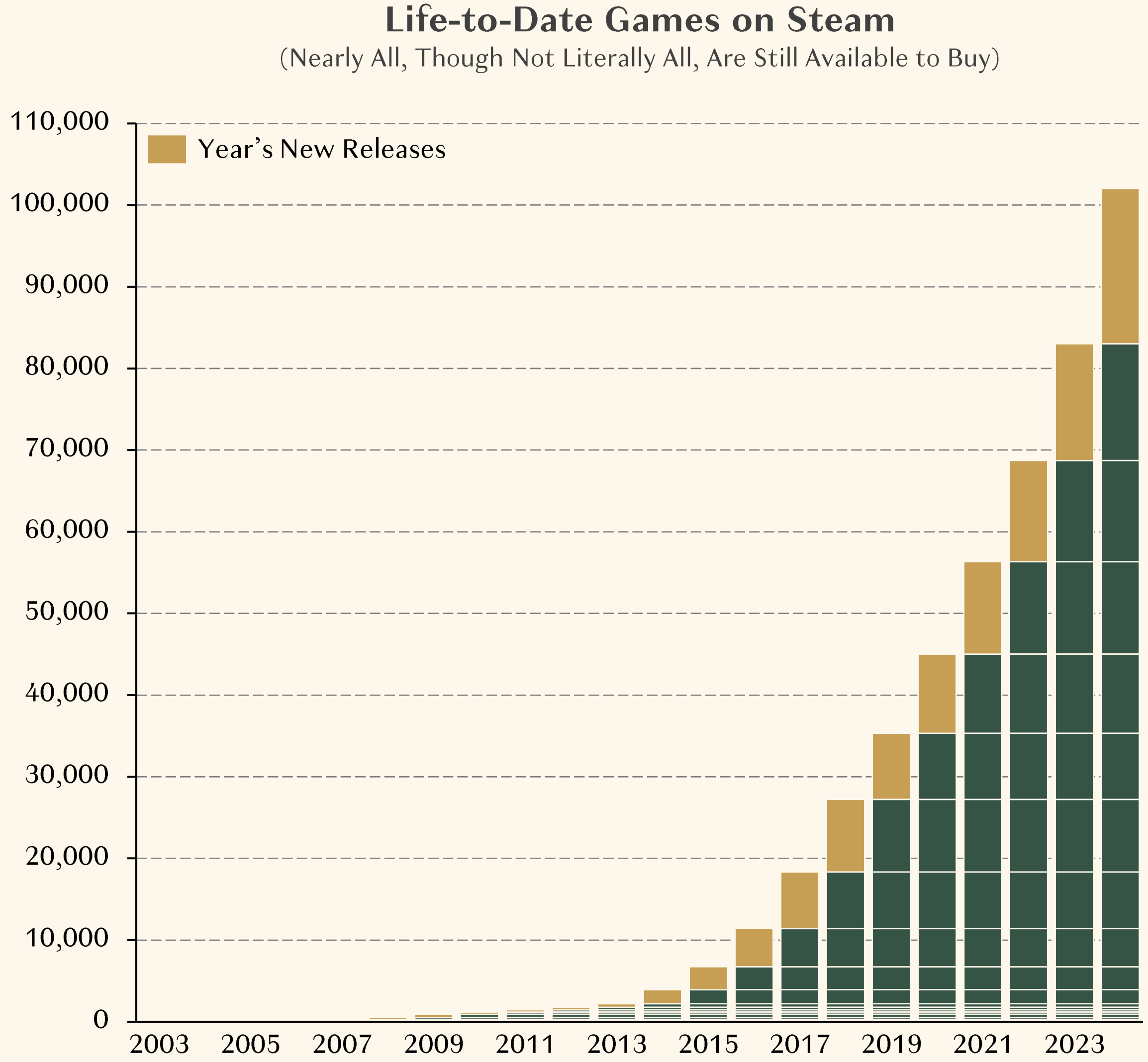
Source: Federal Reserve Board of St. Louis

What else has grown far faster than gamers or spend? The supply of games. In 2024, Steam released nearly as many games per *month* as it did in 2014 *overall*

EPYLLION
BY MATTHEW BALL





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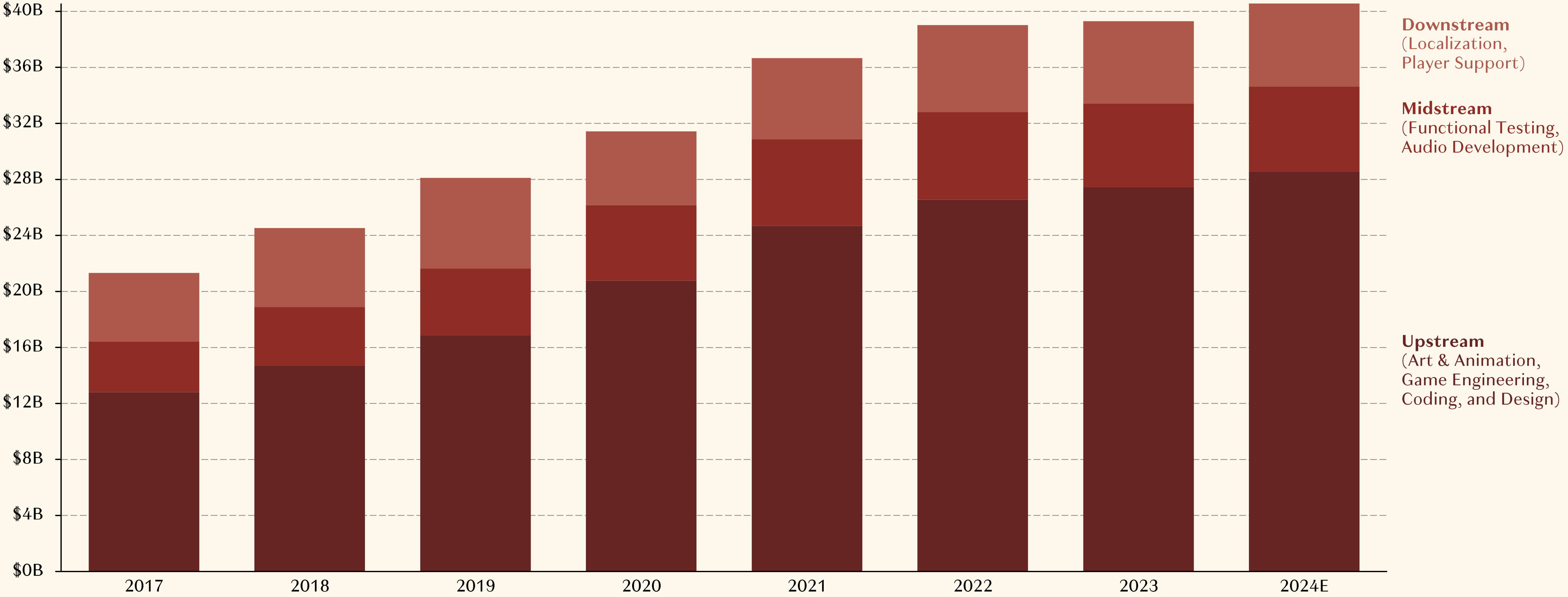
Sources: SteamDB, Video Game Insights, Epyllion analysis

In total, industry-wide content development spend has surged 90% since 2017 — 1.6x the rate of consumer spend growth (and 2.1x that of Console/PC)

EPYLLION
By Matthew Ball

Total Video Game Content Development Spend
(Worldwide)



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Sources: IDG Intelligence, Keywords, Epyllion analysis

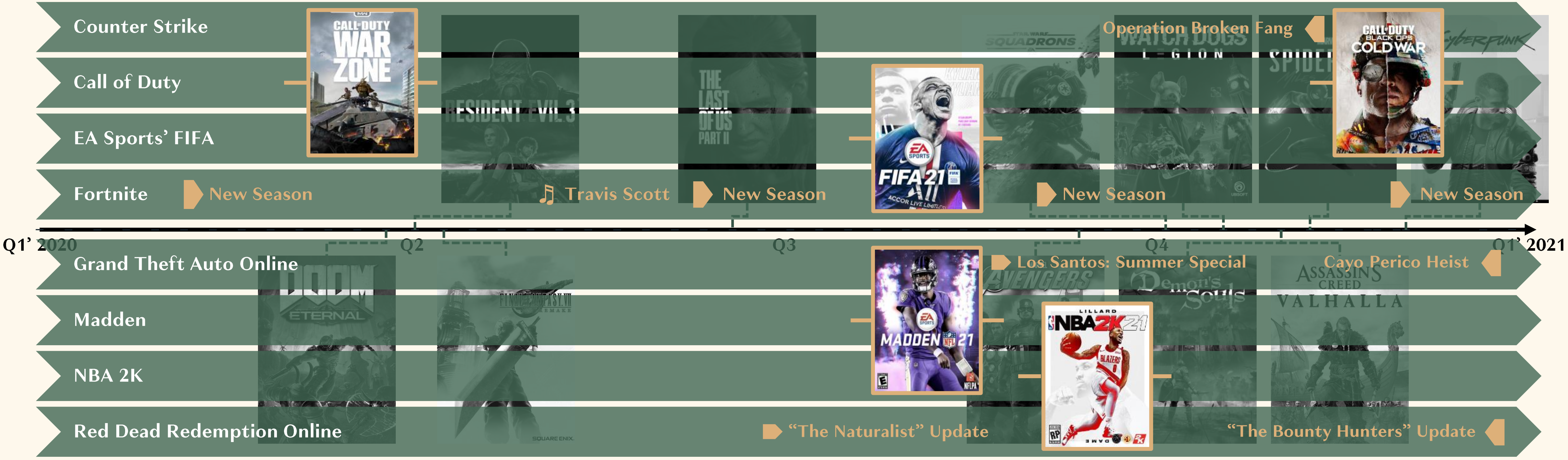
With higher budgets and more competition, yet few new players, dollars, or hours, competition has become more zero-sum than ever — and breakevens even rarer

Major Packaged AAA Video Game Releases Targeting Roughly the Same Player

And of course, new releases exist in a market where many of the top games release annual or even quarterly updates

EPYLLION
By Matthew Ball

Major Packaged AAA Video Game Releases Targeting Roughly the Same Player, Including Top Annual Releases and DLC/Updates



v.1/18/2025

And the top games in a given year? Well, they're almost always the top games in *any* given year

EPYLLION
By Matthew Ball

Best-Selling Packaged Games by Year by Packaged Sale Revenues

(US Only; Excludes Revenues From DLC and Microtransactions)

Rank	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024E
1	Call of Duty: Modern Warfare 3	Call of Duty: Black Ops II	Grand Theft Auto V	Call of Duty: Advanced Warfare	Call of Duty: Black Ops III	Call of Duty: Infinite Warfare	Call of Duty: WWII	Red Dead Redemption II	Call of Duty: Modern Warfare	Call of Duty: Black Ops: Cold War	Call of Duty: Vanguard	Call of Duty: Modern Warfare 2	Hogwarts Legacy	EA Sports College Football 25
2	The Elder Scrolls V: Skyrim	Halo 4	Call of Duty: Ghosts	Destiny	Fallout 4	Battlefield 1	NBA 2K18	Call of Duty: Black Ops 4	NBA 2K20	Call of Duty: Modern Warfare	NBA 2K22	Elden Ring	Call of Duty: Modern Warfare III	Call of Duty: Black Ops 6
3	Madden NFL 12	Madden NFL 13	Madden NFL 25: 1989 – 2014	Grand Theft Auto V	Grand Theft Auto V	Tom Clancy's The Division	Destiny 2	NBA 2K19	Madden NFL 20	NBA 2K21	Call of Duty: Black Ops: Cold War	NBA 2K23	Madden NFL 24	Helldivers II
4	Battlefield 3	Assassin's Creed III	Battlefield 4	Madden NFL 15	Star Wars: Battlefront	NBA 2K17	Madden NFL 18	Super Smash Bros. Ultimate	Pokémon: Sword/Shield	Animal Crossing: New Horizons	Madden NFL 22	Madden NFL 23	Marvel's Spider-Man 2	Dragon Ball: Sparkling! Zero
5	Call of Duty: Black Ops	Borderlands 2	Assassin's Creed IV: Black Flag	Watch Dogs	Madden NFL 16	Madden NFL 17	Legend of Zelda: Breath of the Wild	Madden NFL 19	Borderlands 3	Madden NFL 21	Pokémon: Brilliant Diamond /Shining Pearl	God of War: Ragnarök	NBA 2K24	Call of Duty III: Modern Warfare III
6	Just Dance 3	NBA 2K13	NBA 2K14	NBA 2K15	NBA 2K16	Grand Theft Auto V	Grand Theft Auto V	Marvel's Spider-Man	Mortal Kombat	Assassin's Creed: Valhalla	Battlefield 2042	LEGO Star Wars: The Skywalker Saga	The Legend of Zelda: Tears of the Kingdom	Madden NFL 25
7	Gears of War 3	Call of Duty: Modern Warfare 3	Call of Duty: Black Ops II	Super Smash Bros.	Mortal Kombat X	Pokémon: Sun/Moon	Tom Clancy's Ghost Recon: Wildlands	Far Cry 5	Star Wars: Jedi: Fallen Order	The Last of Us: Part II	Marvel's Spider-Man: Miles Morales	Pokémon: Scarlet/Violet	Diablo IV	EA Sports FC 25
8	Batman: Arkham City	Just Dance 4	Pokémon X/Y	Titanfall	Destiny	Overwatch	Star Wars: Battlefront II	God of War	Super Smash Bros. Ultimate	Grand Theft Auto V	Mario Kart 8	FIFA 23	Call of Duty: Modern Warfare 2	EA Sports MVP Bundle
9	Pokémon Black/White	Mass Effect 3	Disney Infinity	FIFA 15	Halo 5: Guardians	The Elder Scrolls V: Skyrim	Super Mario Odyssey	Monster Hunter: World	Kingdom Hearts III	Ghost of Tsushima	Grand Theft Auto V	Pokémon Legends: Arceus	Mortal Kombat 1	Elden Ring
10	Assassin's Creed: Revelations	Skylanders: Giants	Bioshock: Infinite	Minecraft	Batman: Arkham Knight	Call of Duty: Black Ops III	Mario Kart 8	hon: Let's Go	Tom Clancy's The Division 2	Doom Eternal	Resident Evil: Village	Horizon II: Forbidden West	Star Wars: Jedi: Survivor	Dragons Dogma
11	Mortal Kombat	The Elder Scrolls V: Skyrim	FIFA 14	Far Cry 4	Battlefield: Hardline	FIFA 17	Assassin's Creed: Origins	Grand Theft Auto V	Mario Kart 8	Mario Kart 8	MLB: The Show 21	Grand Theft Auto V	EA Sports FC 24	MLB: The Show 24
12	NBA 2K12	FIFA Soccer 13	Skylanders: Swap Force	Call of Duty: Ghosts	FIFA 16	Final Fantasy XV	FIFA 18	Assassin's Creed: Odyssey	Grand Theft Auto V	Super Mario 3D All-Stars	Far Cry 6	WWE 2K22	Starfield	WWE 2K24

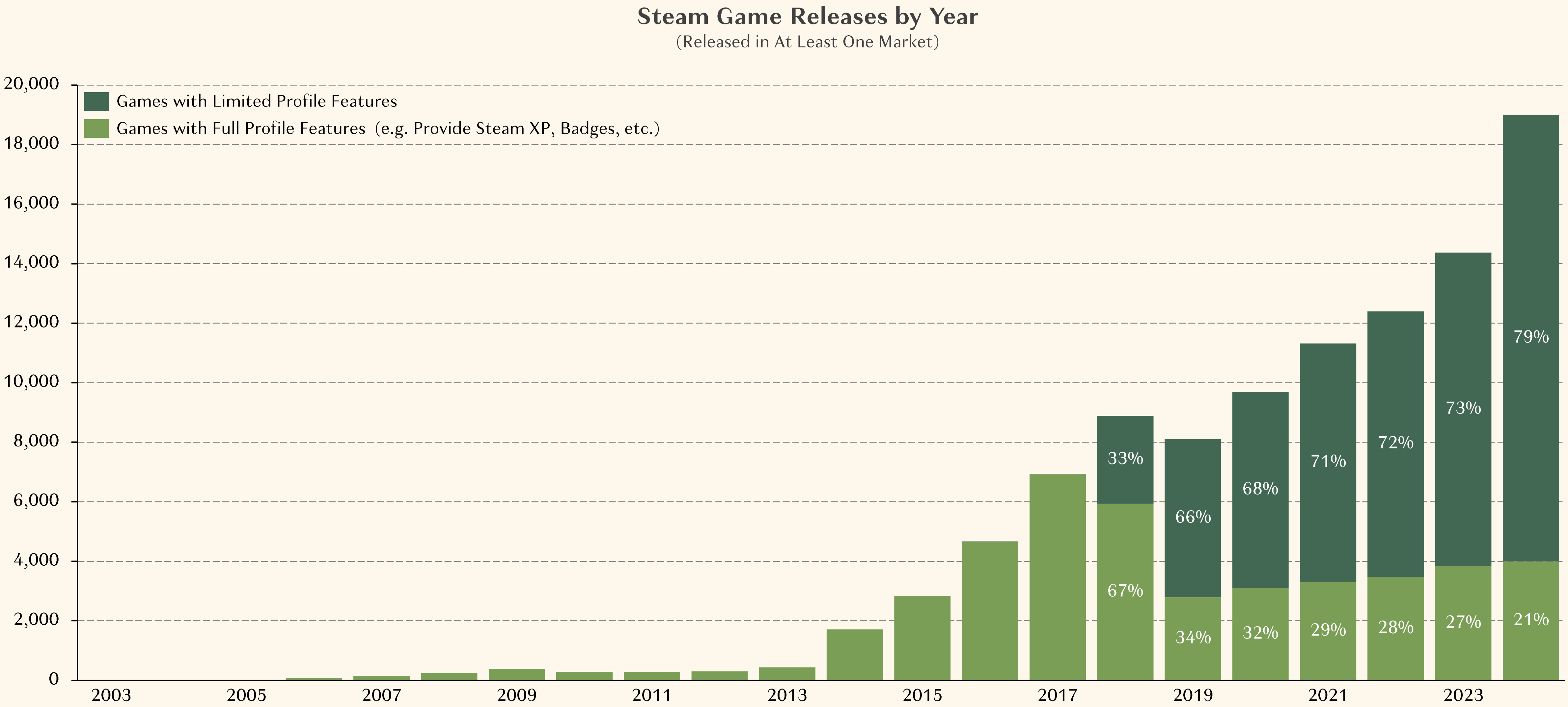
▨ *At Least Four Appearances*

v.1/18/2025

Sources: Circana, Epyllion analysis

Steam is best-in-class for game discovery. Still, 80% of 2024's 19,000 releases didn't qualify for Steam's full social feature functionality (~$5K in sales in 2024)

EPYLLION
By Matthew Ball



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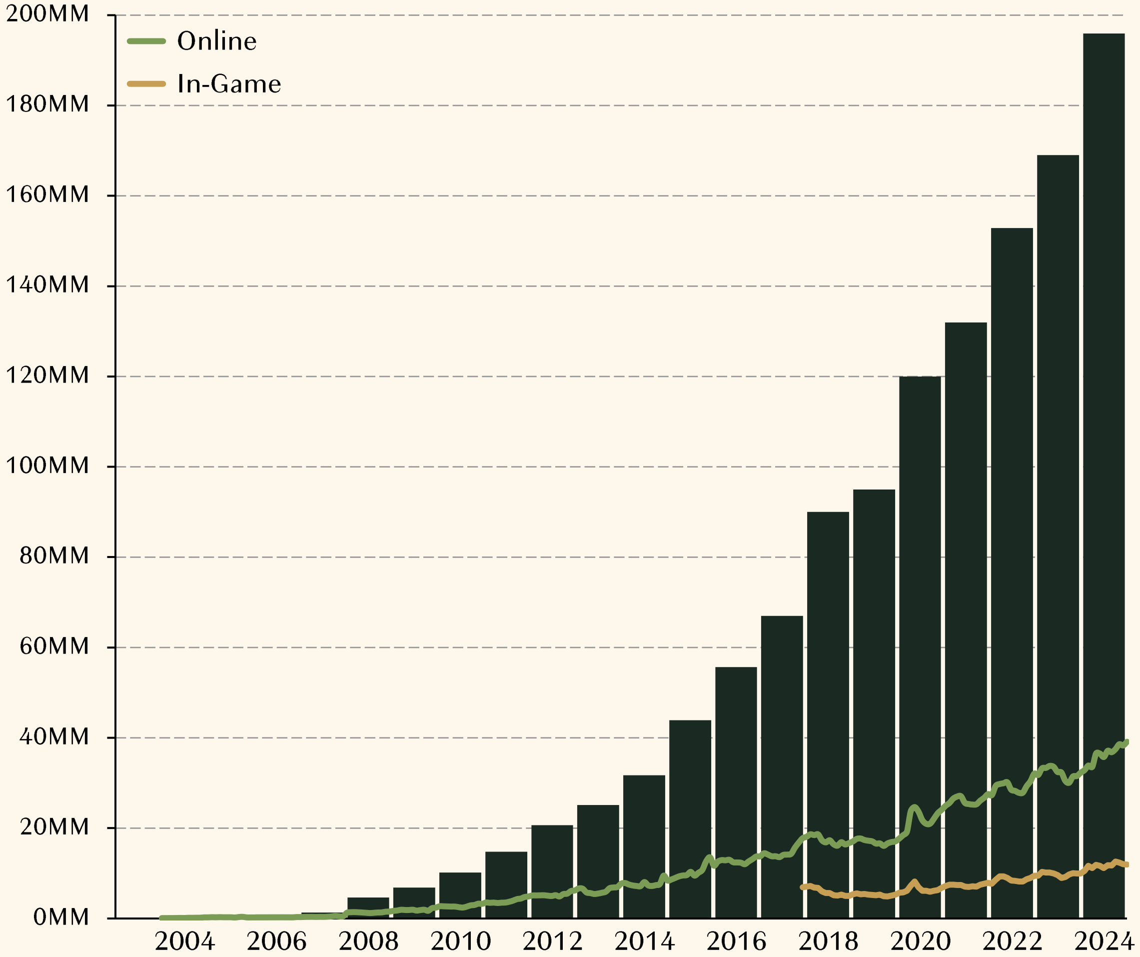
Sources: SteamDB, Epyllion analysis

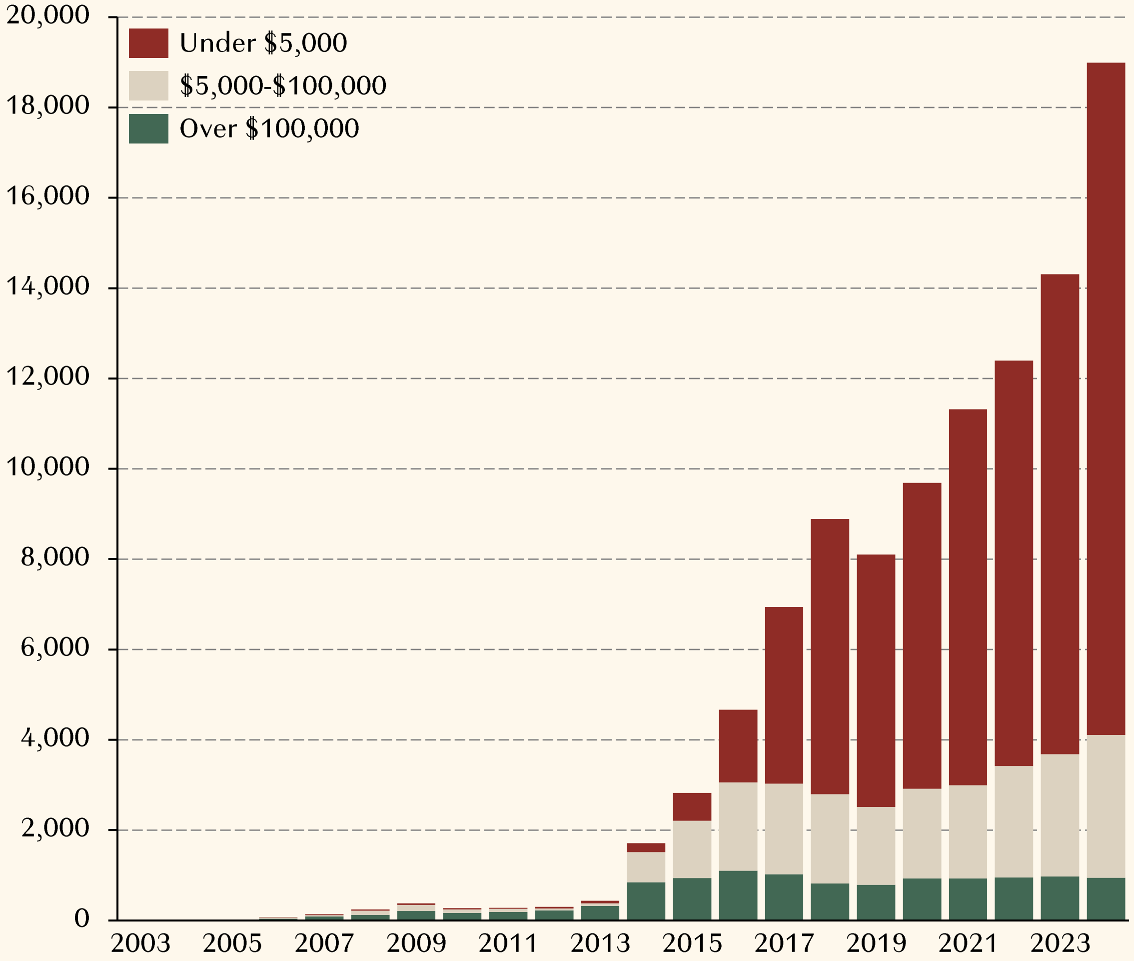
In fact, 150 fewer Steam new releases grossed >$100,000 in 2024 than in 2016 — even though users are up 250%, new releases over 300%, and user spend up 200%

EPYLLION
By Matthew Ball

Estimated Steam MAUs and Peak CCUs by Month
(Worldwide)



Steam Game Release by Year, First Year Sales
(Released in At Least One Market, Includes Microtransactions)



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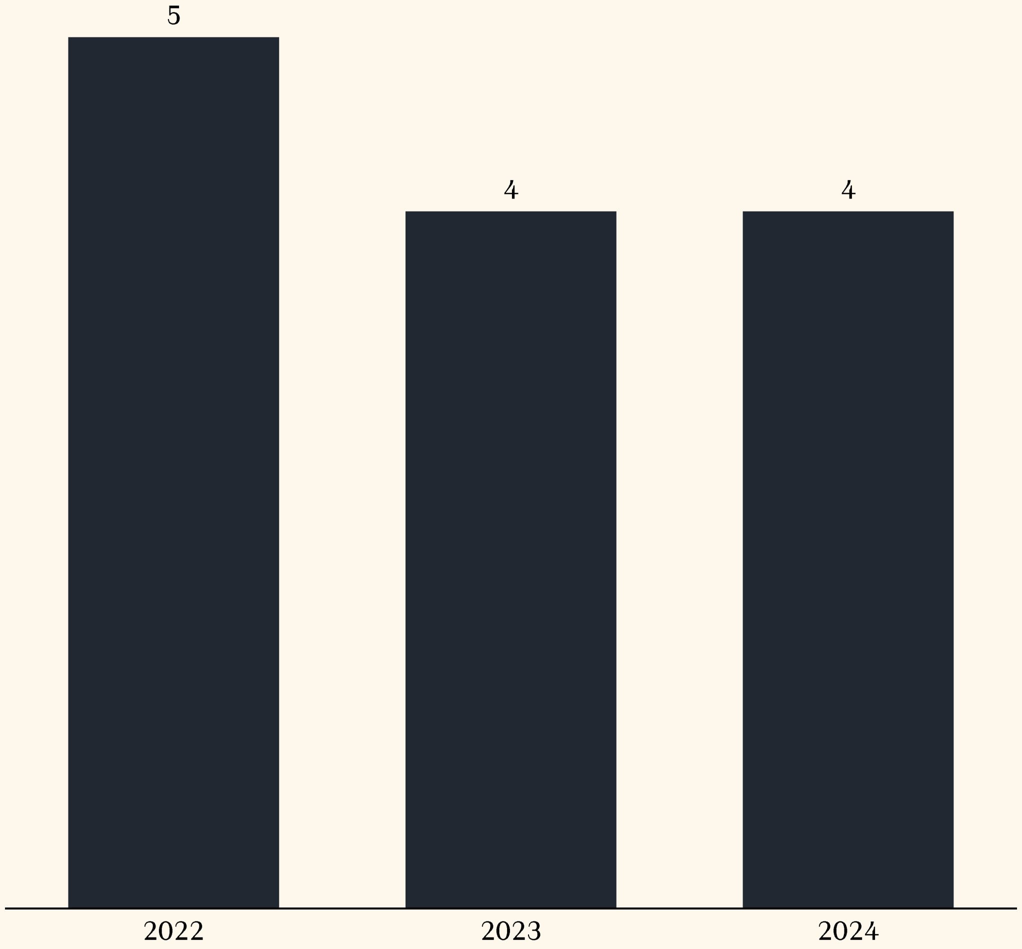
Sources: Valve, SteamDB, Video Game Insights, Epyllion analysis

Steam users play only 4 games a year, with games 8+ years old getting 40% of total playtime and *Counter-Strike* another 13%; the 12-19,000 new releases get only 12%

EPYLLION
By Matthew Ball

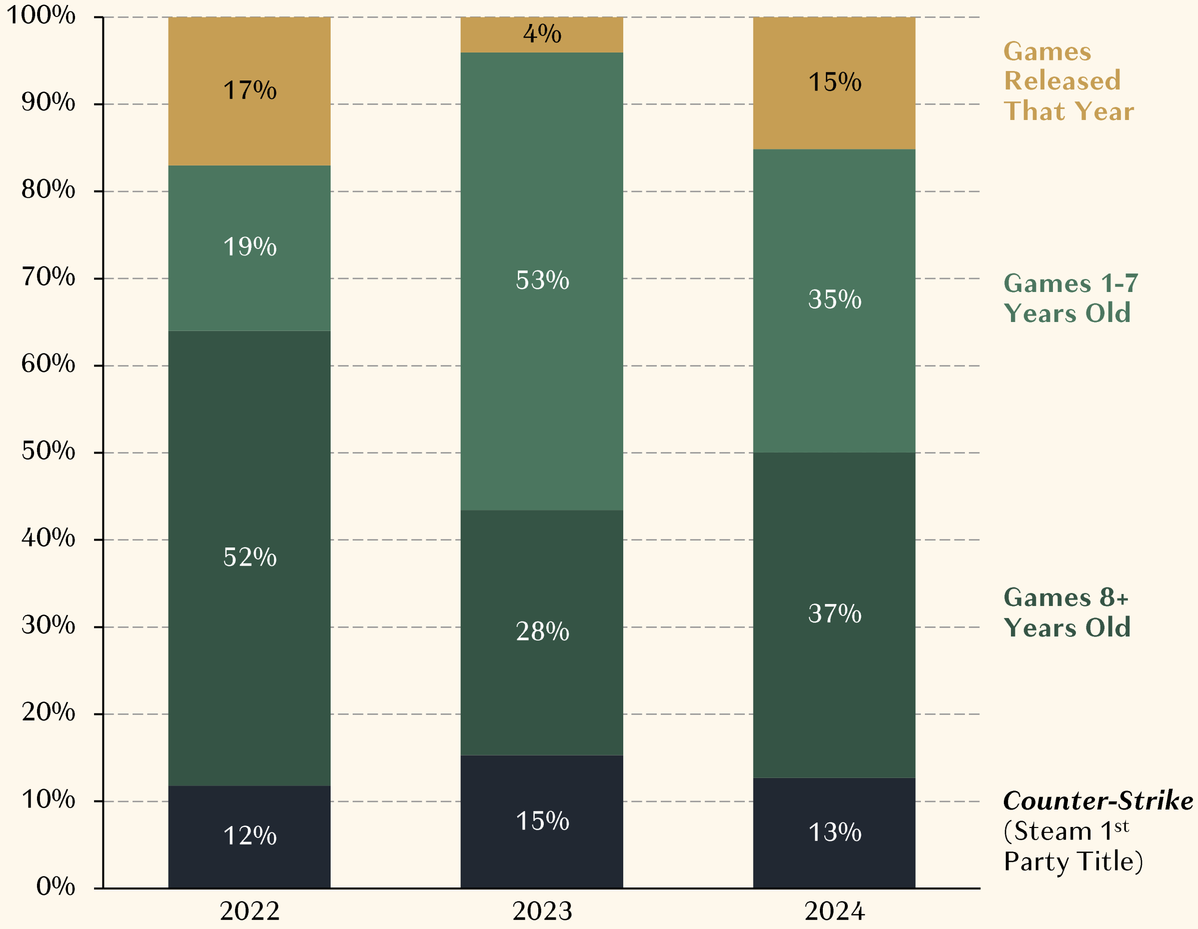
Median Games Played per Steam MAU

(Worldwide)



Playtime on Steam By Year

(Released in At Least One Market)



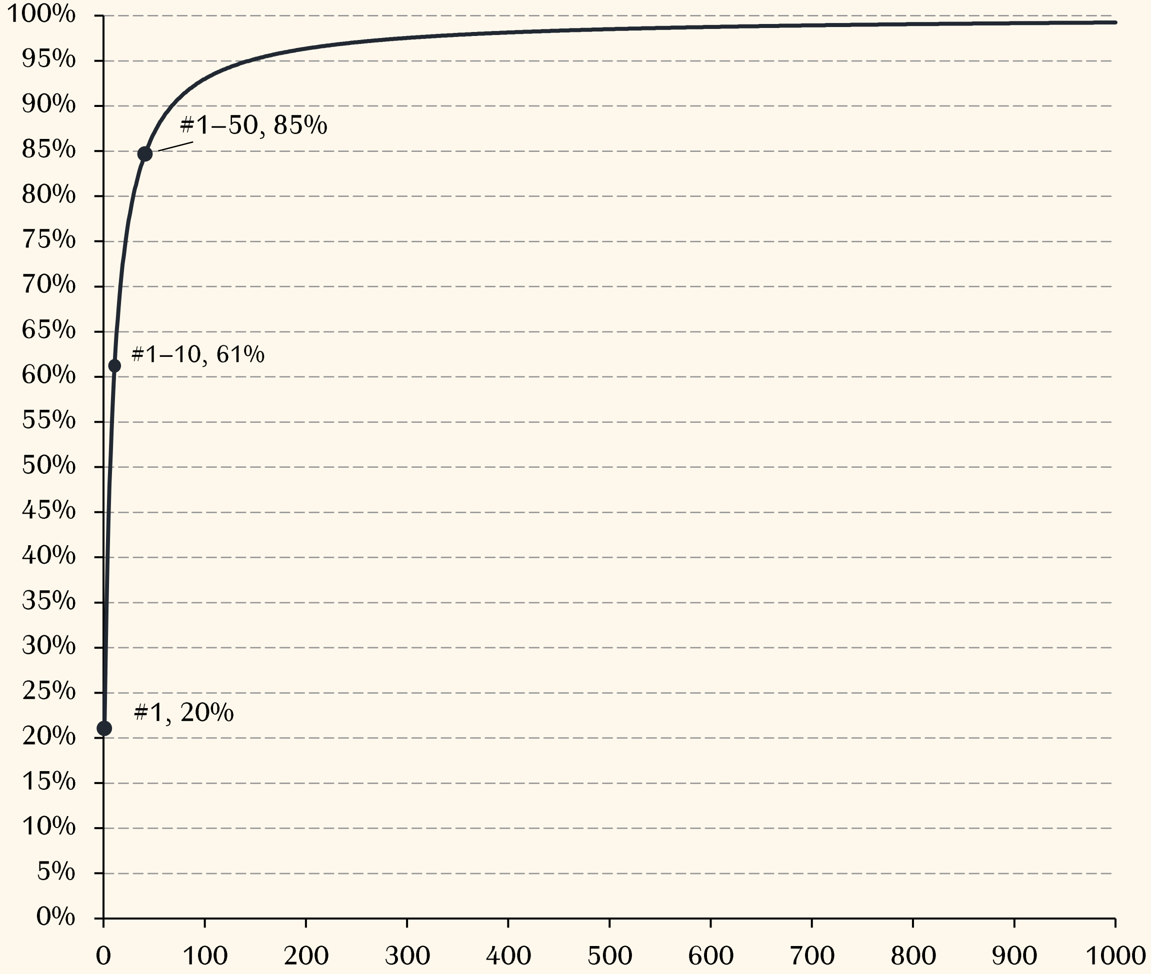
v.1/18/2025

Sources: Valve, Epyllion analysis

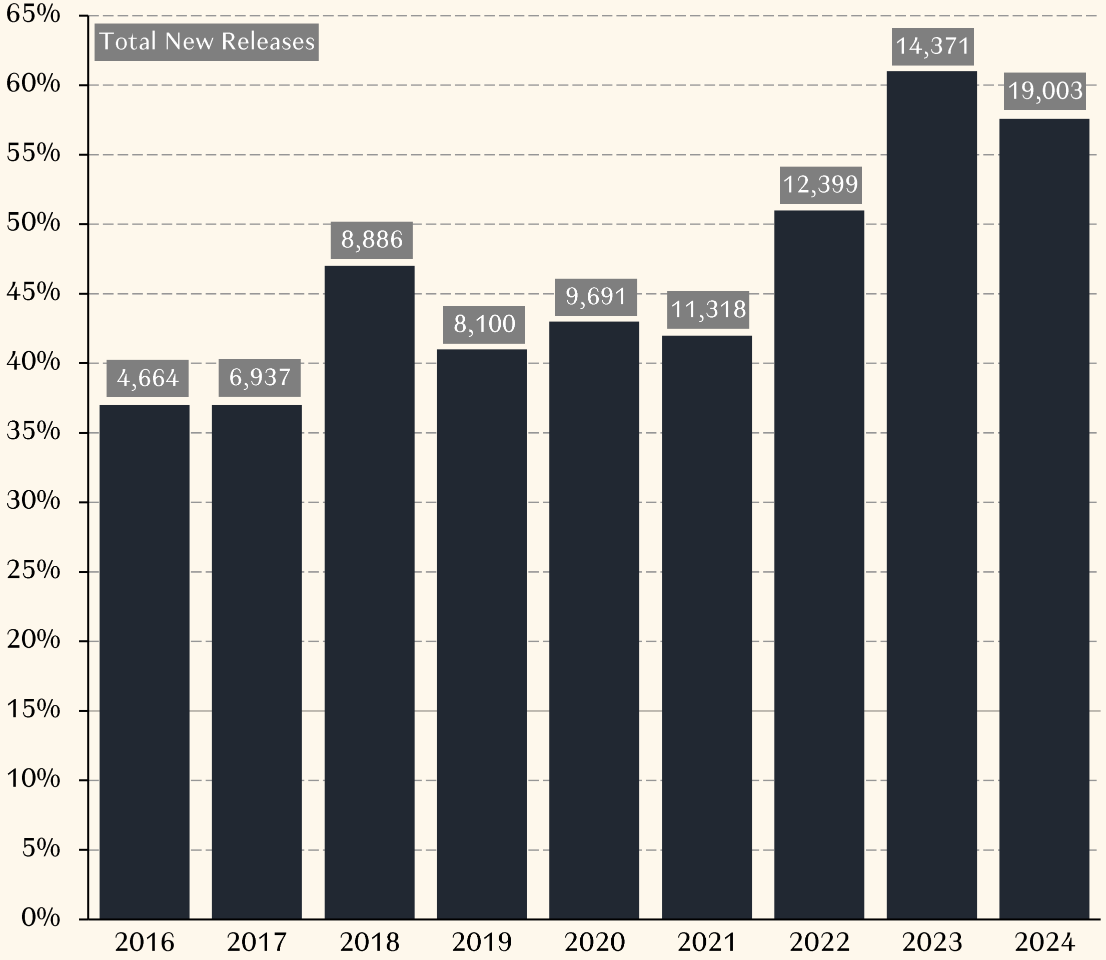
And among the thousands of annual releases fighting for 12% of playtime, #1 gets 20% of sales and #1–10 take 60% (a share that has grown even as output swelled)

EPYLLION
By Matthew Ball

Share of Total New Game Sales on Steam, Top N Releases
(2023; Worldwide)



Share of Total New Game Sales on Steam, Top 10 Releases
(Worldwide)



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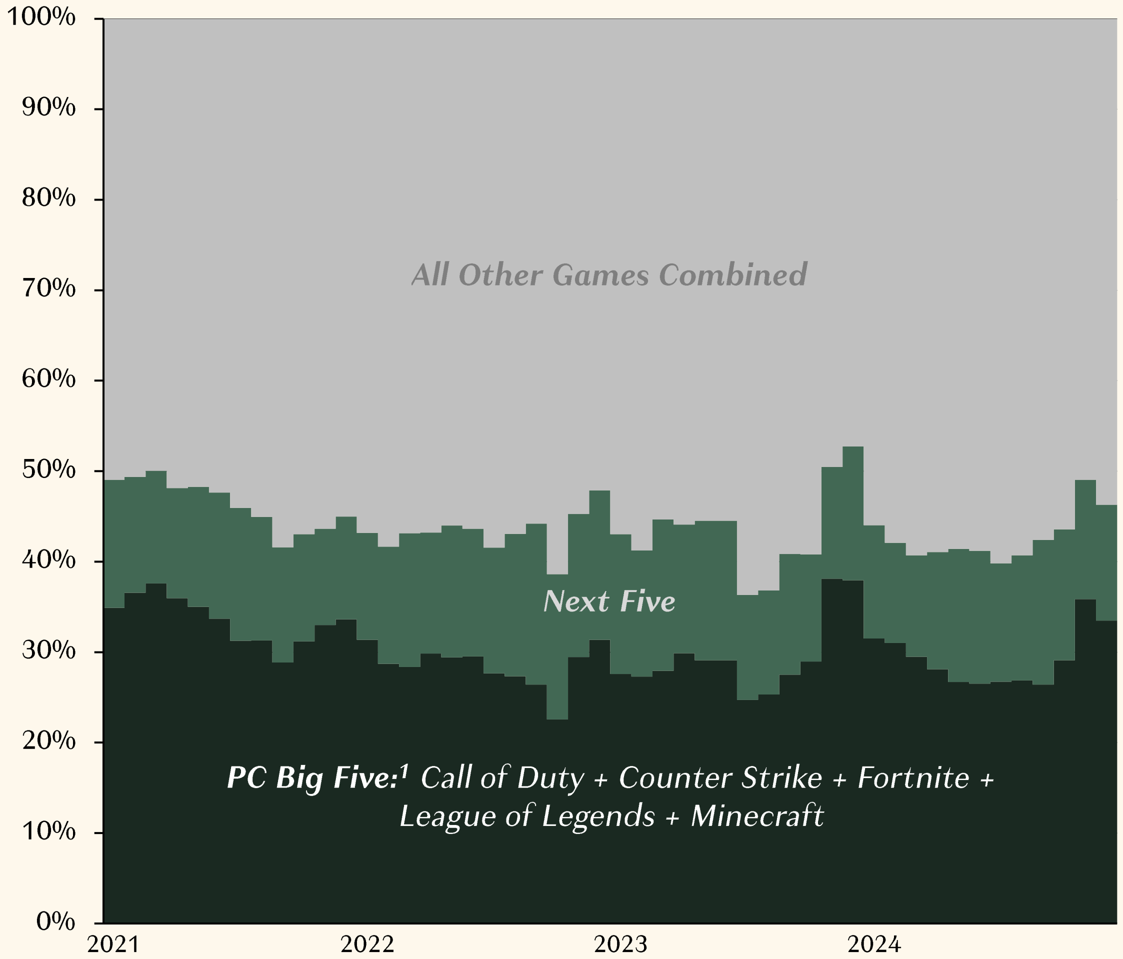
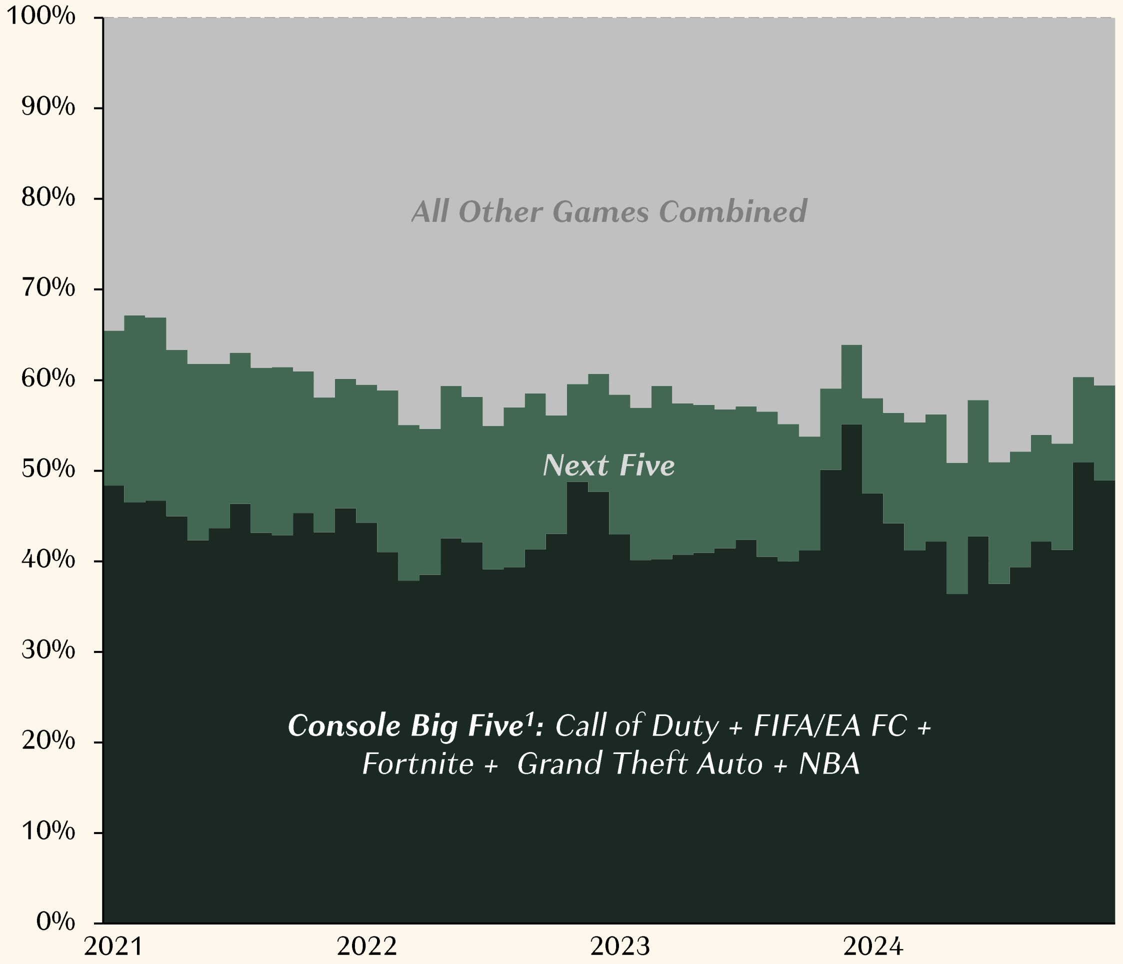
Sources: Video Game Insights, SteamDB

In total, the *same* five franchises on PC (which are 6–22 years old) have averaged 30% of playtime for 4 years straight. On PS/Xbox (7–31 years), it's a stunning 43%!

Share of PC Engagement
(Worldwide; Users 18+; 37 Markets Total and Excludes India and China)



Share of PlayStation and Xbox Console Engagement
(Worldwide; Users 18+; 37 Markets Total and Excludes India and China)



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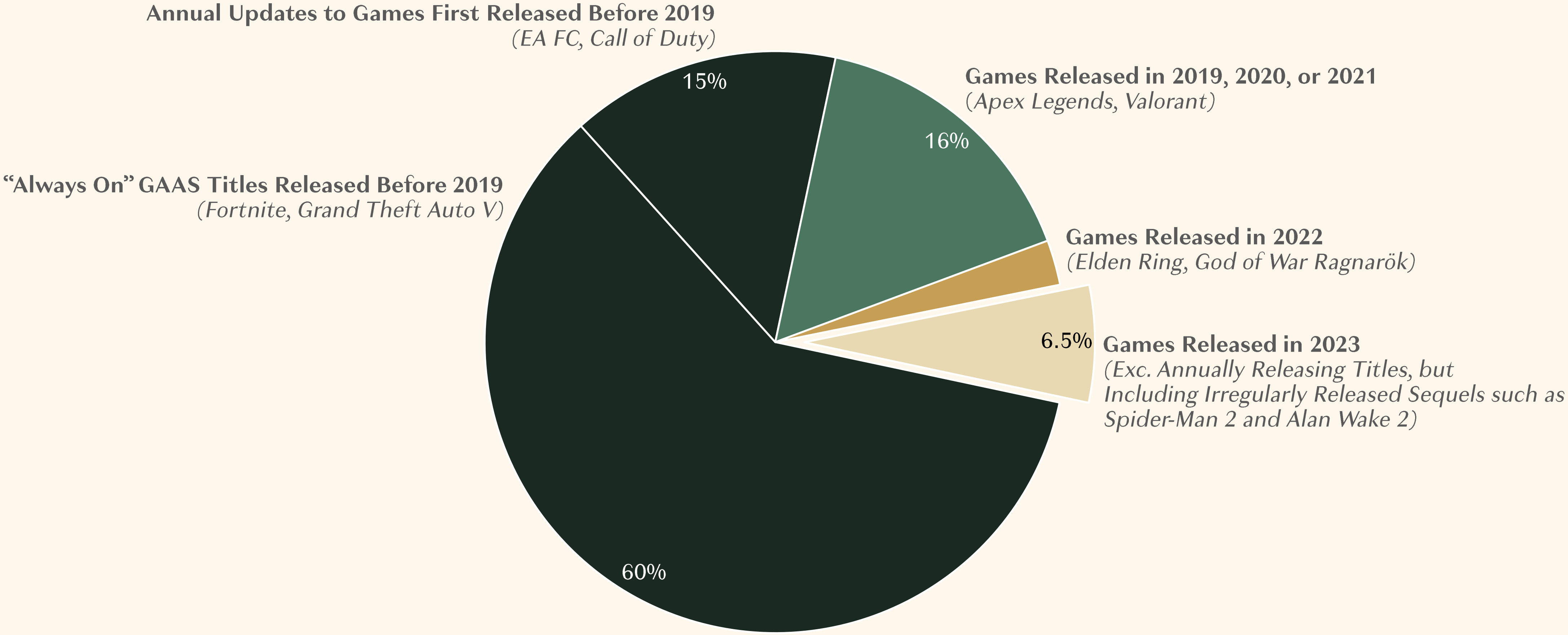
Notes: ¹Ordered alphabetically, rather than by time share

Sources: Newzoo, Epyllion analysis

Excluding annual releases (*NBA 2K*) but including sequels (*Spider-Man 2*), only 6.5% of gametime in 2023 was for *new* games (a share that was *high* vs. 2021, 2022, 2024)

Share of Time Spent Playing PC and PlayStation/Xbox Games in 2023

(Worldwide; Users 18+; 37 Markets Total and Excludes India and China)



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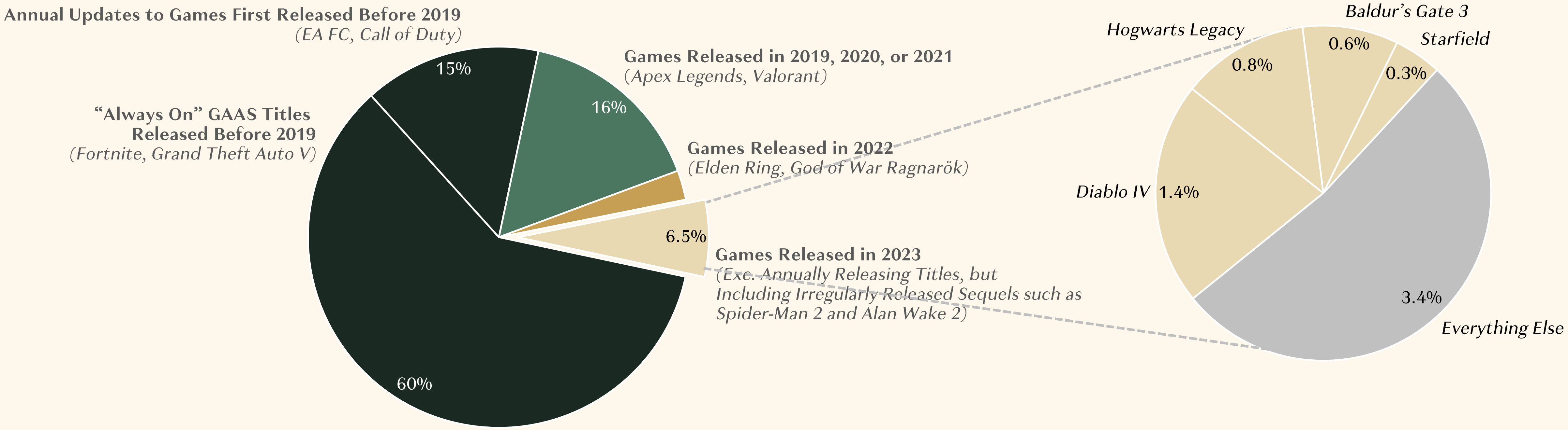
Sources: Newzoo, Epyllion analysis

Tens of billions in development and marketing investment and thousands of games competed for that 6.5% of total player hours (and four titles won half of it)

EPYLLION
BY MATTHEW BALL

Share of Time Spent Playing PC and PlayStation/Xbox Games in 2023

(Worldwide; Users 18+; 37 Markets Total and Excludes India and China)



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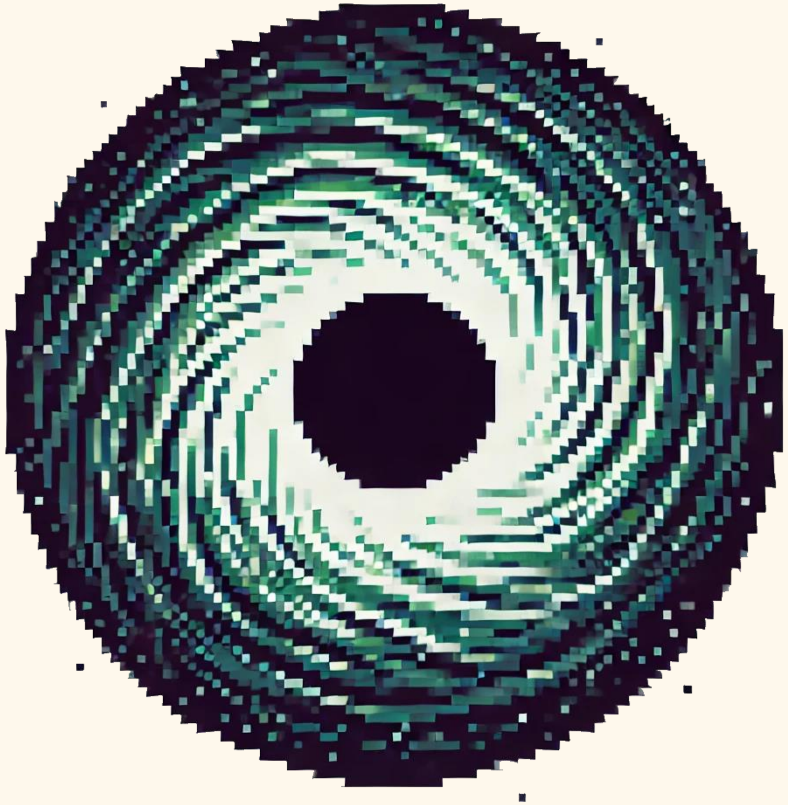
Sources: Newzoo, Epyllion analysis

"Black Hole Games" refers to a phenomenon whereby a massive franchise title has such a hold on players that it's nearly impossible for a new game to pull them away



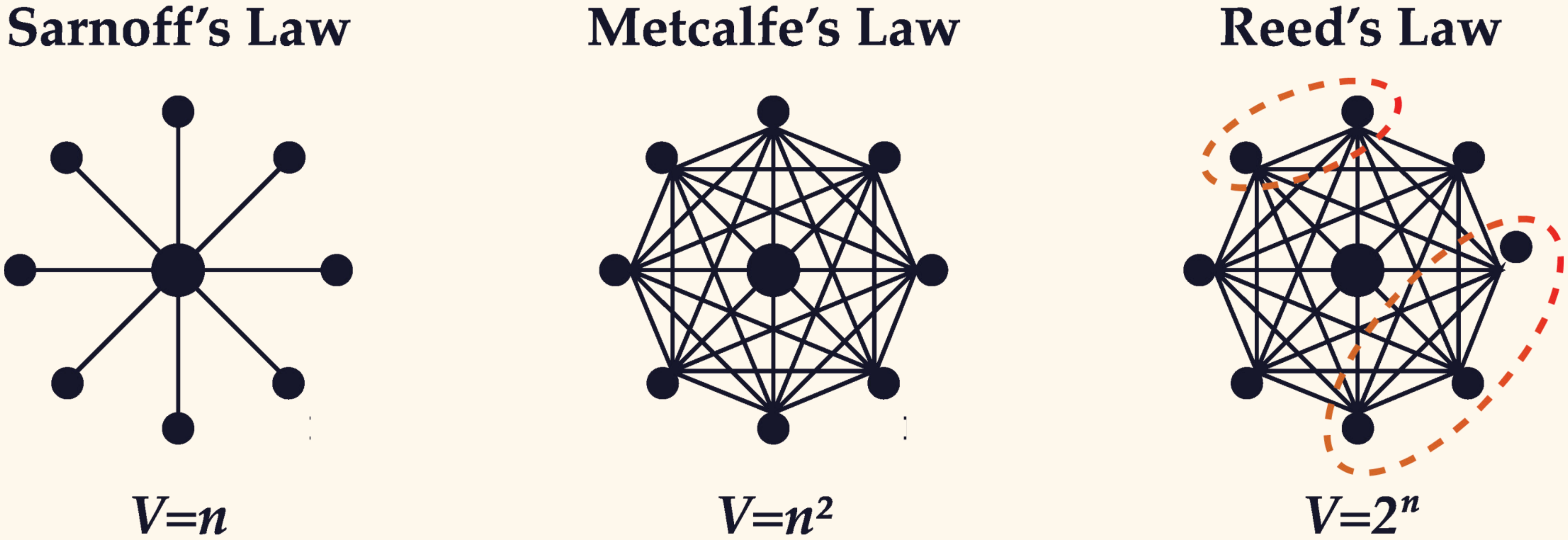
To compete with a Black Hole game, a would-be competitor must offer an experience that can overcome a player's…

1. Hundreds or thousands of hours achieving skill mastery (and comfort)
    - *800MM+ Fortnite players have probably spent 125B+ hours playing the game*
2. Hundreds or thousands of dollars in purchased entitlements (avatars, outfits, items, skins, etc.), and much more in earned entitlements
    - *Fortnite players have probably spent $30B on cosmetics and items, much of which is on licensed IP (e.g. Star Wars, Marvel, John Wick, Neymar) that is not available in any other game*
3. Hundreds of millions (or billions) of player connections and playmates, only a fraction of which will be on another game
    - *Epic counts over 6 billion player connections across Fortnite, Rocket League, and Epic Games Store*
4. Hundreds of millions of hours and investment dollars (if not billions) in ecosystem development
    - *Creators have launched over 150,000 UEFN games on Fortnite, with Epic paying $500MM to these creators since March 2023*
5. Confidence that their scarce time, money, effort, and social signaling will be durably rewarded

v.1/18/2025

Source: Epyllion analysis

Behind "Black Hole" games is not just Metcalfe's Law (the value of a network is a quadratic function) but the stronger Reed's Law (it is an exponential function)



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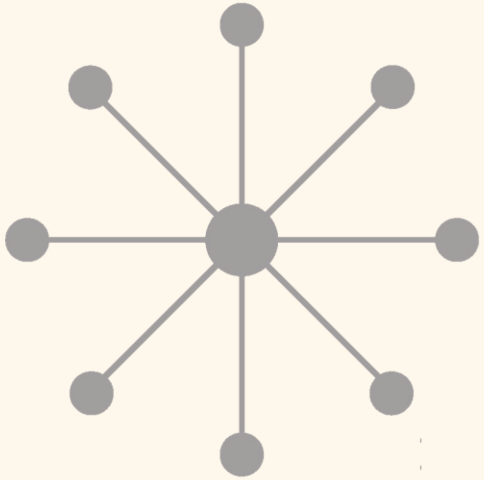
Source: NfX

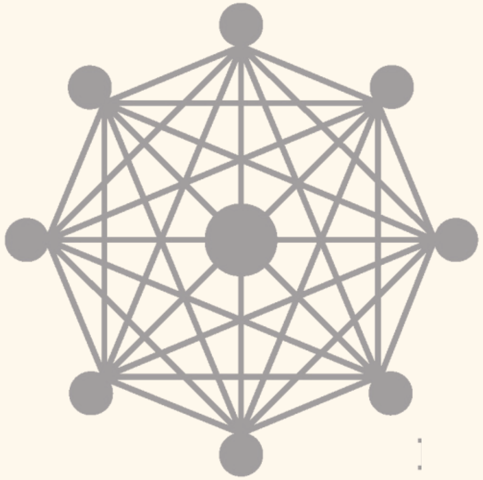
Reed's Law observes network strength on network size, as well as group and sub-group formation. An A+ game that lacks a player's squad is no A+ game.

Sarnoff's Law



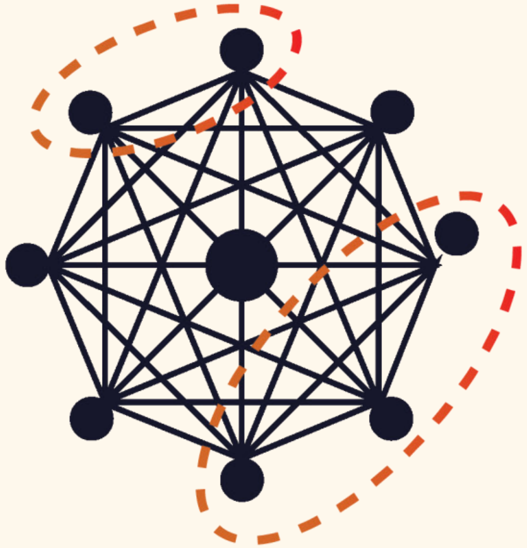
$V=n$

Metcalfe's Law



$V=n^2$

Reed's Law

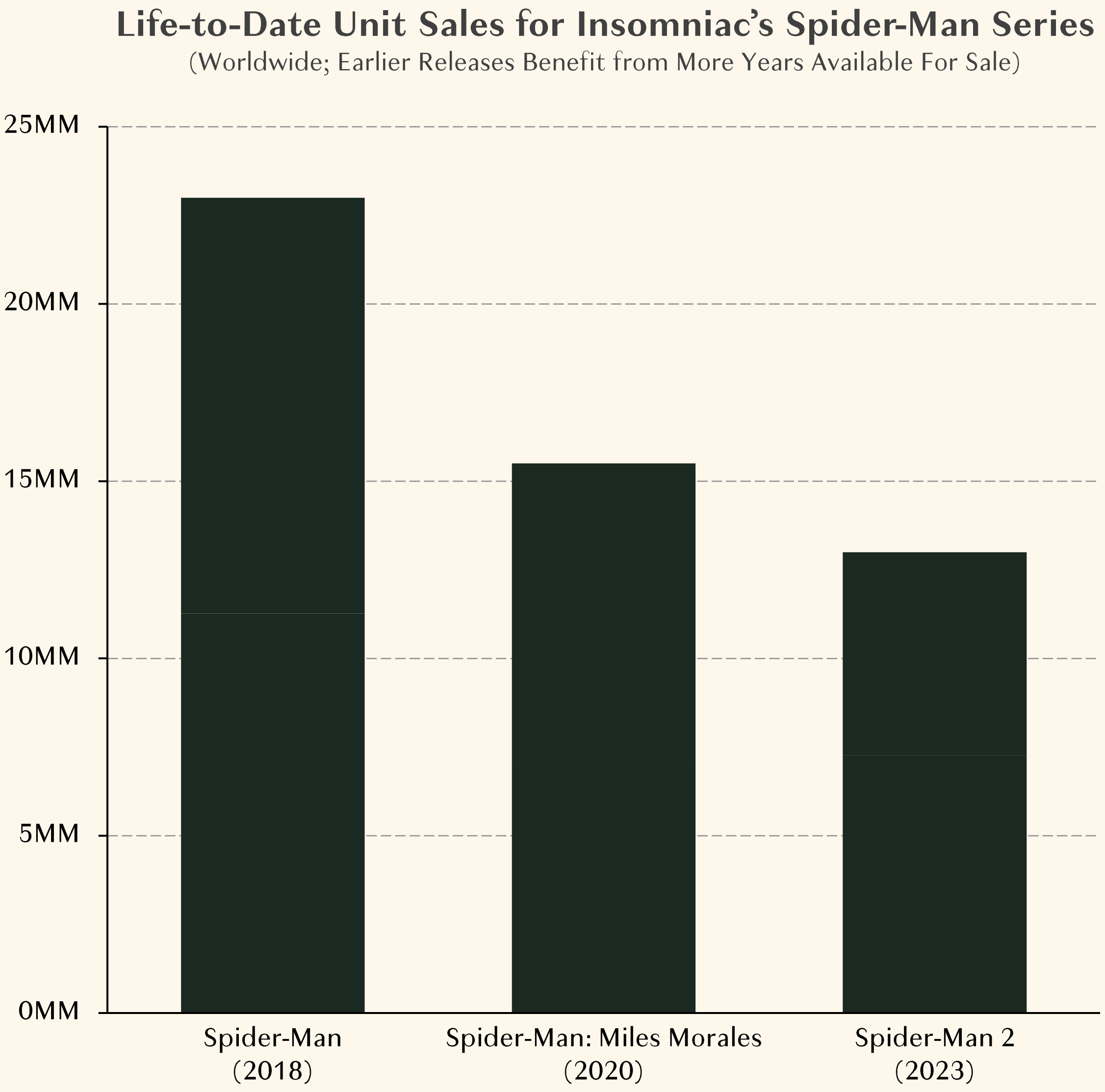


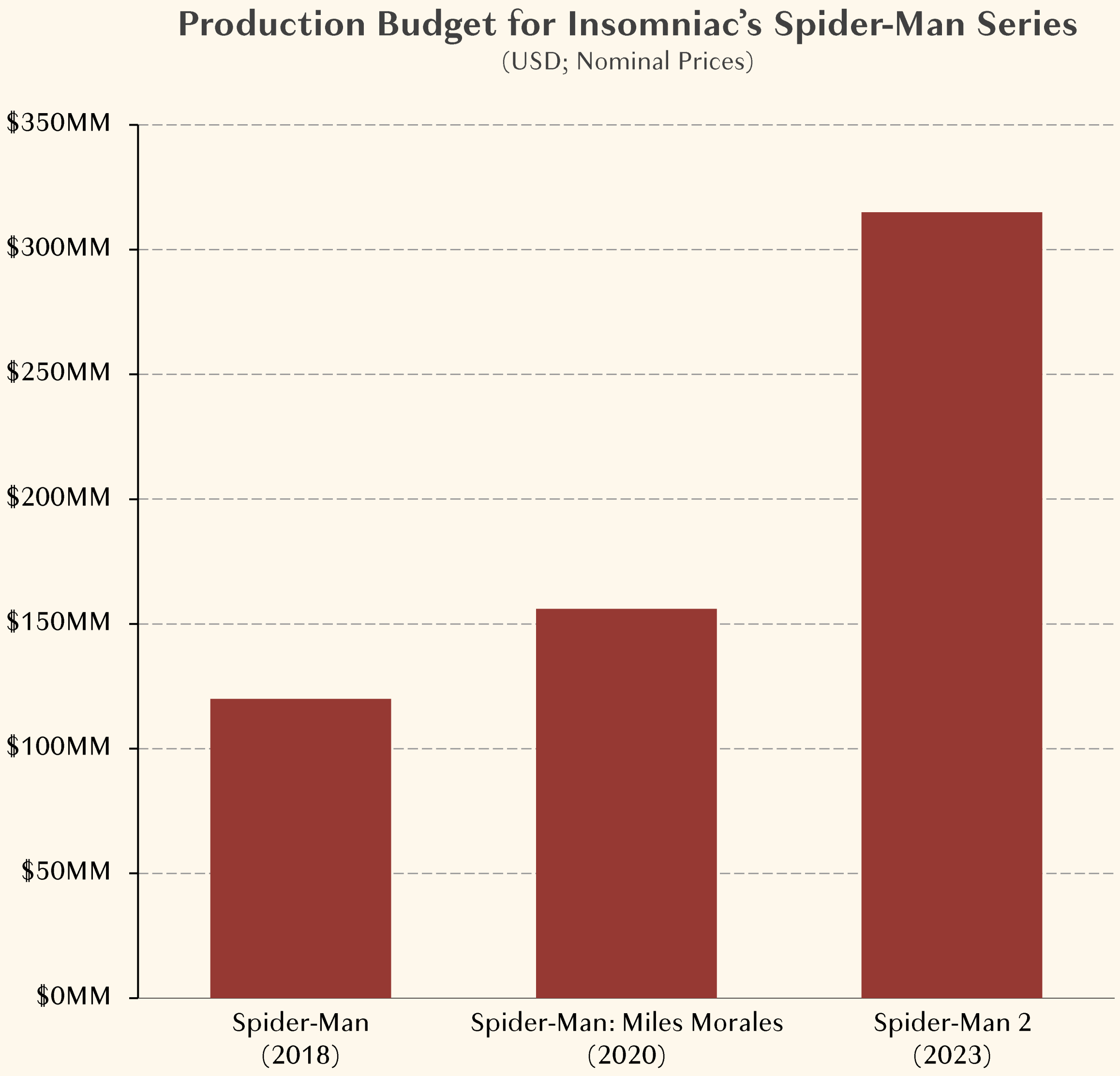
$V=2^n$

Source: NfX

As "Black Holes" strengthen, supply grows, but players stagnate, even the best franchises often face falling sales but higher budgets across successive releases

EPYLLION
By Matthew Ball





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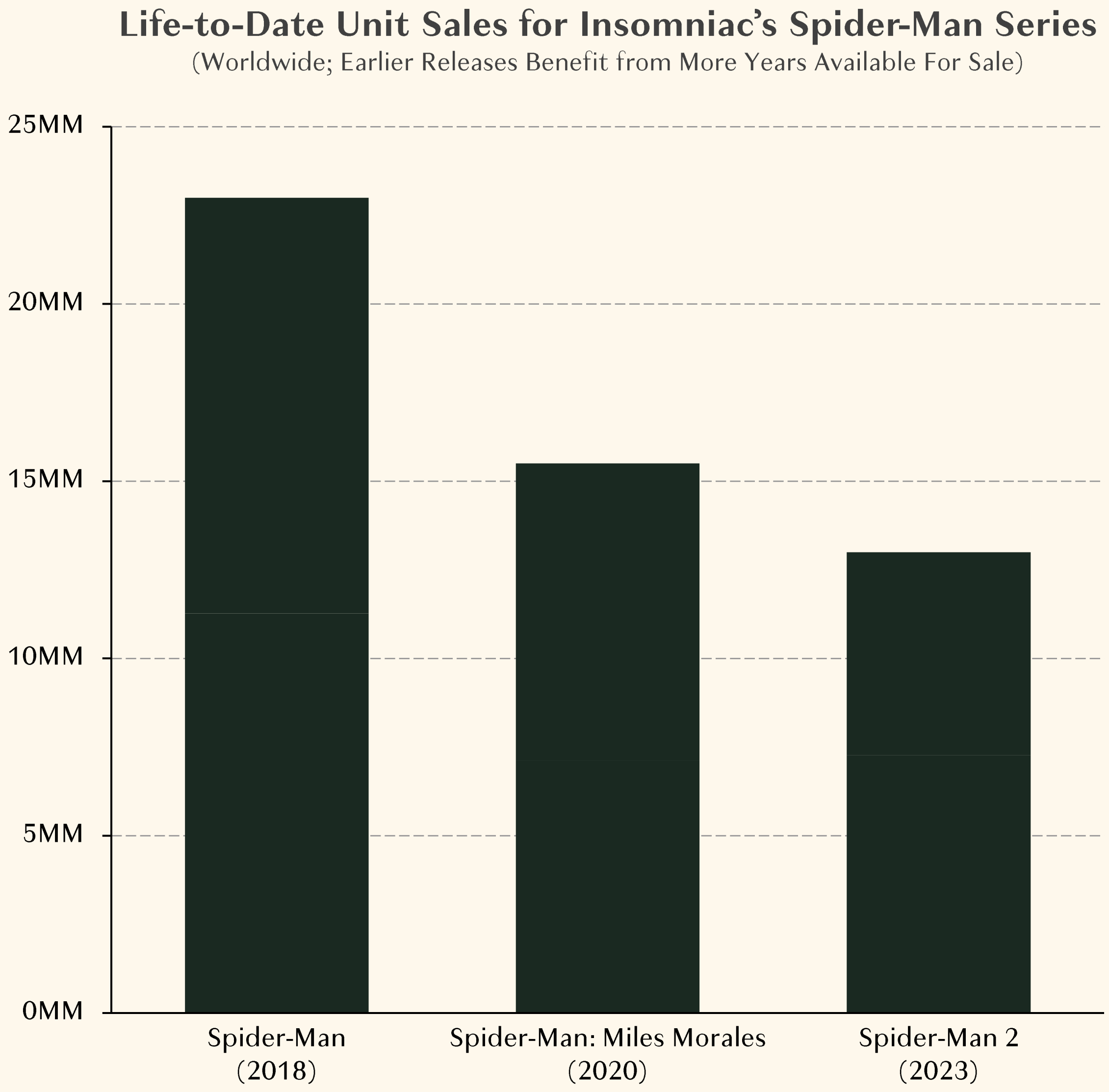
Sources: Insomniac, Sony, VGChartz, Epyllion analysis

It's easy to argue that sequel budgets should be lower given the uncertainty of matching, let alone growing, the sales of the prior entry...



More Expansive

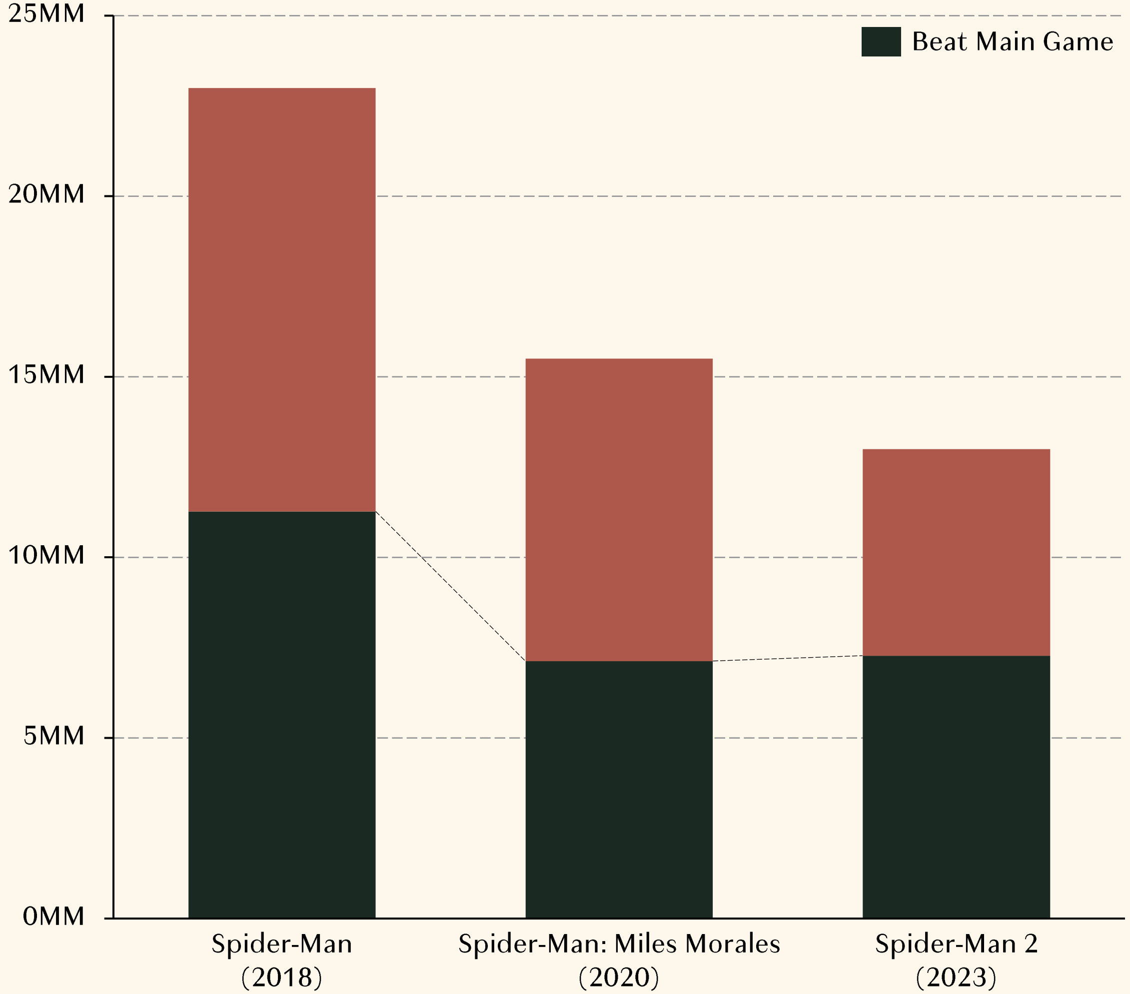
v.1/18/2025

Sources: Insomniac, Sony, VGChartz, Epyllion analysis

…But it's not easy to convince those who skipped or didn't finish a game to spend $70 on a sequel — or earn another $70 and 25 hours from those who did

Life-to-Date Unit Sales for Insomniac's Spider-Man Series

(Worldwide; Earlier Releases Benefit from More Years Available For Sale)



More Real

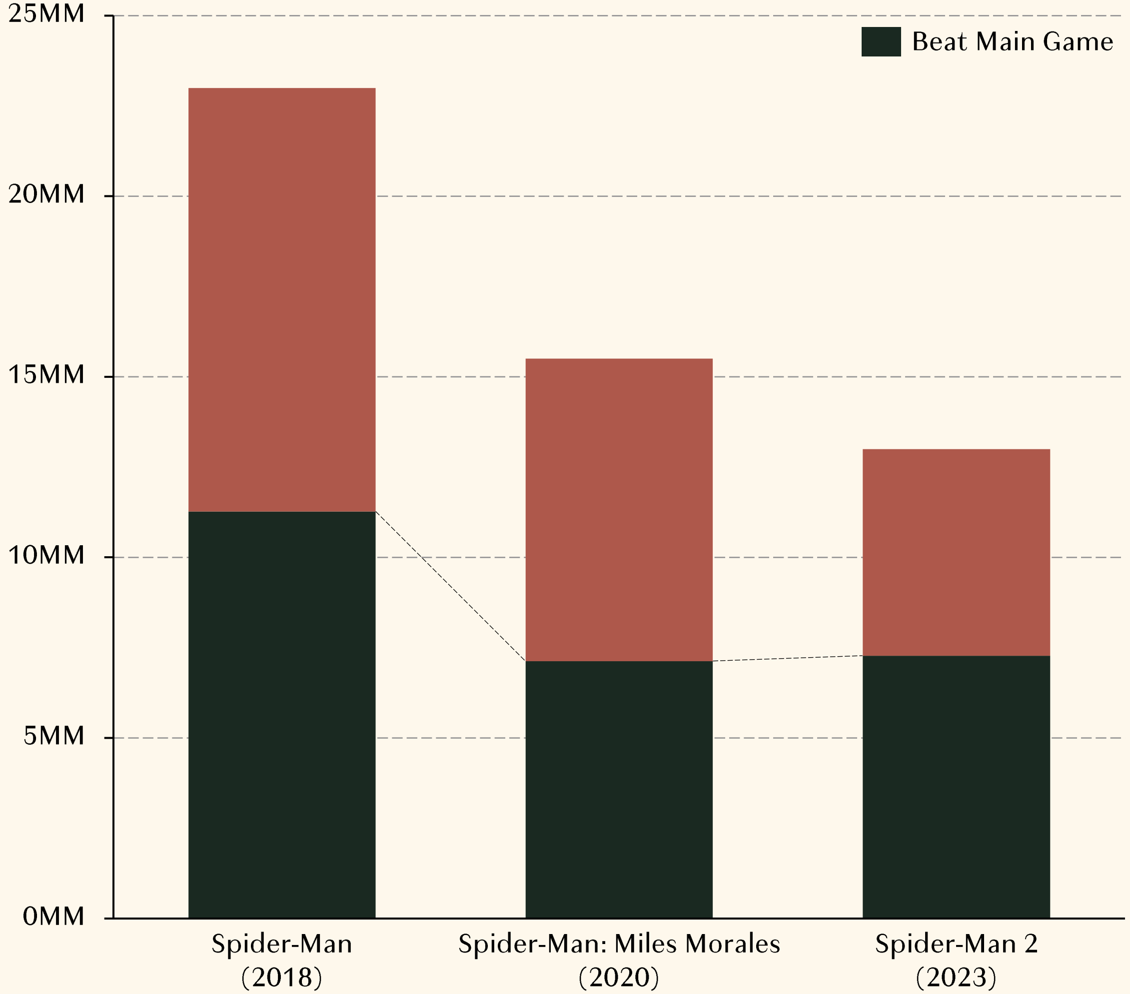
v.1/18/2025

Sources: Insomniac, Sony, VGChartz, Epyllion analysis

…And building a richer, deeper, and more expansive game is a natural response to a market that competes for increasingly scarce players, time, and spend

Life-to-Date Unit Sales for Insomniac's Spider-Man Series

(Worldwide; Earlier Releases Benefit from More Years Available For Sale)



More Immersive

More Cinematic

2hr 45m of MoCap Cinematics

4hr 45m of Mocap Cinematics

v.1/18/2025

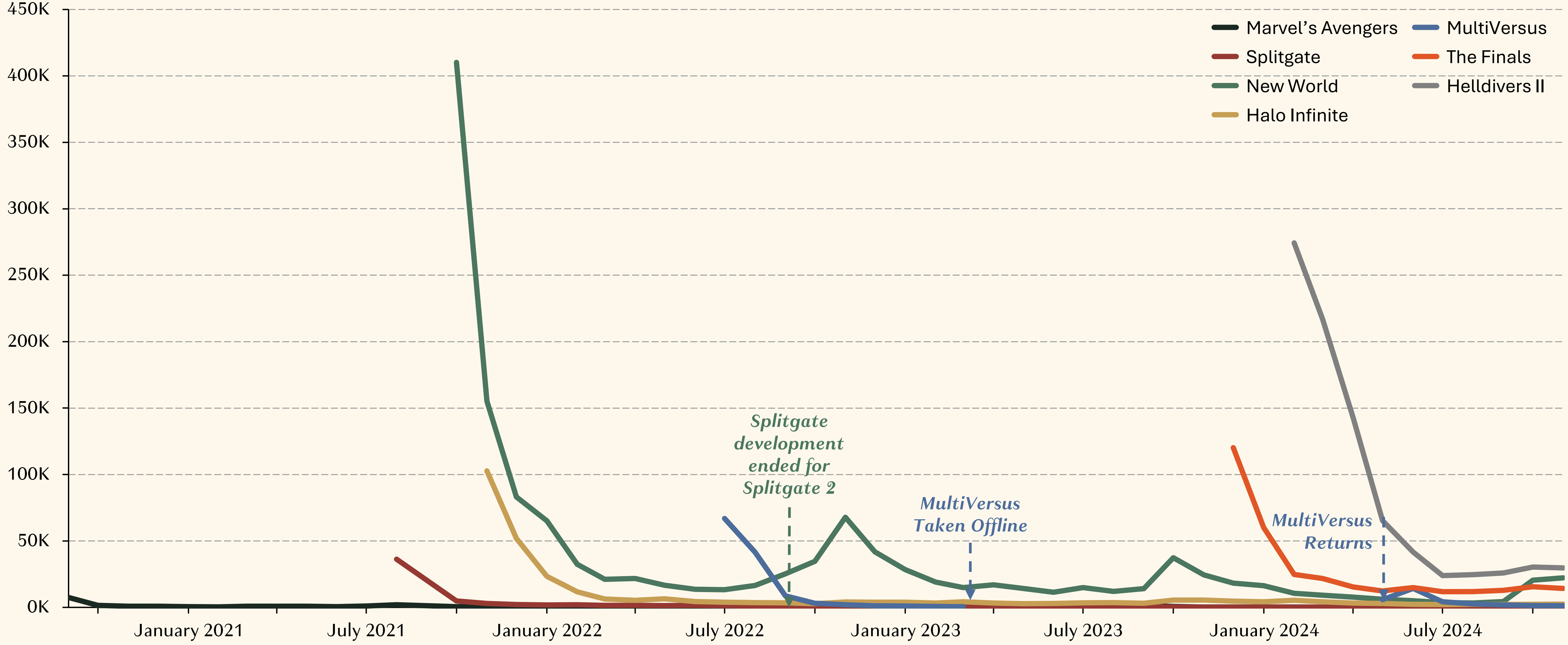
Sources: Insomniac, Sony, VGChartz, Epyllion analysis

To endure, live services titles need to *replace* a user's existing weekly-to-daily habit — which makes a feature/content-light launch an even greater challenge

EPYLLION
BY MATTHEW BALL

Average Concurrent Players on Steam by Month

(Not All Titles Have the Same Player Concentration on Steam)

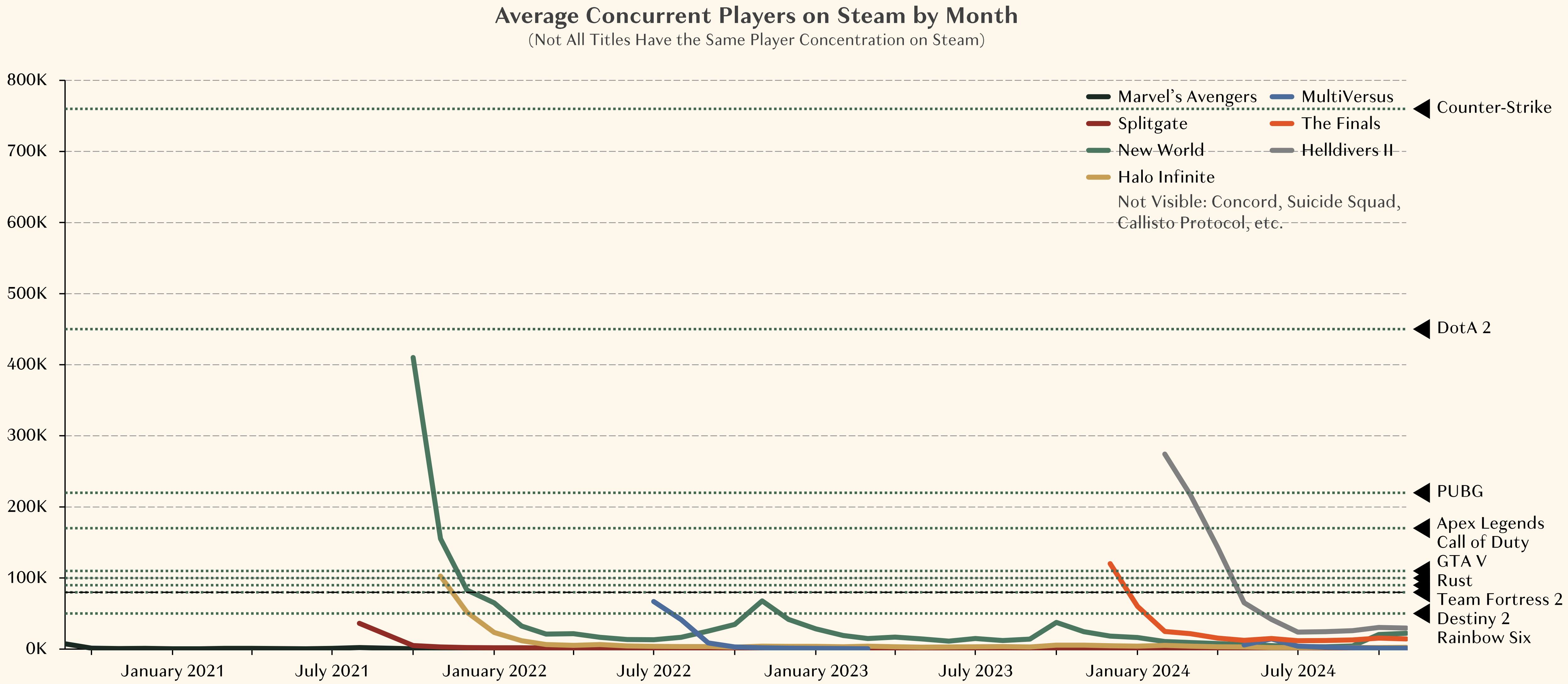


v.1/18/2025

Source: Steam Charts

Even at their cultural peak, many would-be GAAS leaders have fewer players than long-running GAAS leaders *averaged over four-plus years*

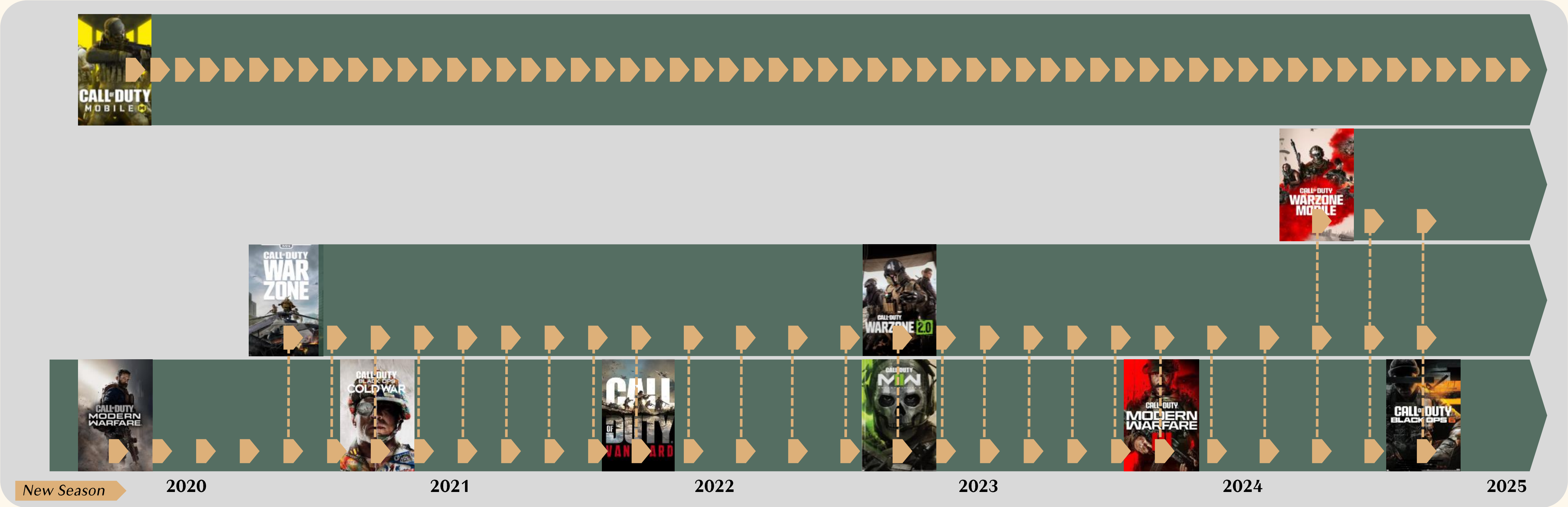
EPYLLION
BY MATTHEW BALL



v.1/18/2025

Source: Steam Charts

And *after* a hit launch, a new title must sustain against market leaders powered by extraordinarily effective, profitable, and substantial releases and infrastructure



3,000+ People Across 15+ Activision-Owned Studios & Units

Infinity Ward
Treyarch
Sledgehammer Games
Raven
High Moon Studios
Solid State Studios
Activision Central Tech
demonware
Toys for Bob
Beenox
Digital Legends
Activision Shanghai Studio
Activision
Activision Quality Assurance
Team Ricochet

Outside Co/Ex-Dev, Localization, and QA

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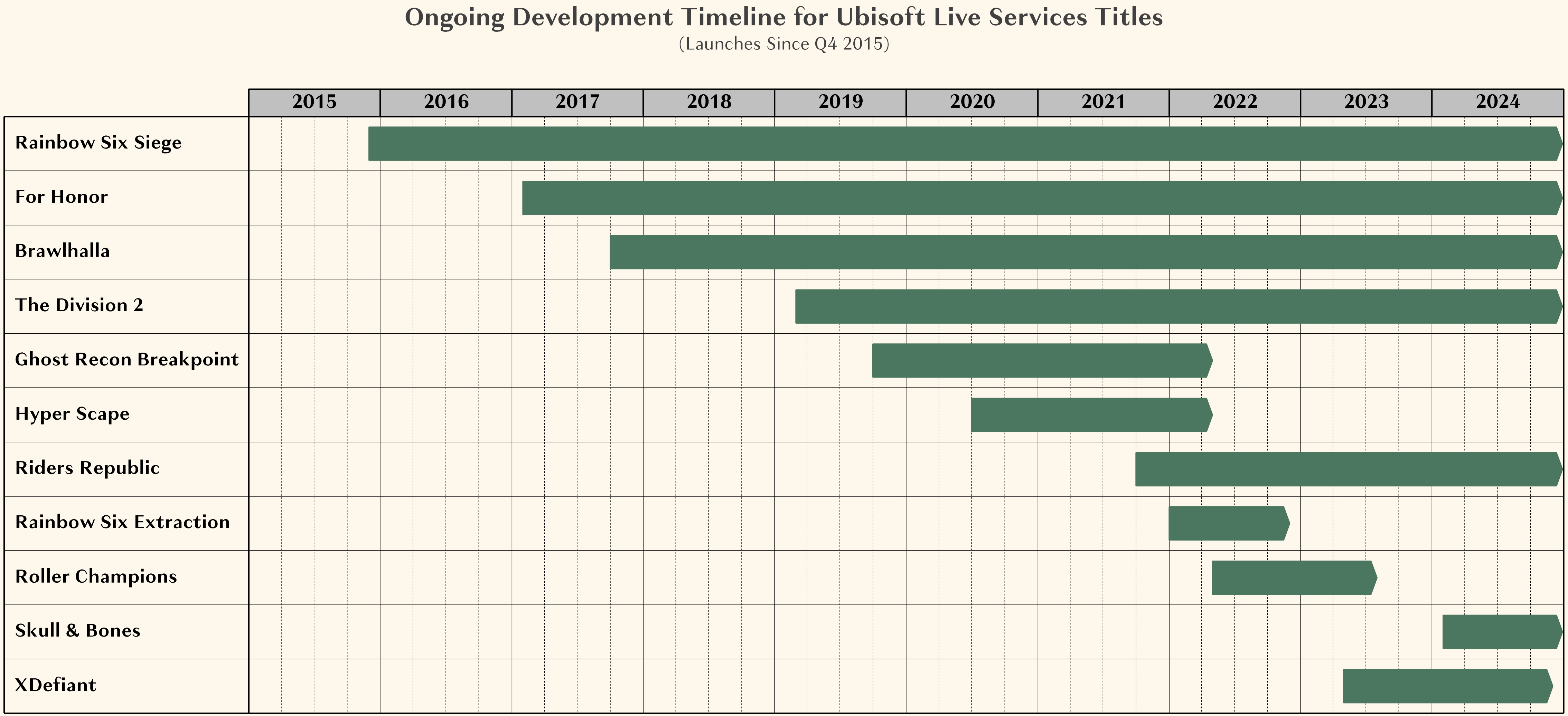
Sources: Activision, GameSpot, Epyllion analysis

With rising costs of support, shrinking playerbases, and strengthening Black Holes, new live service titles are forced to call it quits earlier than ever


Ongoing Development Timeline for Ubisoft Live Services Titles
(Launches Since Q4 2015)

v.1/18/2025

Sources: Game File / Game File, Ubisoft

EPYLLION

So, What’s Going On… In a Sentence?

So, What's Going On… In a Sentence?

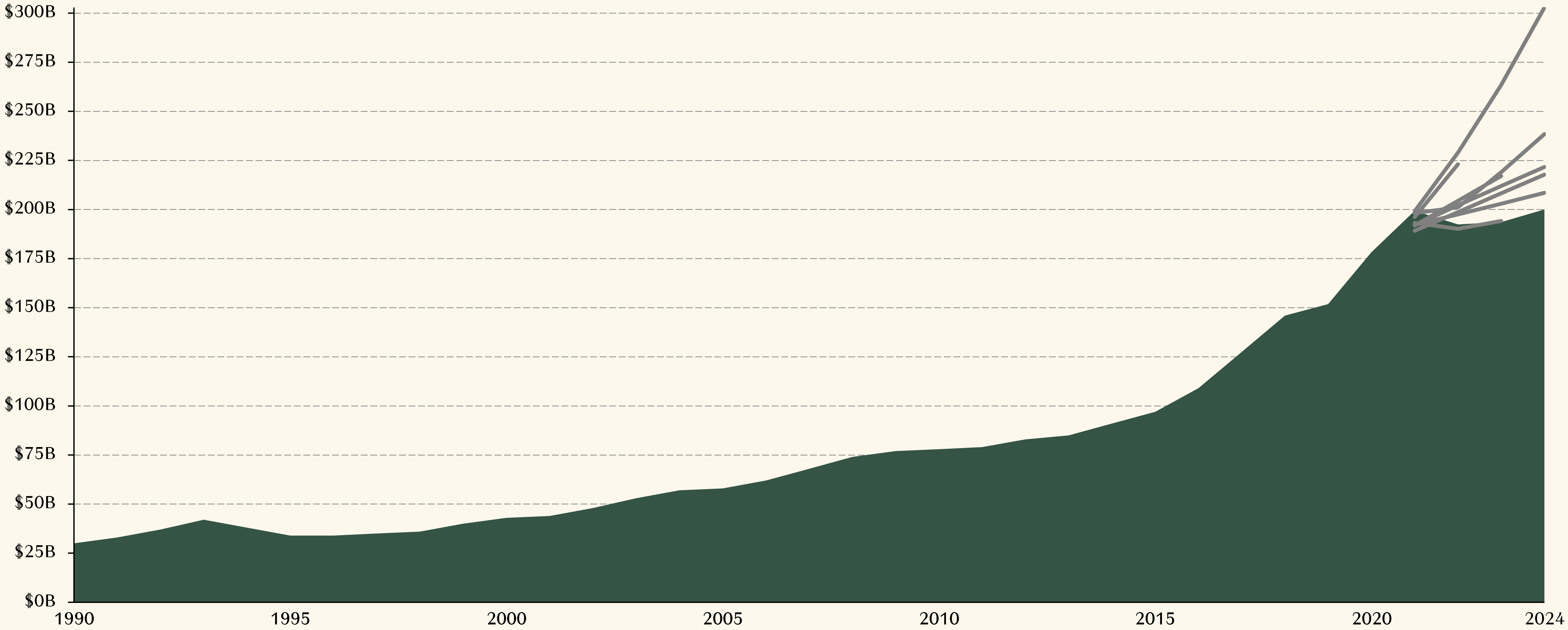
The exhaustion of decade-plus growth drivers that grew players, playtime, and spend… coincided with evolving user behaviors, changing monetization models, and growing "lock-in" effects… that exacerbated long-running competitive and budgetary escalations… while growth concentrated in foreign markets that shifted to local productions (and then took share abroad)… and occurred alongside acute macroeconomic financial events and epidemics… were worsened by microeconomic platform policy shifts… as well as the emergence of new and hyper-viral substitutes… and foreign-based competition… alongside too many would-be new growth drivers that have yet to deliver growth

This confluence of factors explains why the market stagnated, not just fell so very short of external *and* (not publicly available) internal forecasts

EPYLLION
By Matthew Ball

Worldwide Consumer Spending on Video Game Content, Plus Select External Forecasts For Growth[1]

(Nominal Prices; Arcade + Console + PC + Mobile + VR + Web; Excludes Hardware & Accessories; Excludes Web3/NFT)



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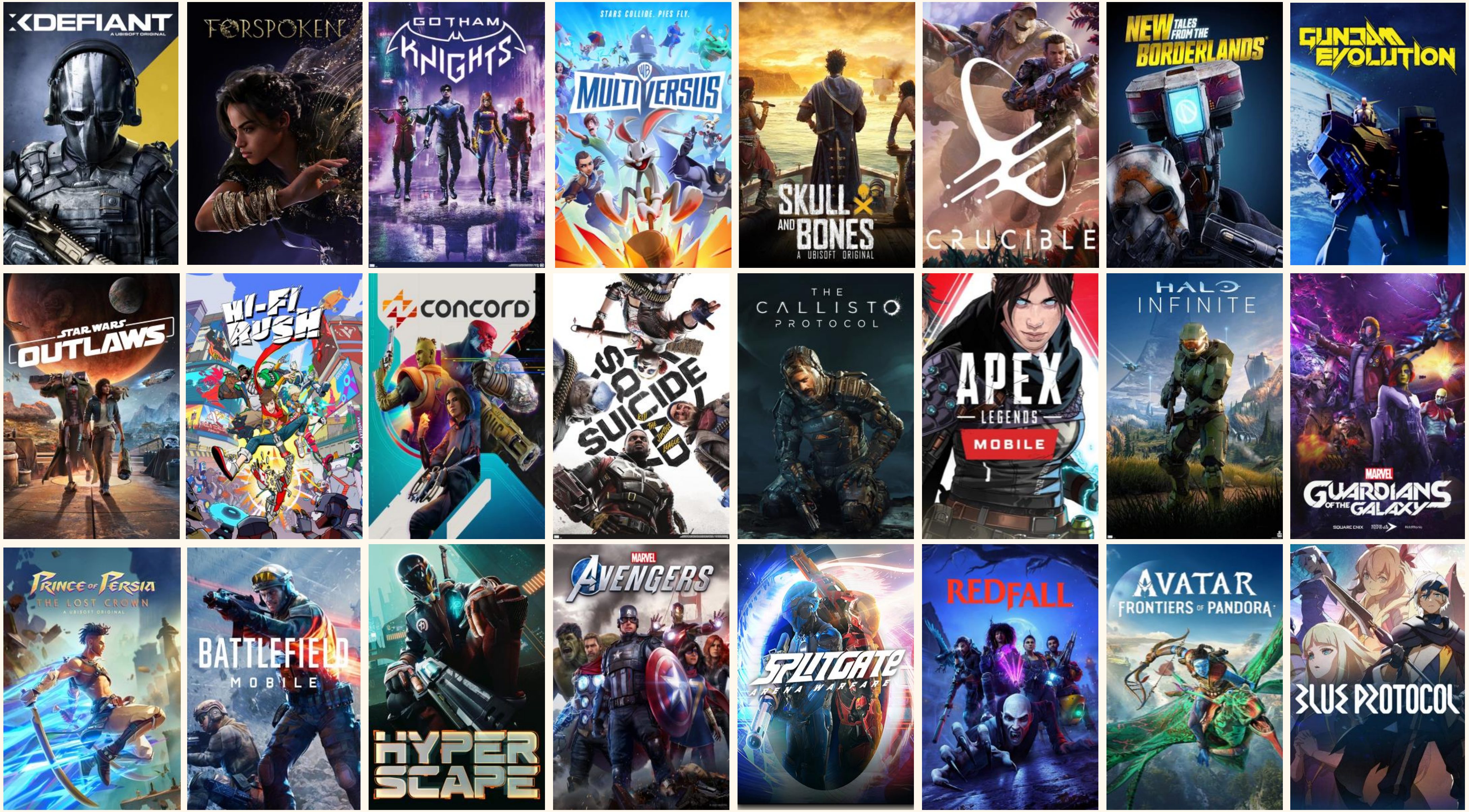
Notes: [1]Forecasts that did not include AR/VR or arcade are normalized; different starting values in 2021 reflects different estimates for 2021 at the time of forecast

Sources: Pelham Smithers / Bloomberg, IDG, Newzoo, Meta, IDC, ARK, Bain, Google, E&Y, Ampere, Epyllion analysis

…And why so many titles have missed internal expectations (or even their production costs)



…And why so many gamemakers re-evaluated their development pipelines and, more often than not, cancelled scores of titles to instead refocus on existing hits

Naughty Dog cancels its The Last of Us multiplayer game

The Last of Us Online scrapped after years of development

Take-Two says cancelled games weren't 'core franchise' titles

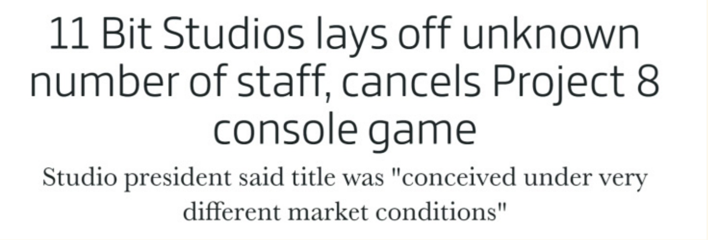
THE PUBLISHER'S RELEASE SLATE HAS DROPPED BY 12 TITLES, FOLLOWING GAME CANCELLATIONS

Take-Two sells Private Division and almost all its games

New *Deus Ex* Game Reportedly Canceled By *That* Gaming Company

Swedish holdings company Embracer Group has seemingly canceled an in-development *Deus Ex* game at Eidos-Montréal

Bandai Namco Reveals It Canceled at Least Five In-Development Games



11 Bit Studios lays off unknown number of staff, cancels Project 8 console game

Studio president said title was "conceived under very different market conditions"

Bungie's Canceled Project Payback Was A Third-Person Spinoff Set In Destiny Universe

The project was canceled two months ago, with most of Bungie now reportedly working on Marathon.

People Can Fly lays off more than 120 employees as it cuts back on in-development games: 'We need to tailor our plans to our financial capacity'

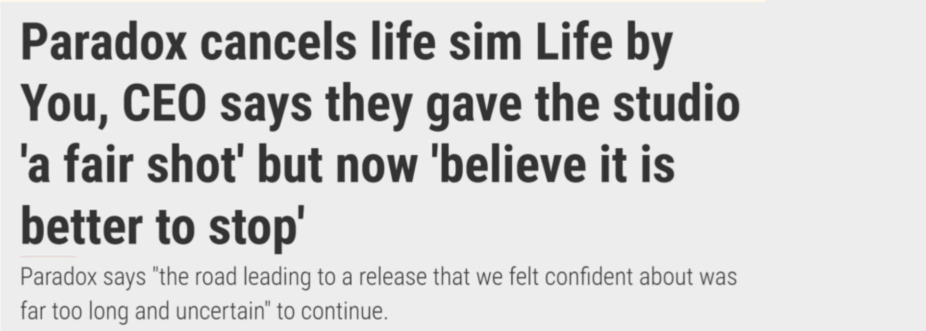
Epic says Fortnite's Rocket Racing is ending 'themed updates'

THE PSYONIX-DEVELOPED GAME LAUNCHED LESS THAN A YEAR AGO

Ubisoft Cancels The Division Heartland

The company will move resources to "bigger opportunities" such as XDefiant and Rainbow Six

Microsoft Cancels New Blizzard Video Game After Six Years of Development



Paradox cancels life sim Life by You, CEO says they gave the studio 'a fair shot' but now 'believe it is better to stop'

Paradox says "the road leading to a release that we felt confident about was far too long and uncertain" to continue.

Sony cancels two live service projects including God of War title

Niantic lays off 230 employees, cancels NBA and Marvel games

EA Cancels Respawn *Star Wars* Shooter Amid Mass Layoff

The game was announced in 2022 as part of a larger partnership between EA and Lucasfilm

Battlefield Mobile Canceled To Better Deliver On "Vision" For The Franchise

XDefiant Is Being Shut Down, Developer Closed

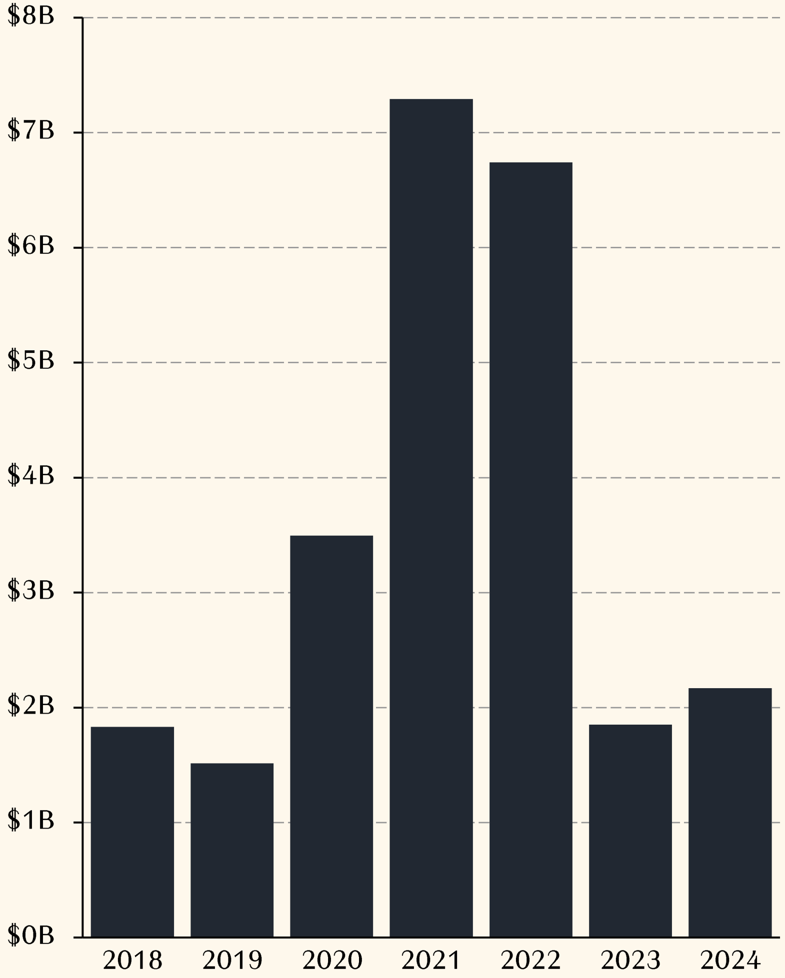
Sources: Naughty Dog, The Verge, Bloomberg, IGN, Kotaku, Game Developer, GameSpot, PC Gamer, Polygon, VGC

…And why venture capitalists have retreated to 2018–2019 investment levels, even though worldwide spend is up 34% or $51B

EPYLLION
By Matthew Ball

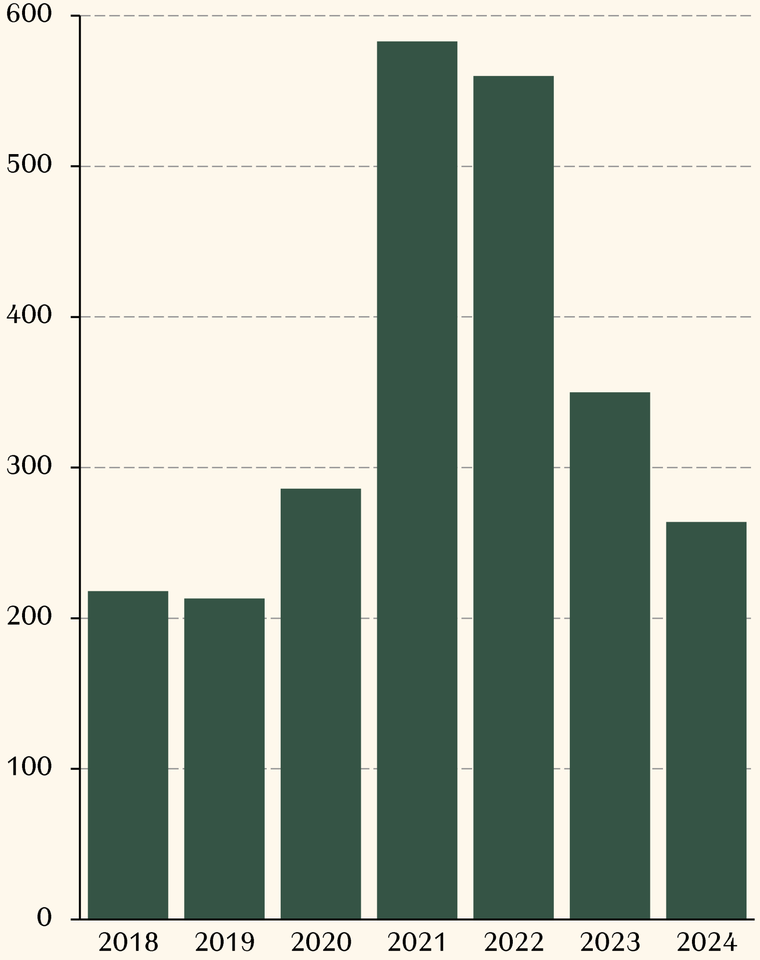
VC Funding in Video Game Content Start-Ups

(Worldwide)



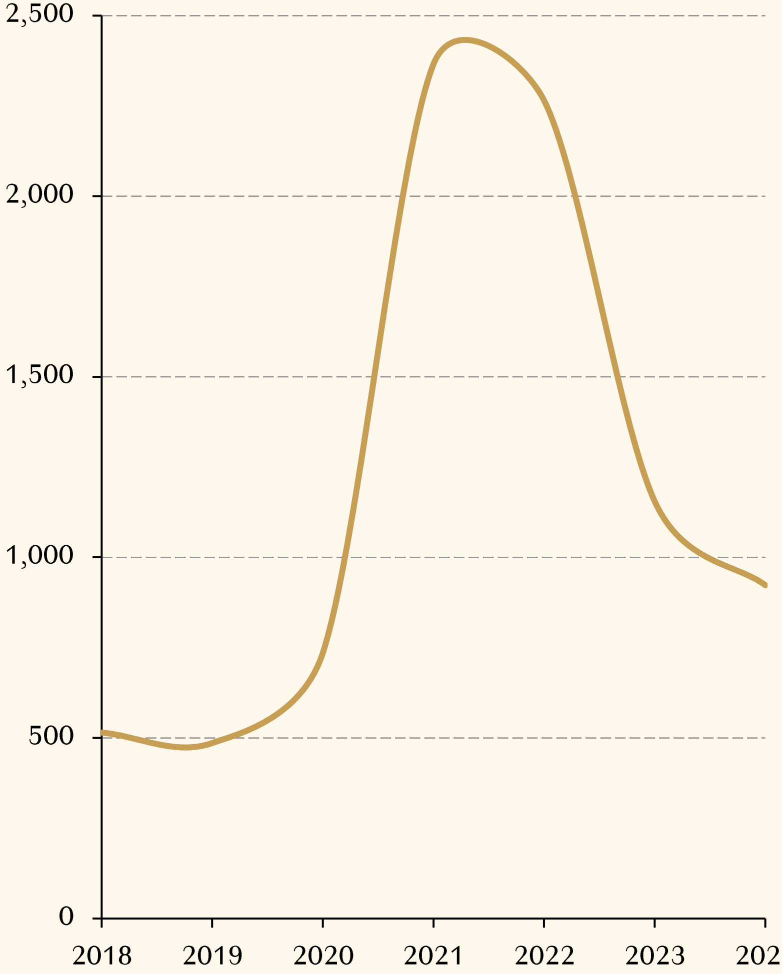
VC Deals in Video Game Content Start-Ups

(Worldwide)



Active VC Investors in Video Gaming

(Worldwide; At Least One Deal in Year)



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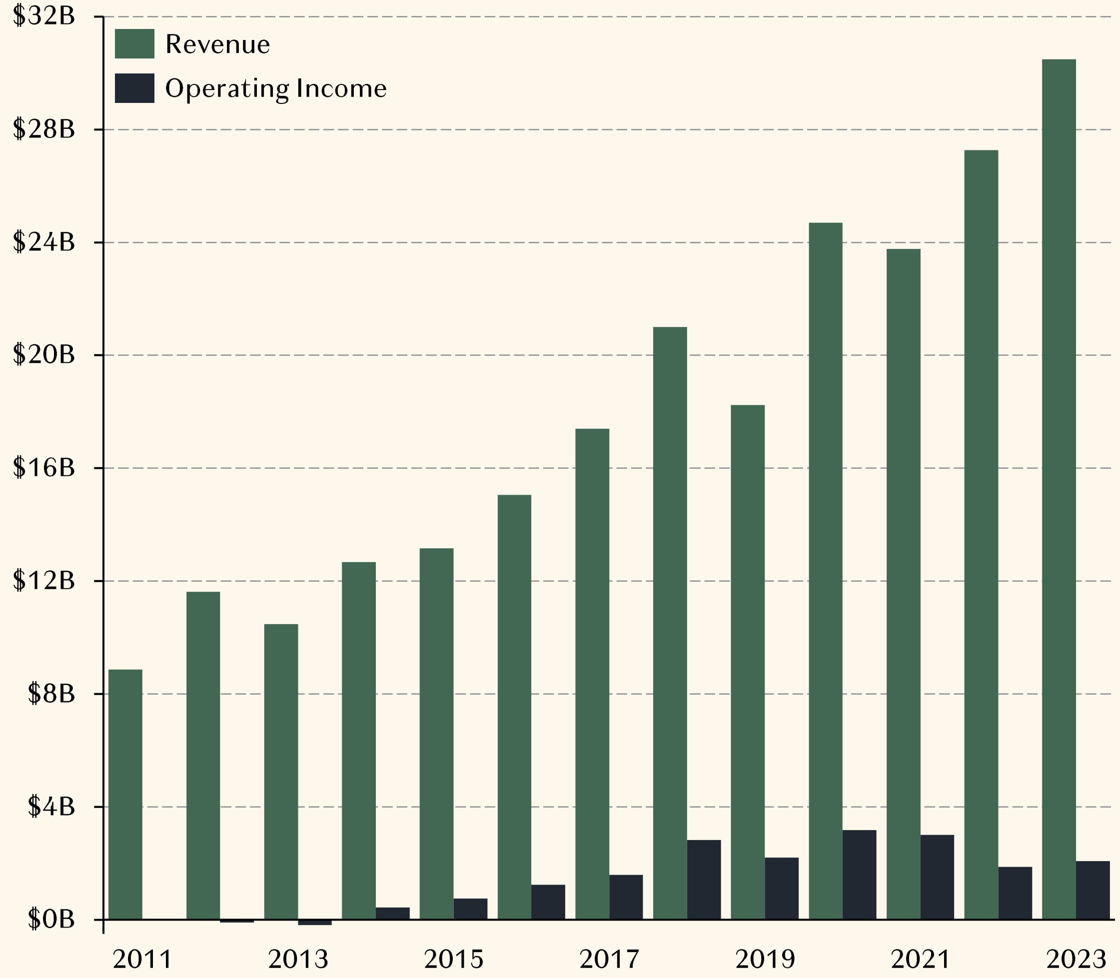
Source: *Pitchbook*

...Why PlayStation, a platform with 100MM MAU and $30B in revenue, has seen revenues grow 67% since 2019 but profits fall by 6% (and to a 7% income margin)

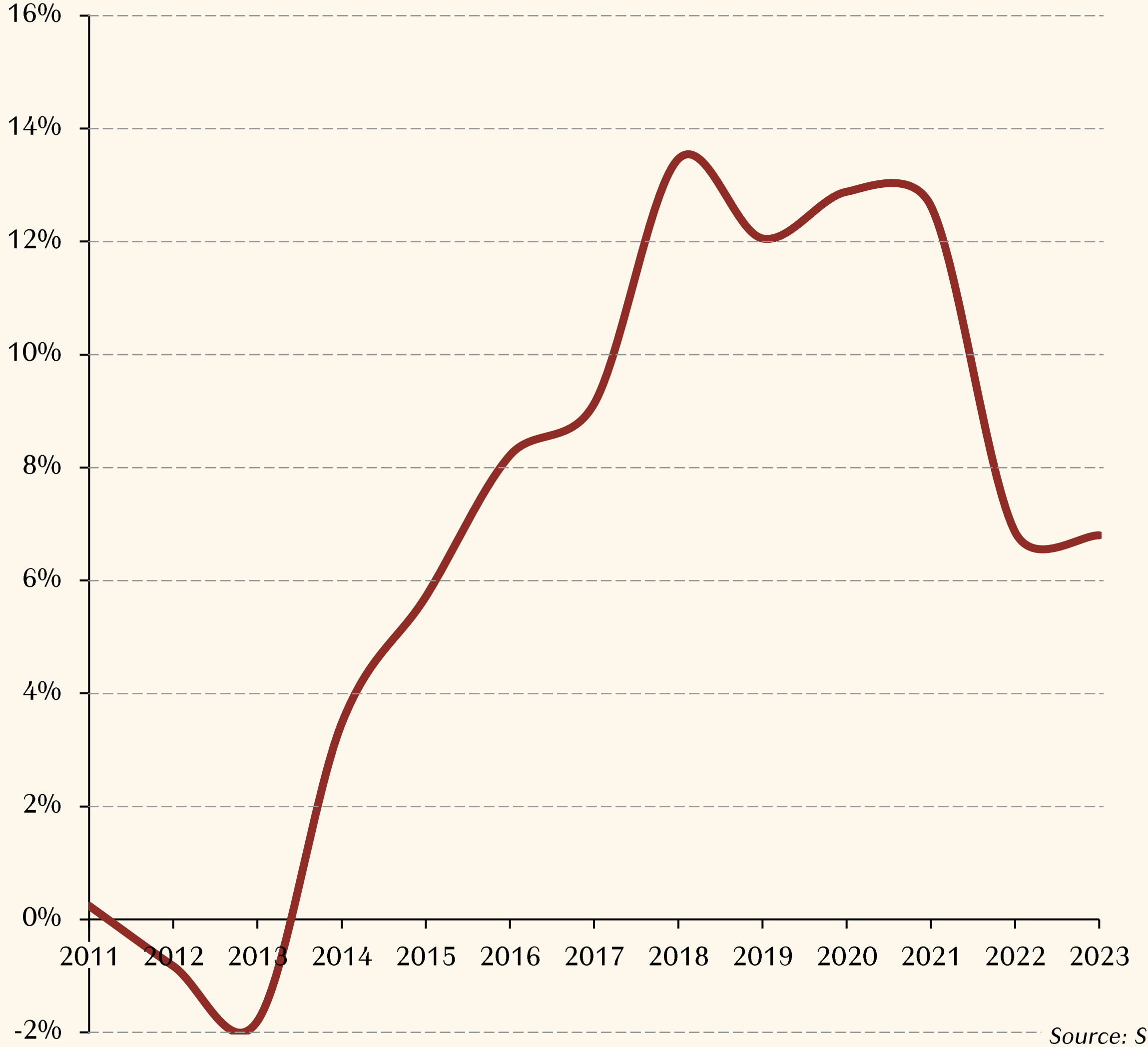
EPYLLION
By Matthew Ball

PlayStation P&L

(USD; Nominal Prices)



PlayStation Operating Income Margin



v.1/18/2025

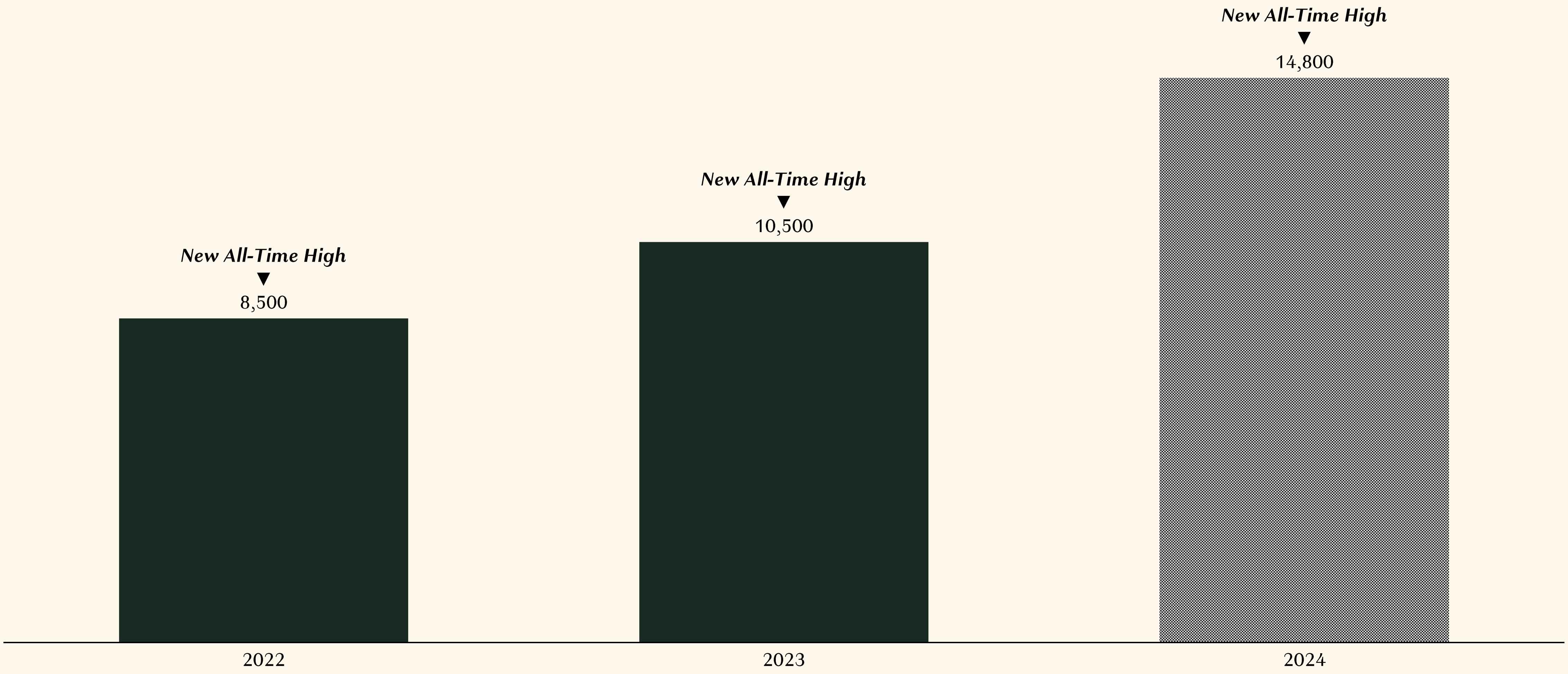
Source: Sony

…And employees suffered three straight years of record layoffs — 35,000 total *before* counting unreported layoffs and those without specified headcount

EPYLLION
By Matthew Ball

Annual Gross Reported Layoffs in the Video Game Industry

(Excludes Unreported Layoffs and Layoffs Where the Approximate Headcount Is Not Known; Not Net of Hiring)



v.1/18/2025

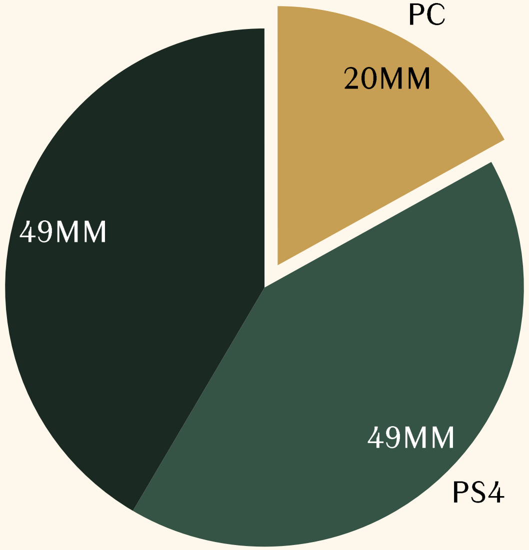
Sources: Farhan Noor, Epyllion analysis

…Prompting nearly every platform and publisher to start "aggressively" pursuing customers *on every channel*

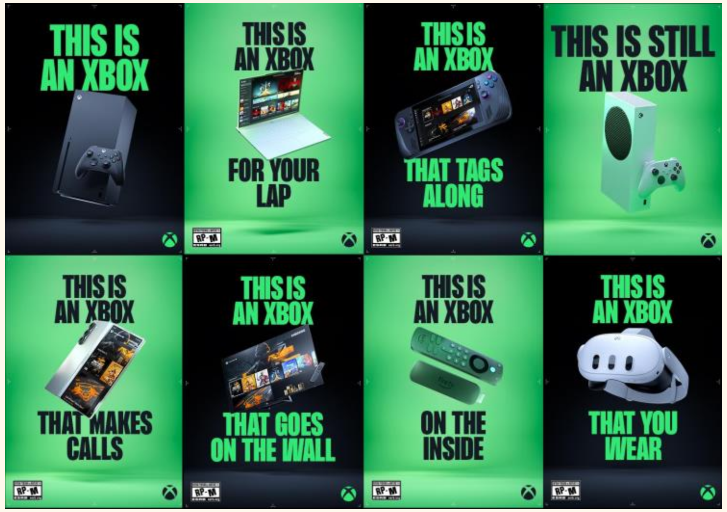
EPYLLION
By Matthew Ball

2024 PlayStation Network MAUs

(April 2024)



2024 Xbox Platform Strategy



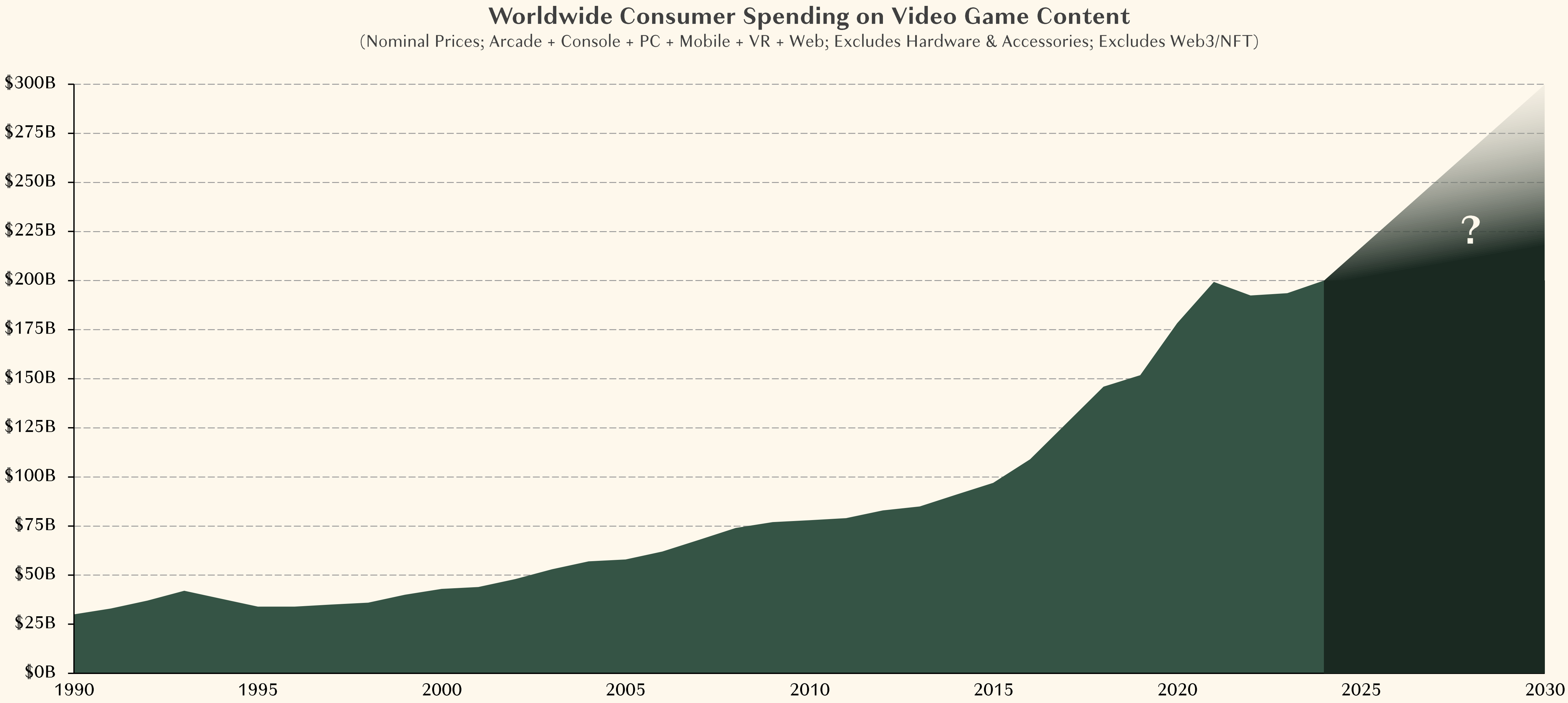
2024 Square Enix Content Strategy

"[We will now] aggressively pursue a multiplatform strategy that includes Nintendo platforms, PlayStation, Xbox, and PCs."

Sources: Sony, Microsoft, Square Enix

But how can the video game industry return to growth, rather than just fight over the same players, hours, and spend (and at ever higher costs)?

EPYLLION
BY MATTHEW BALL



v.1/18/2025

Sources: Pelham Smithers / Bloomberg, Newzoo, data.ai / Sensor Tower, IDG, Epyllion analysis

Without new growth engines, the video gaming market is stuck in a vicious cycle

Stagnant Revenues (with Rising Costs)

Falling Profits with More & Bigger Failures

Less Investment and Risk Taking

Fewer Games & Studios

Fewer New Hits & Innovations

No-to-Low Player or Playtime Growth

v.1/18/2025

Source: Epyllion analysis

EPYLLION

A Rough Three Years and the End of the 2011-2021 Growth Wave

The Mobile Marketplace in 2025

A (Brief) Review of AR/VR Forecasts and Disappointments

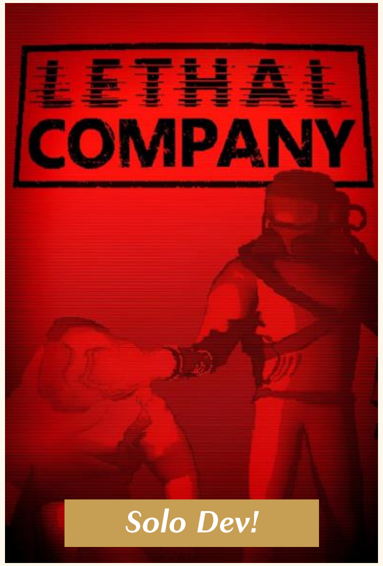
How Much (and Where) Console/PC Has Grown

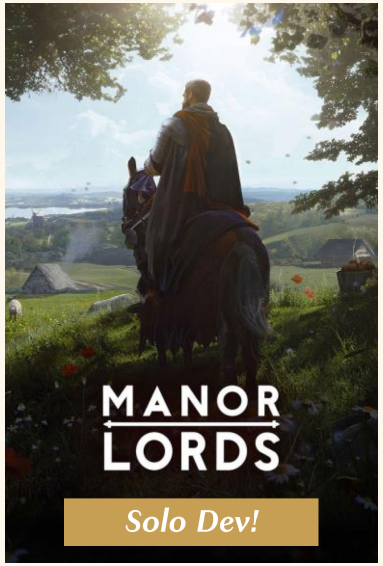
The Relevance of China (and Other Emerging Markets)

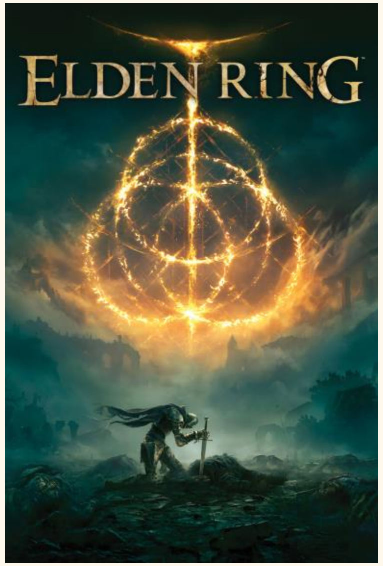
The Hostility of the Modern Console/PC Content Marketplace

How Player, Playtime, and Player Spend Might Return to Growth

First, it's important to recognize that while low growth is a challenge for everyone — especially the largest players — new studios and franchises are emerging







Second, there are a few potential "Growth Engines" that are argued and in sight[1,2]

"Non-Core" Markets

UGC Platforms & Tools

Social Game Services

Switch 2

Other New Handhelds & Devices

AA/AAA Mobile Gaming

App Store Regulation

New Game Genres

AI

Advertising

GTA VI Pricing

v.1/18/2025

Notes: [1] *Ordered logically, rather than in order of monetary value, significance, timing, etc.;* [2] *This isn't to say I believe in each one, let alone to the degree sometimes argued, but I do think each is worth arguing*

Reviewing Potential New "Growth Engines"[1]

"Non-Core" Markets

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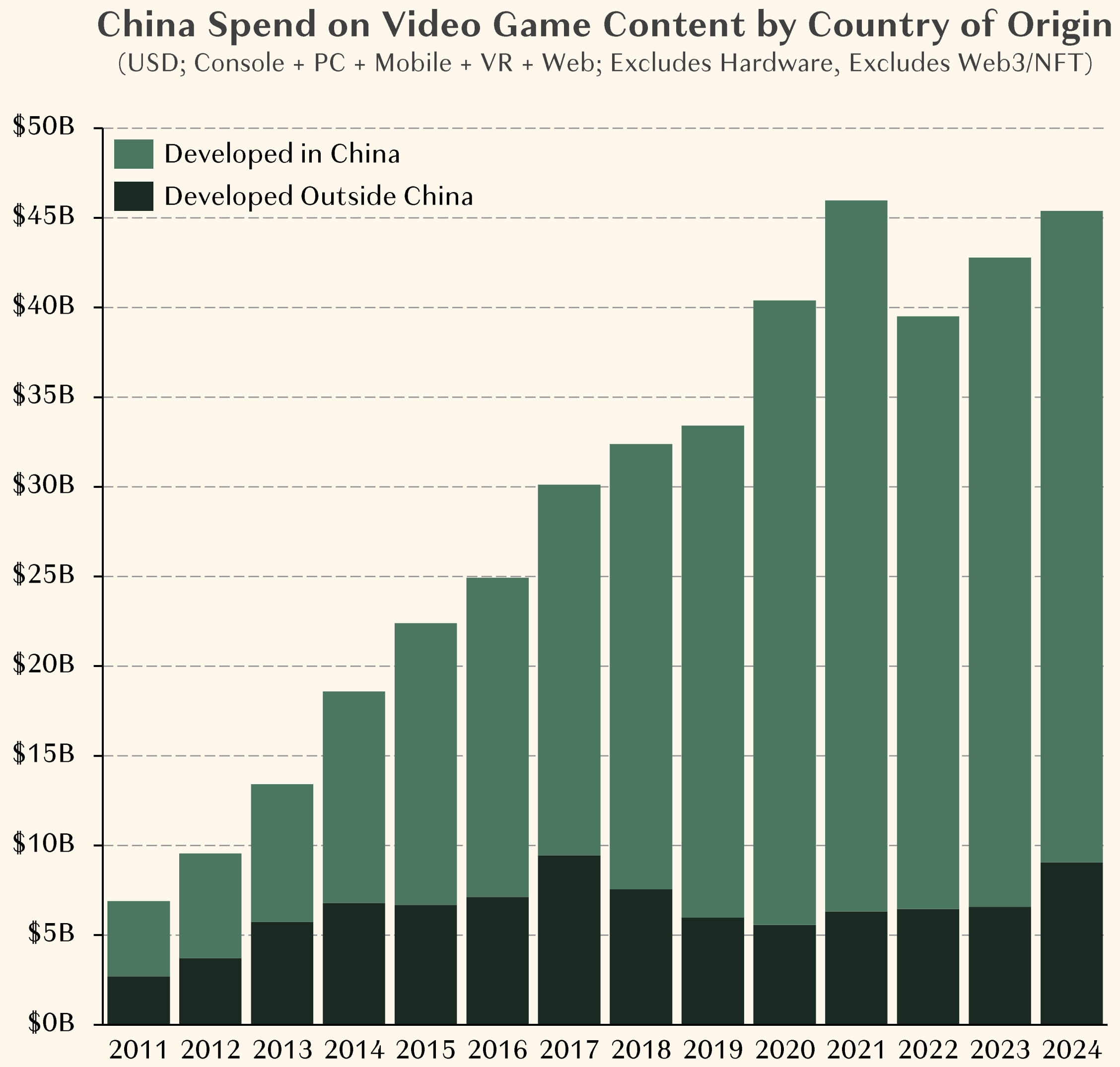
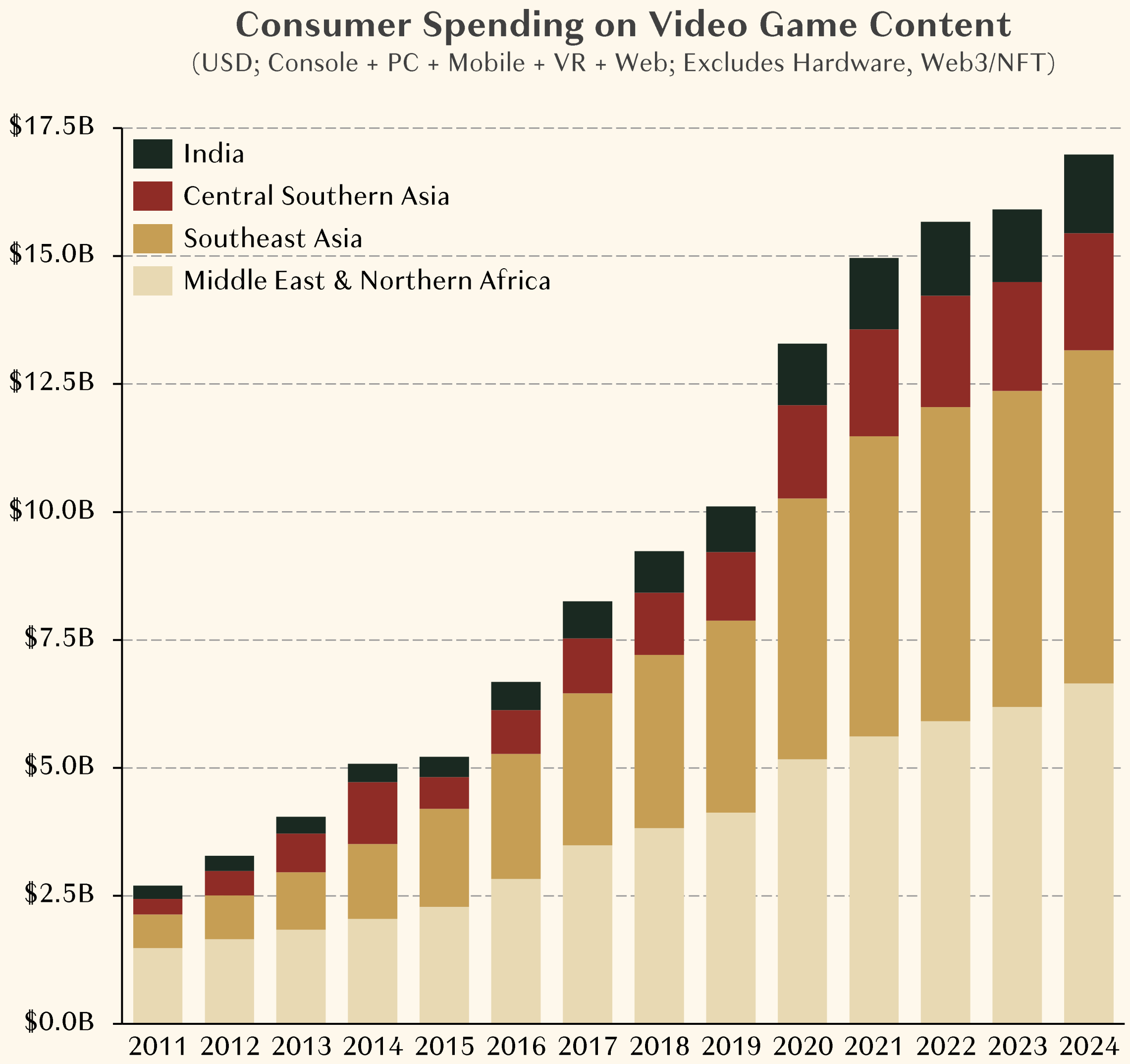
As was the case in China, the global maturation of local/regional content studios is likely to (substantially) accelerate spending growth in those same markets



China Spend on Video Game Content by Country of Origin

(USD; Console + PC + Mobile + VR + Web; Excludes Hardware, Excludes Web3/NFT)



Consumer Spending on Video Game Content

(USD; Console + PC + Mobile + VR + Web; Excludes Hardware, Web3/NFT)

v.1/18/2025

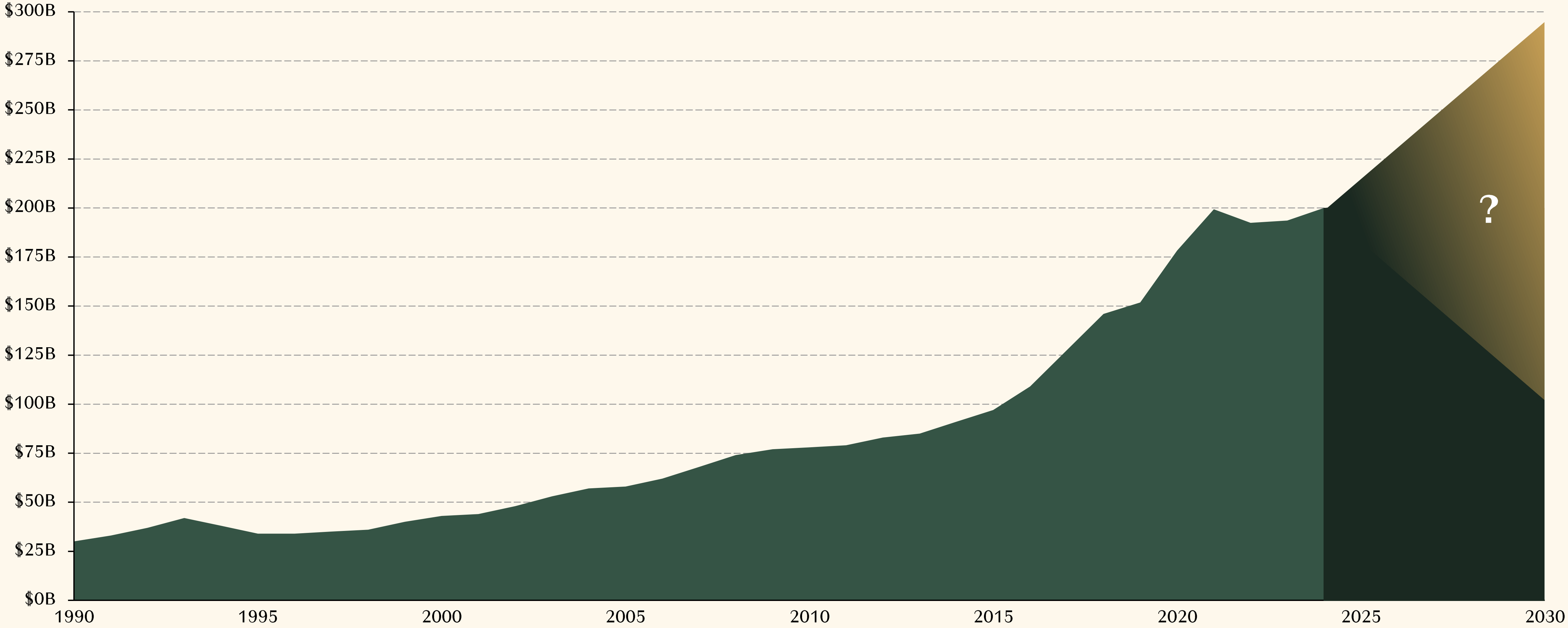
Source: China Audio-Video and Digital Publishing Association, Newzoo, Capcom, VGChartz, Niko Partners, Research & Markets, Epyllion analysis

But with growing national support, plus far (*far*) lower production costs, emerging market developers may take most of future growth — and more of *current* spend

EPYLLION
By Matthew Ball

Worldwide Consumer Spending on Video Game Content

(Nominal Prices; Arcade + Console + PC + Mobile + VR + Web; Excludes Hardware & Accessories; Excludes Web3/NFT)



v.1/18/2025

Sources: Pelham Smithers / Bloomberg, Newzoo, data.ai / Sensor Tower, IDG, Epyllion analysis

Reviewing Potential New “Growth Engines”[1]

EPYLLION
By Matthew Ball

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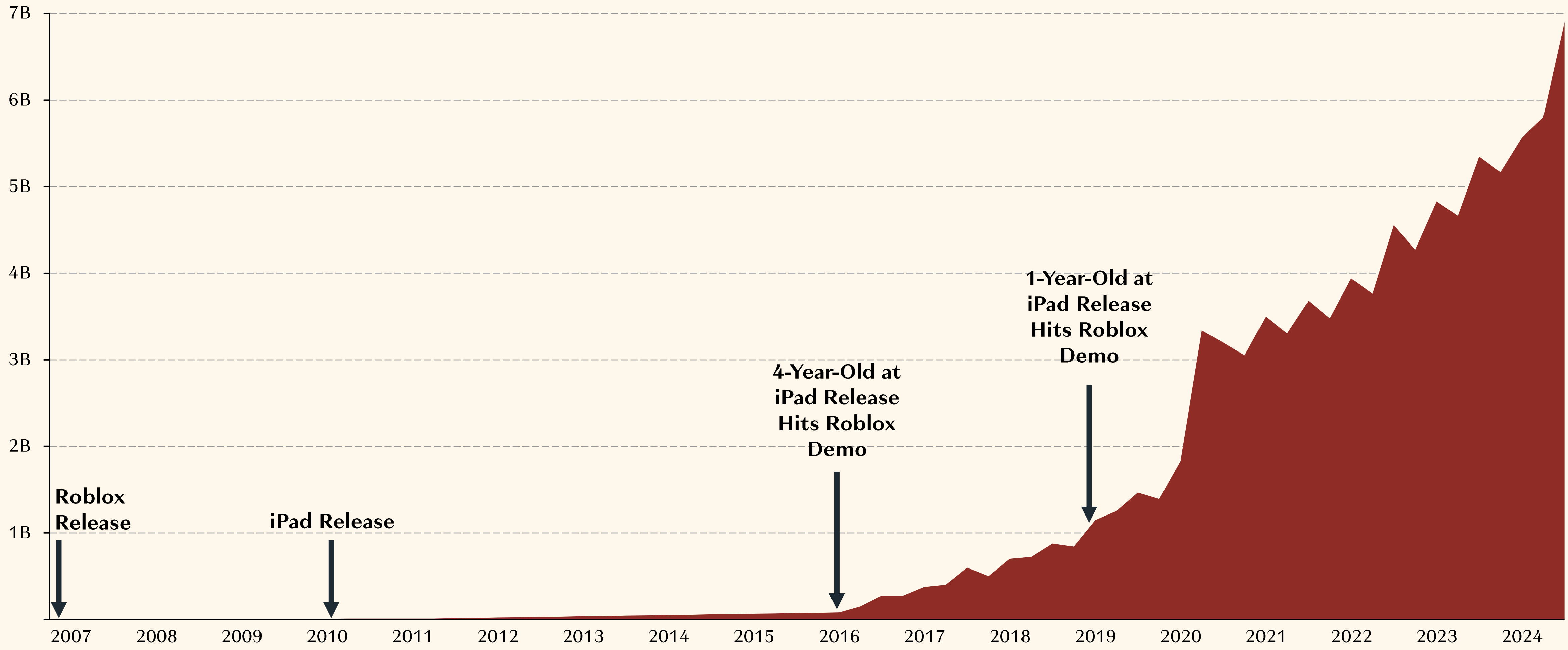
Although video gaming faces declining players and playtime, Roblox's growth is accelerating — benefiting from 140MM kids turning each of 8, 9, 10, etc., annually

EPYLLION
By Matthew Ball

Roblox Avg. Monthly Hours of Engagement

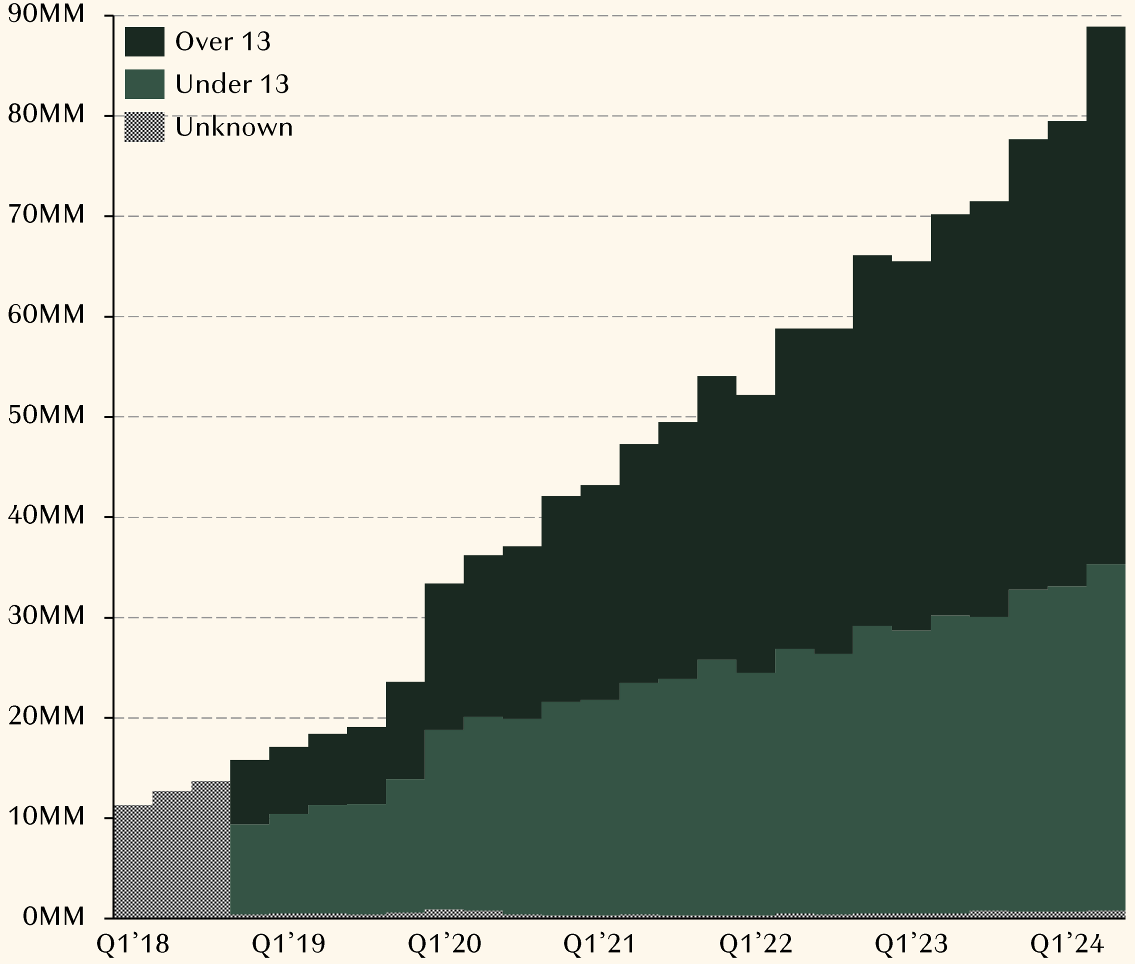
(Launch to Date; Excludes Off-Platform Engagement such as YouTube and Twitch)



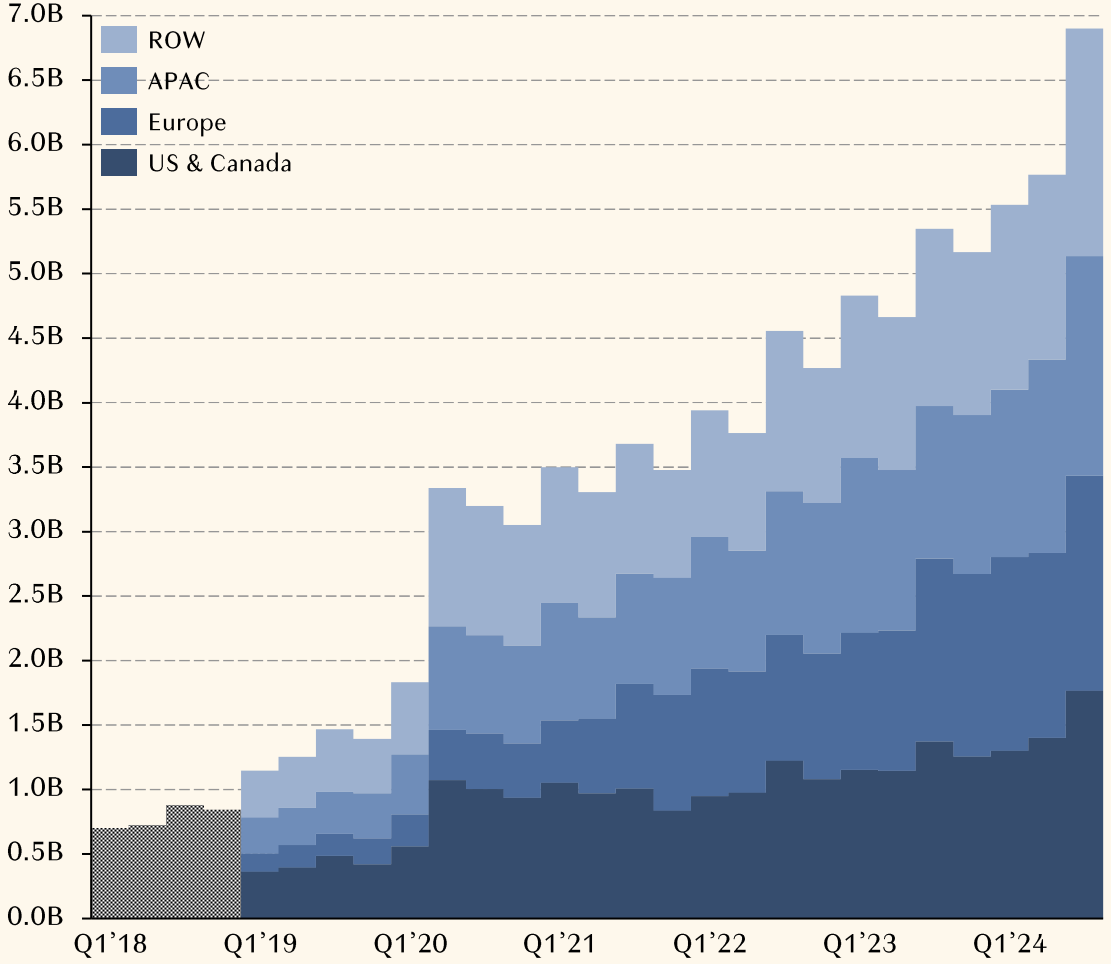
v.1/18/2025

Sources: Roblox, Epyllion analysis

Yet Roblox's growth is also heavily diversified. 60% of users are now over 13 and playtime (and growth) is split roughly evenly across all major regions



Roblox Average DAUs by Age by Quarter
(Worldwide)



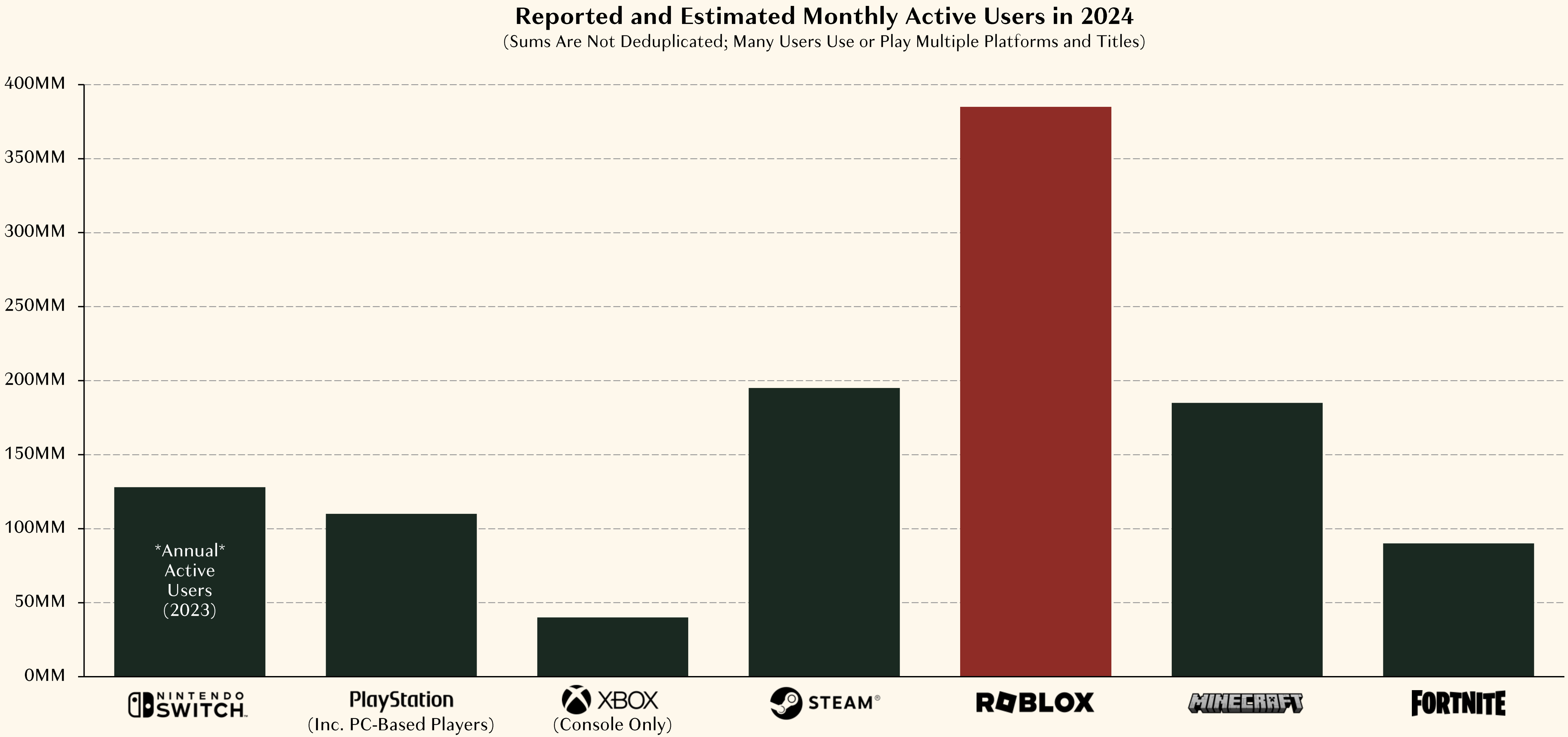
Roblox Avg. Monthly Hours by Region
(Worldwide)

v.1/18/2025

Source: Roblox

With 350–400 million monthly active users, Roblox already rivals the size of the entire AAA ecosystem and towers over core competitors

EPYLLION
By Matthew Ball

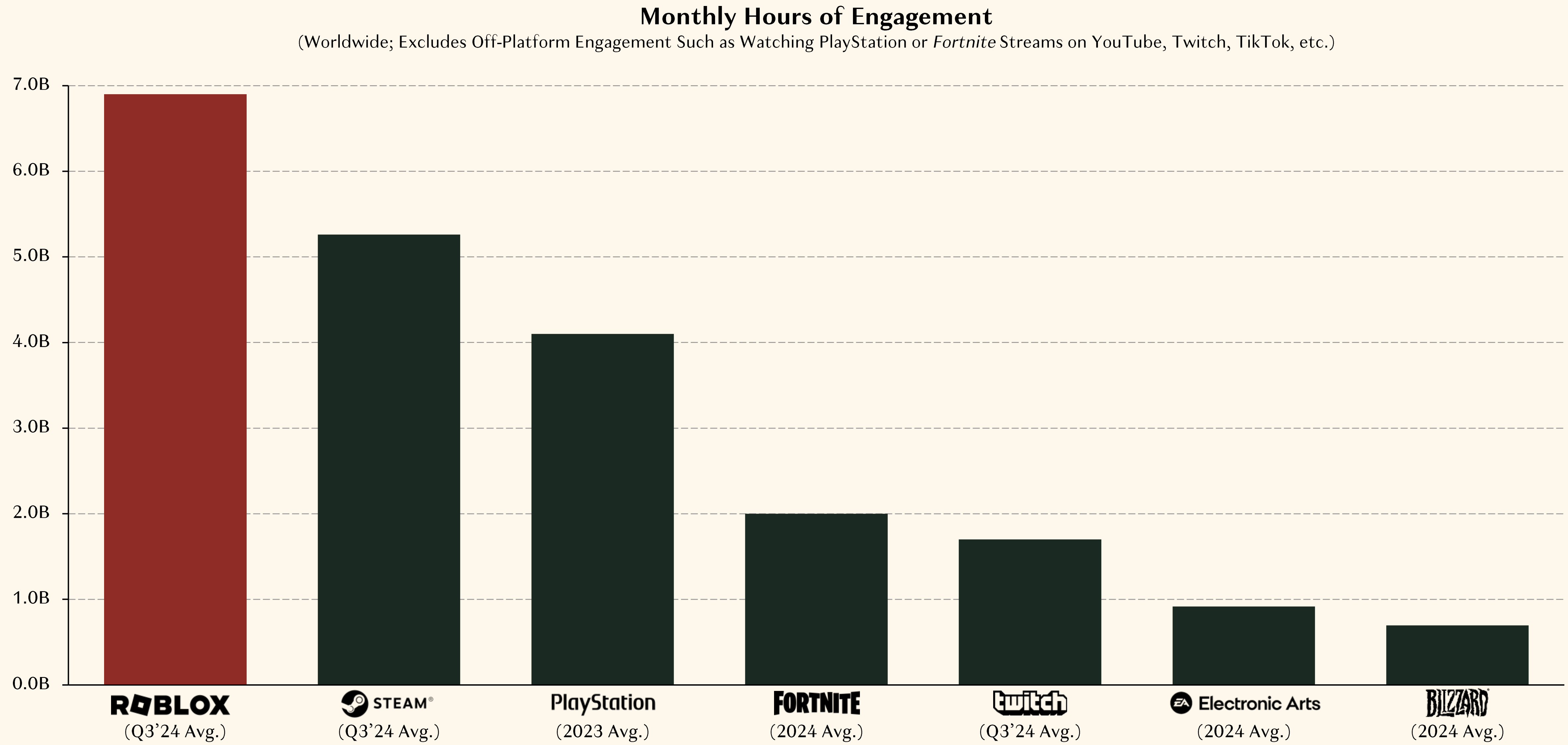

Reported and Estimated Monthly Active Users in 2024
(Sums Are Not Deduplicated; Many Users Use or Play Multiple Platforms and Titles)

v.1/18/2025

Sources: RTrack, Nintendo, Sony, Microsoft, SteamDB, The Verge, VGChartz, IGN, Epyllion analysis

And though children game less than adults, Roblox now has more hours of direct monthly engagement than every gaming-specific console or software platform

EPYLLION
By Matthew Ball



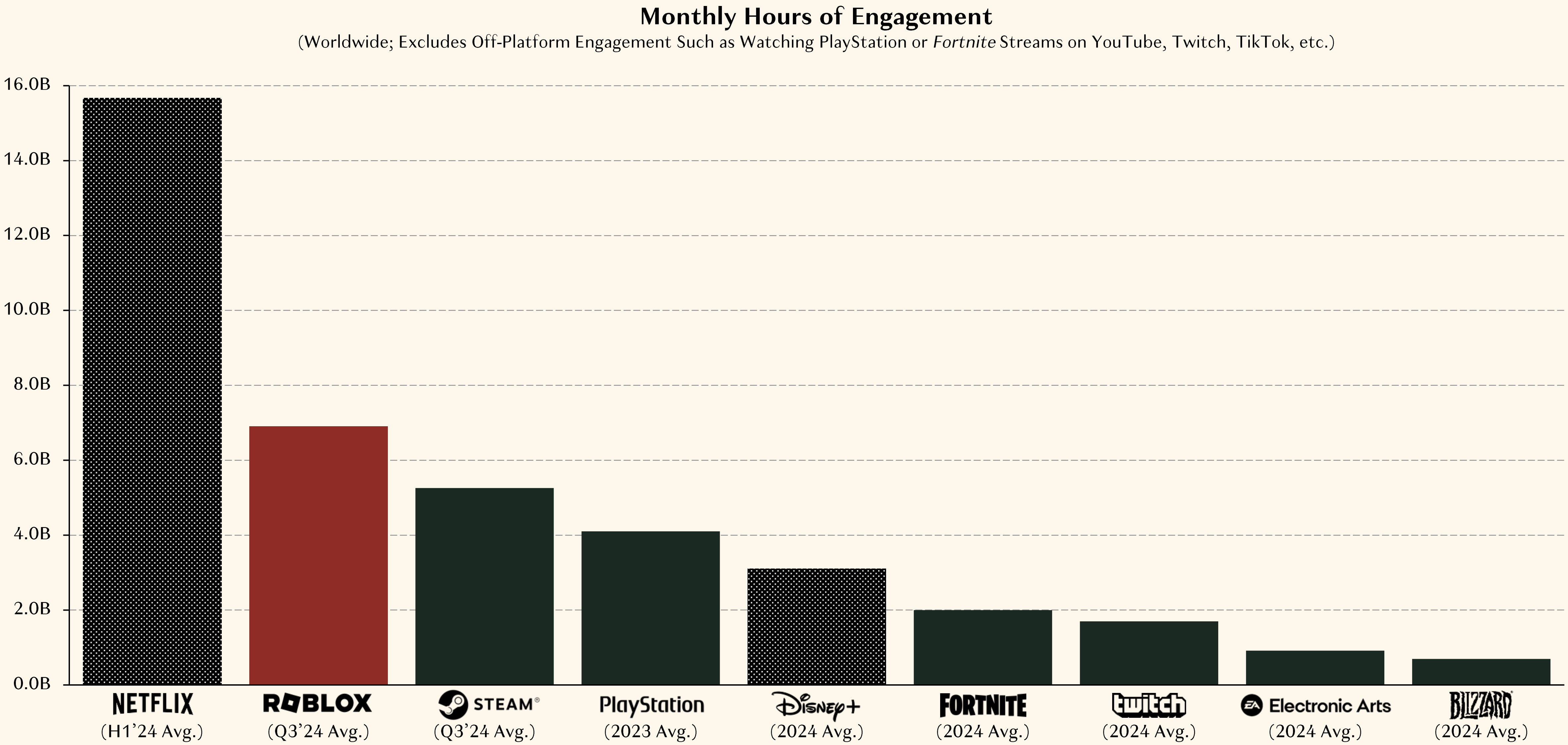
Monthly Hours of Engagement
(Worldwide; Excludes Off-Platform Engagement Such as Watching PlayStation or *Fortnite* Streams on YouTube, Twitch, TikTok, etc.)

v.1/18/2025

Sources: Roblox, SteamDB, Sony, EA, Twitchtracker, Blizzard, Epyllion analysis

In fact, Roblox, with half the users of Netflix and about as many as Disney+, has about half the usage of Netflix and twice that of Disney+

EPYLLION
By Matthew Ball

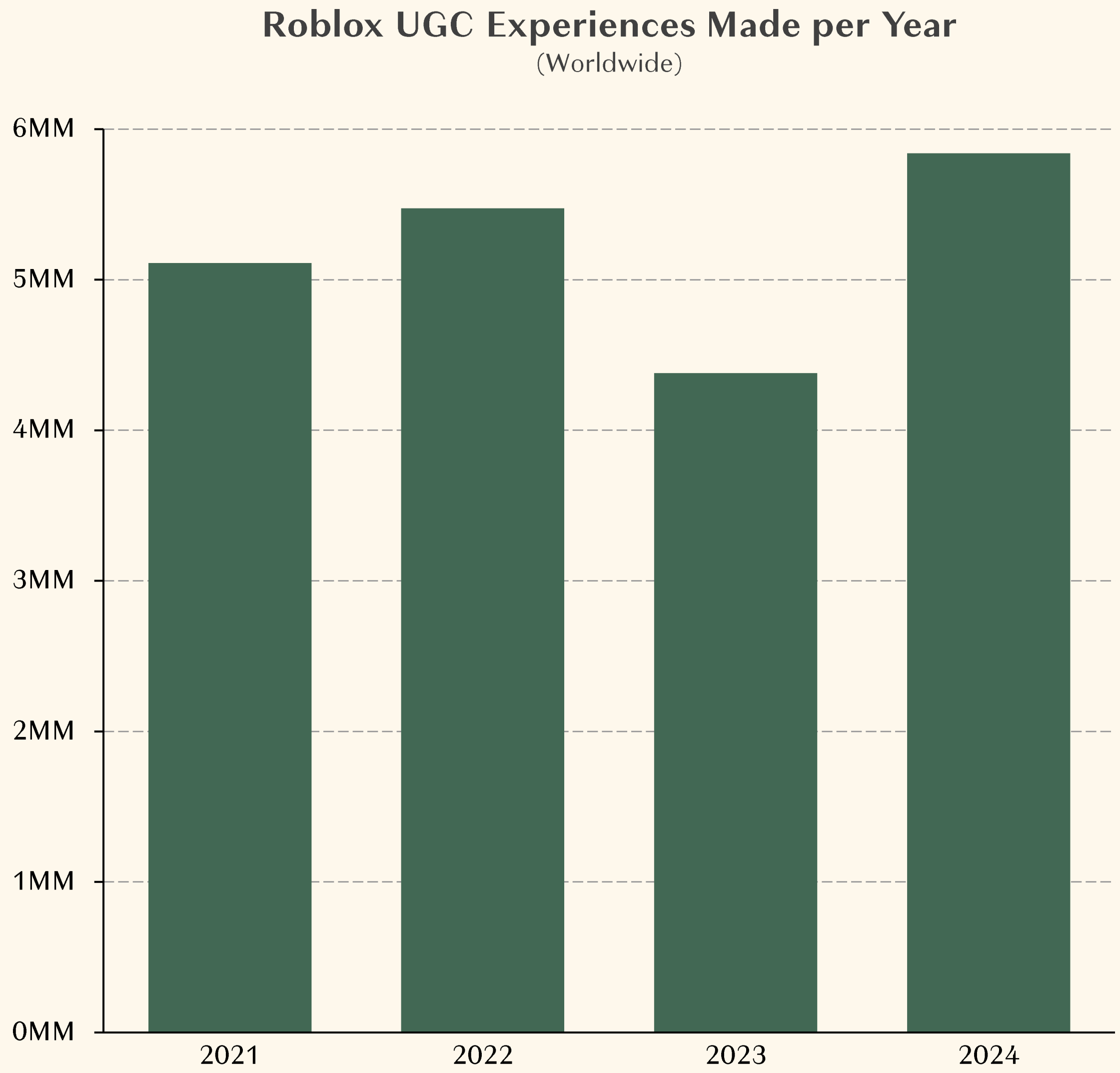


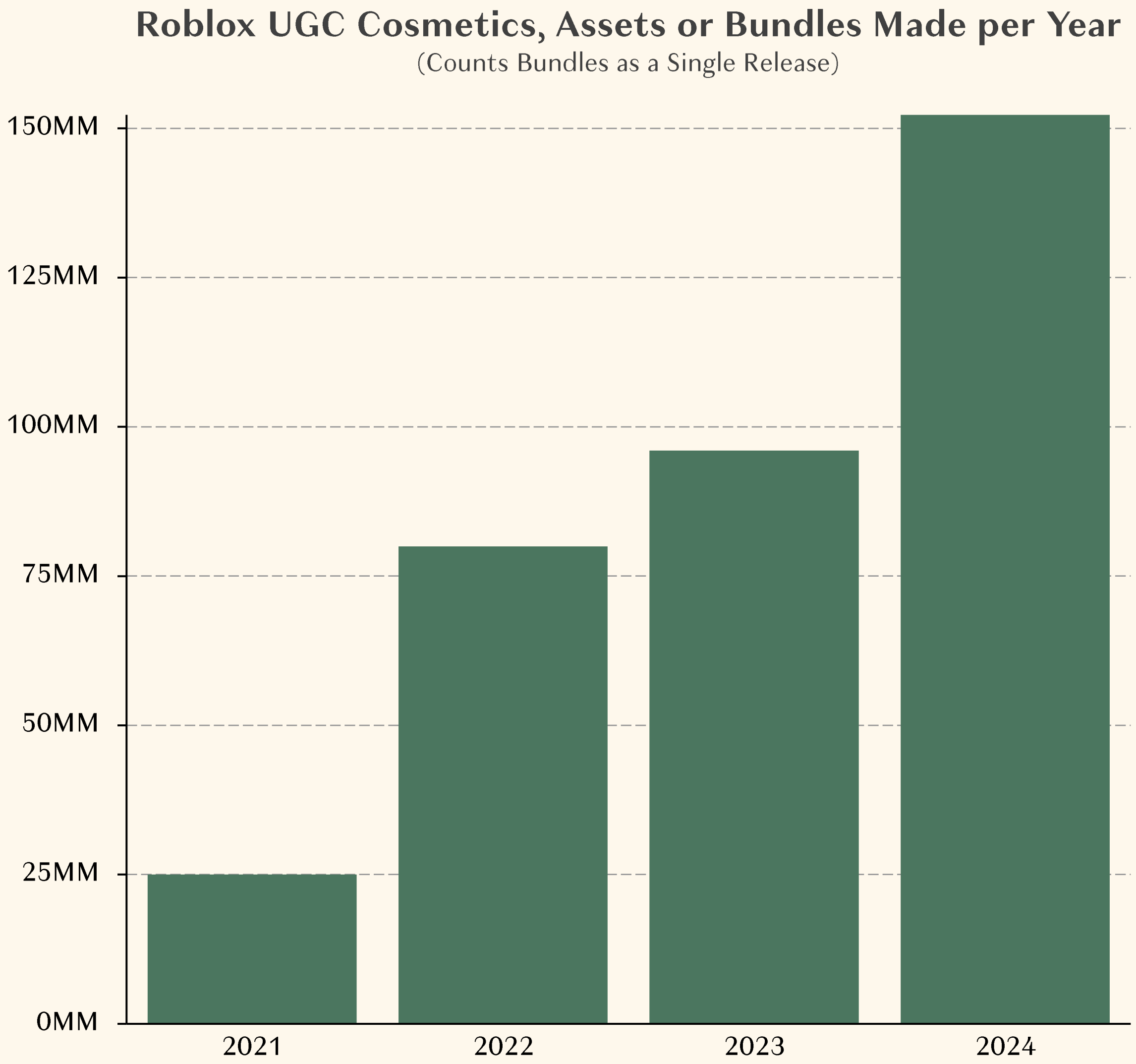
v.1/18/2025

Sources: Roblox, SteamDB, Sony, Netflix, EA, Twitchtracker, Blizzard, Epyllion analysis

But Roblox doesn't focus on "game-like" objectives (win, kill, shoot, defeat, score, beat) but non-game-like ones (share, create, express, identify, feel, show)

EPYLLION
BY MATTHEW BALL





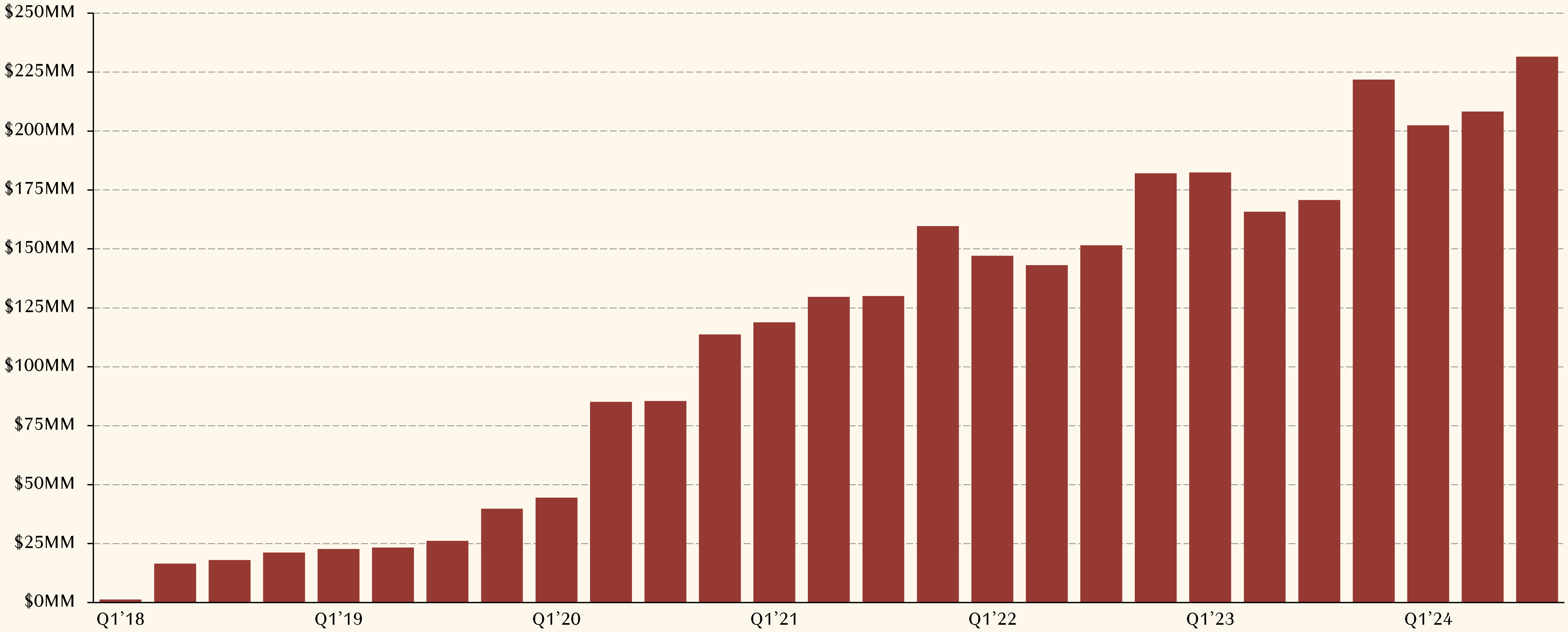
v.1/18/2025

Source: Roblox, Epyllion analysis

Moreover, Roblox's UGC economy is piping, with over $3B in payouts to UGC developers since 2006 — and annual run-rate payments now approaching $1B

EPYLLION
By Matthew Ball

Roblox Quarterly Developer Payments
(Worldwide)



v.1/18/2025

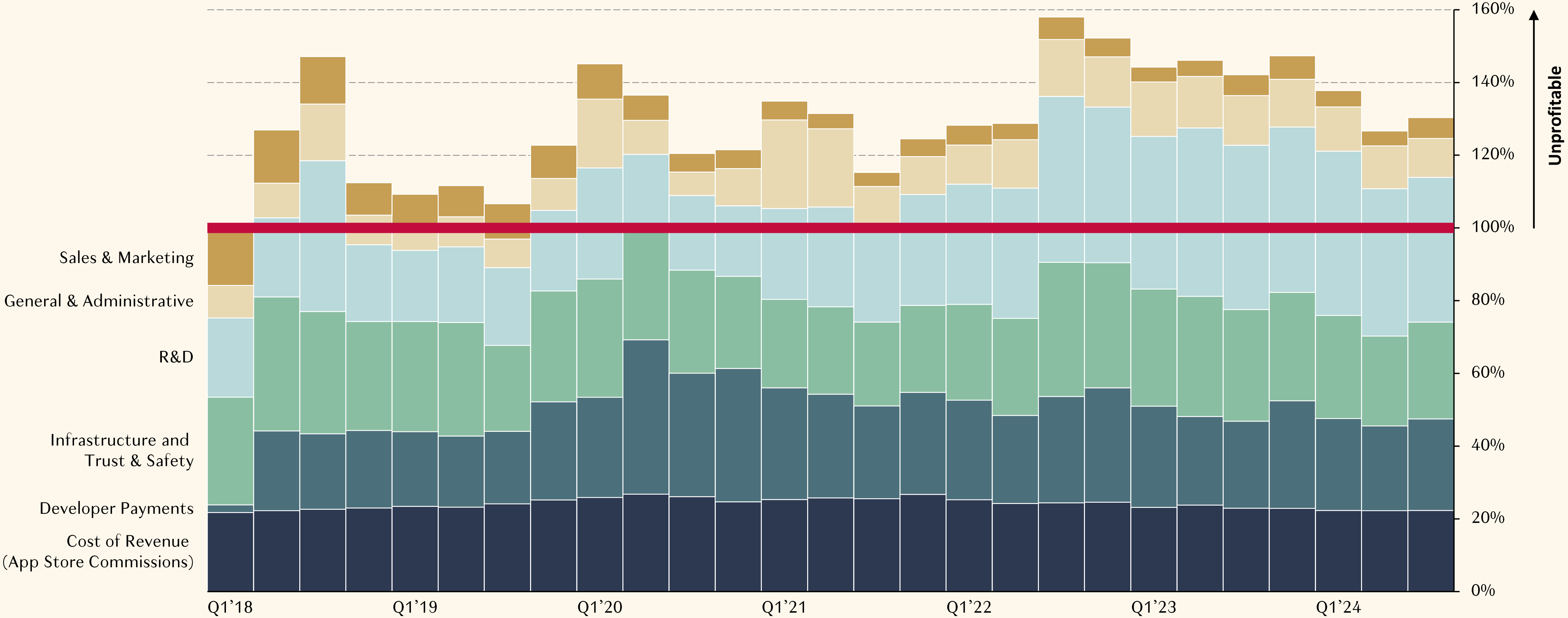
Source: Roblox

Yet Roblox also loses roughly $35 for every $100 a player spends. After App Store and developer payments, only $52 is left for the remaining $87 in costs

EPYLLION
By Matthew Ball

Roblox Costs as a Percentage of Revenue

(Based on GAAP)

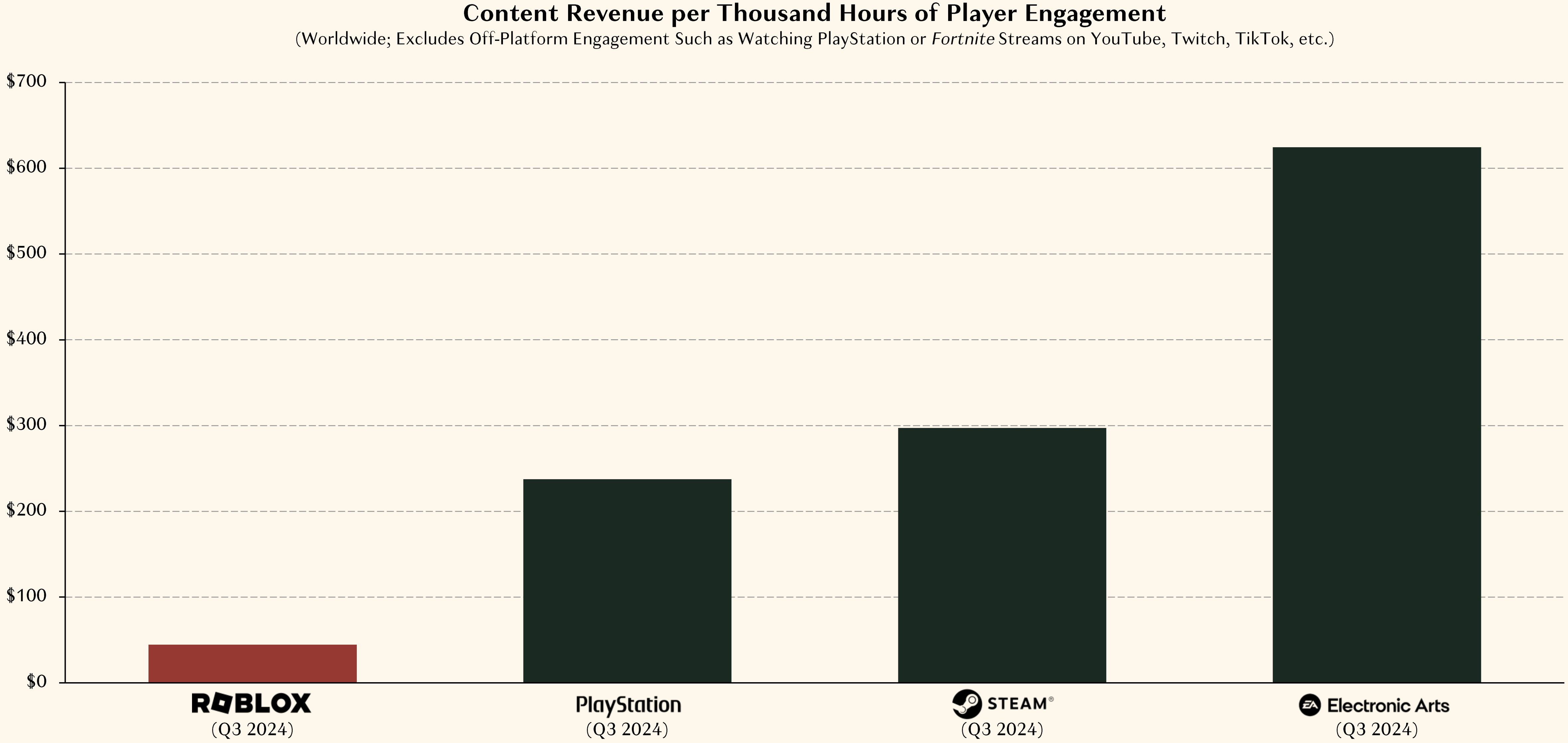


v.1/18/2025

Source: Roblox, Epyllion analysis

One problem is spend: Roblox generates a fraction of the revenue per hour of rival platforms and publishers (partly due to its sizable pre-teen/teen playerbase)

EPYLLION
BY MATTHEW BALL



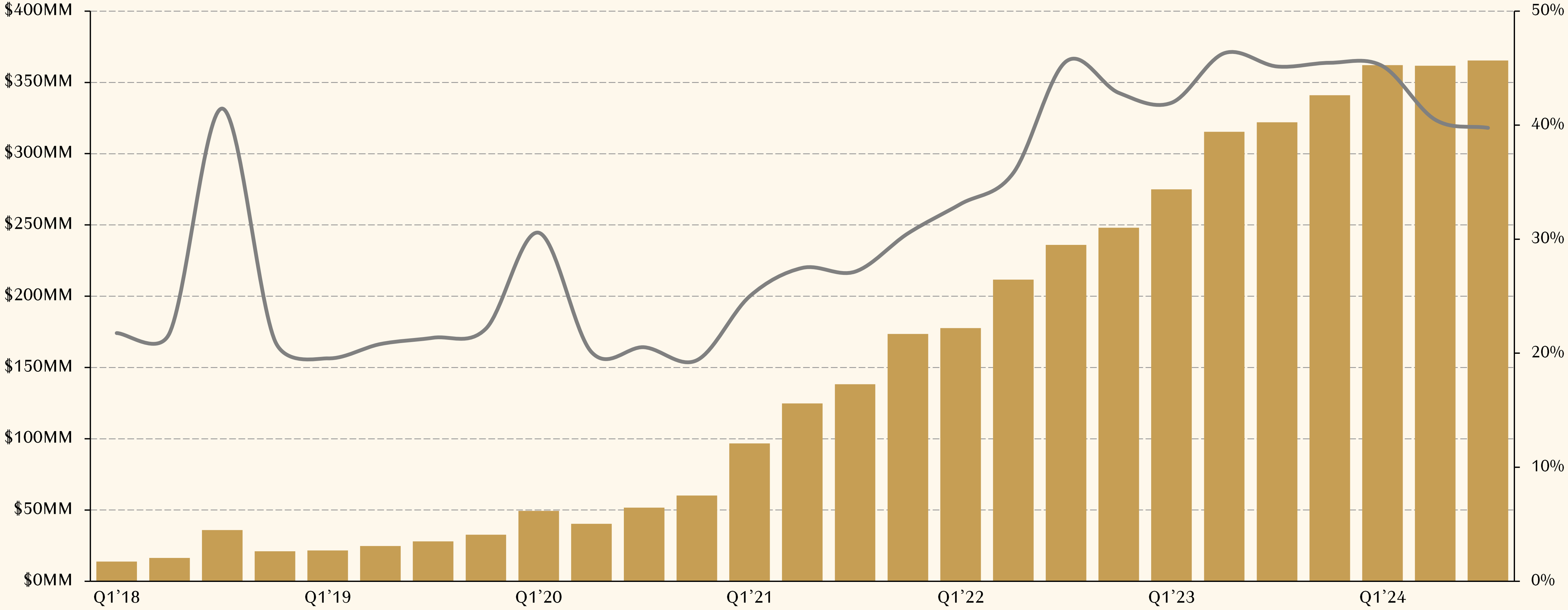
v.1/18/2025

Sources: Roblox, Sony, Valve, IDG, EA, Epyllion analysis

Another challenge is the tech/tools platform required for such scale. Roblox now spends $1.4B annually (45% of revenue) just on R&D (a 13x increase over 5 years)

EPYLLION
By Matthew Ball

Roblox Quarterly R&D Expense and R&D Expense as TTM Share of Revenue
(Based on GAAP)



v.1/18/2025

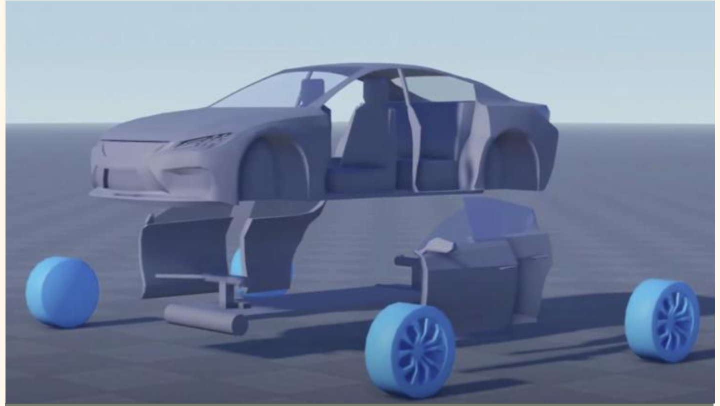
Sources: Roblox, Epyllion analysis

Roblox's engine and data centers now enable surprisingly high-fidelity games (thus far, developers and users seem mostly uninterested in such experiences)

WATCH: https://x.com/JoshLu/status/1633506752082894848 or https://tinyurl.com/StateofVideoGaming2025-Roblox

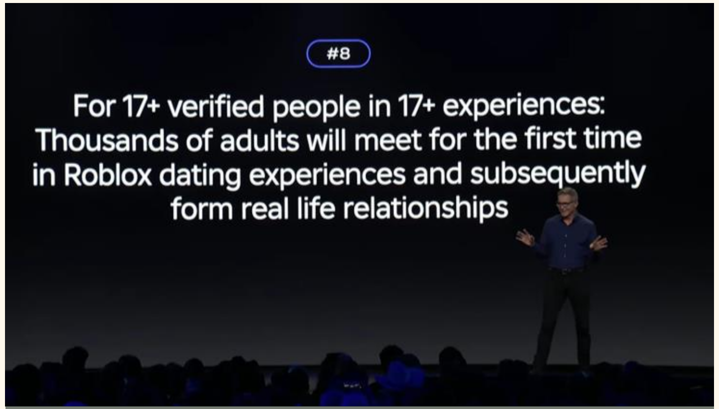
Sources: Maximillian's FRONTLINES on Roblox, Josh Lu

Roblox's R&D also supports numerous (mostly non-gaming) platform efforts. Few platforms ever reach 400MM MAU — and when they do, opportunities only grow…



Fully Composable GenAI Objects & Worlds

Immersive Ad Network

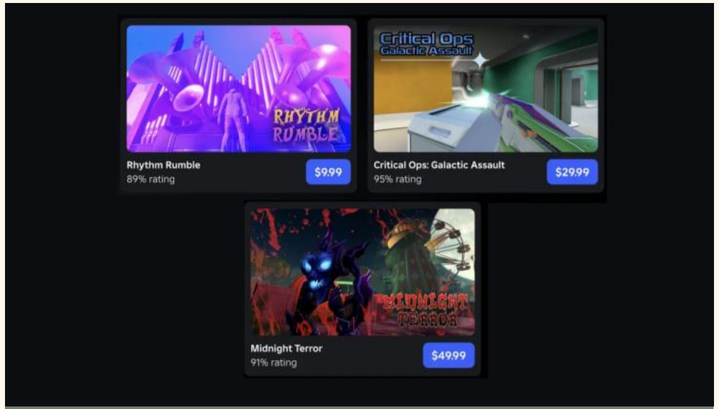


#8

For 17+ verified people in 17+ experiences: Thousands of adults will meet for the first time in Roblox dating experiences and subsequently form real life relationships

(Rumored) Dating Platform

Social Messaging and Video Calling

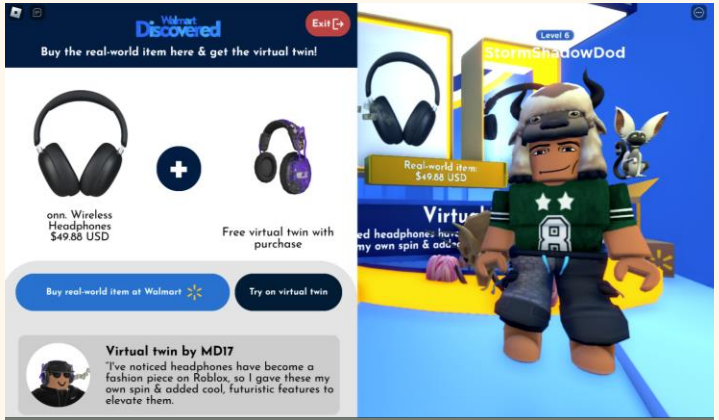


Rhythm Rumble
89% rating
$9.99

Critical Ops: Galactic Assault
95% rating
$29.99

Midnight Terror
91% rating
$49.99

Packaged Game Sales ($10-50 Each)



Walmart Discovered

Exit

Buy the real-world item here & get the virtual twin!

onn. Wireless Headphones $49.88 USD

Free virtual twin with purchase

Buy real-world item at Walmart

Try on virtual twin

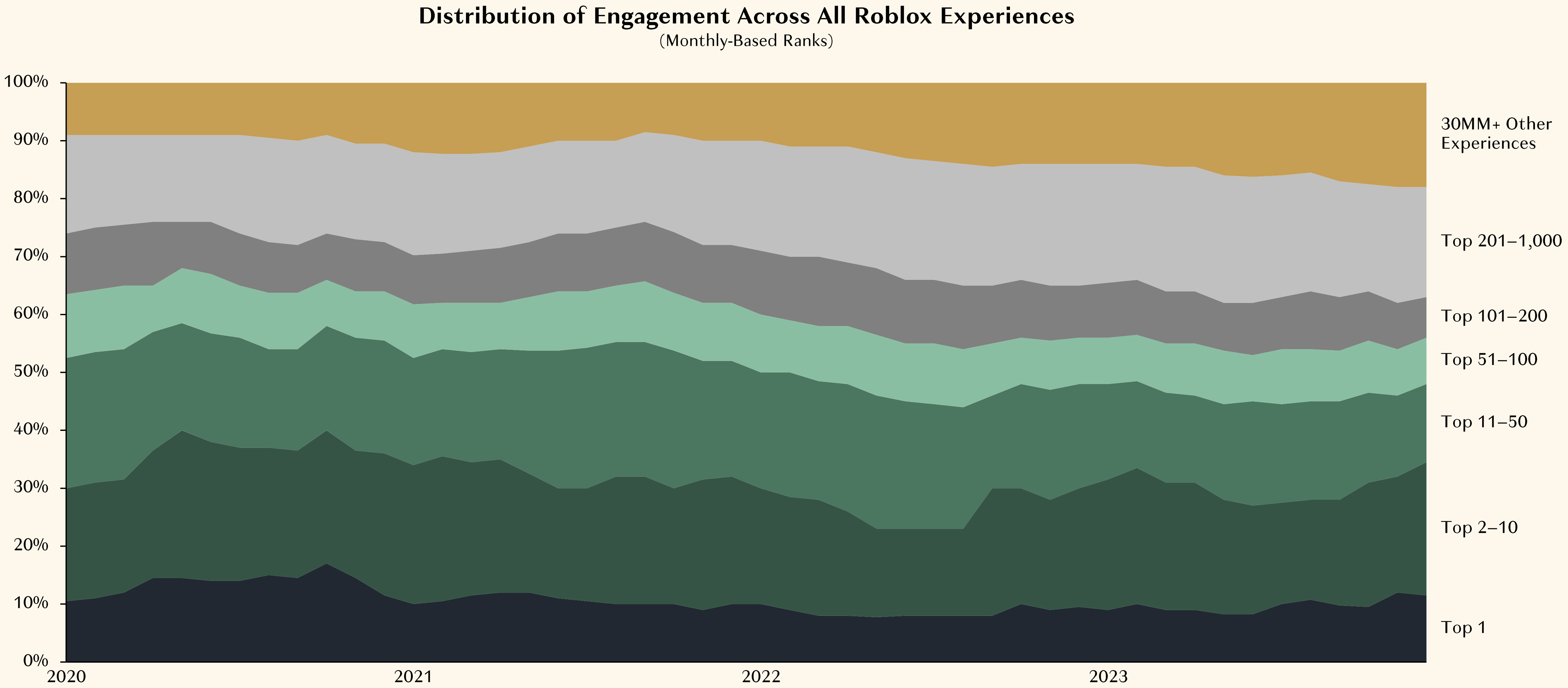
Virtual twin by MD17
"I've noticed headphones have become a fashion piece on Roblox, so I gave these my own spin & added cool, futuristic features to elevate them.

Shoppable Real World Merch

Sources: Roblox, Epyllion analysis

Yet Roblox has its own discoverability challenges: The most-played experience is 10% of playtime, while the top 10 are 30%, and top 50 of 15MM+ (!) are over half

EPYLLION
By Matthew Ball

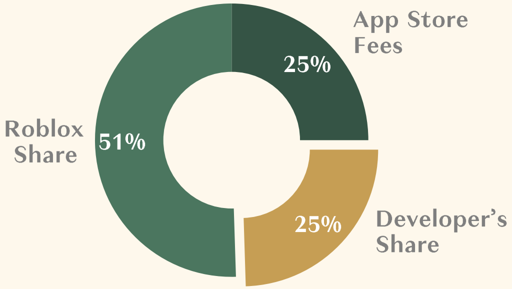


v.1/18/2025

Sources: Roblox, Epyllion analysis

Moreover, Roblox's benefits — while great — come with large financial, technological, and strategic implications for developers

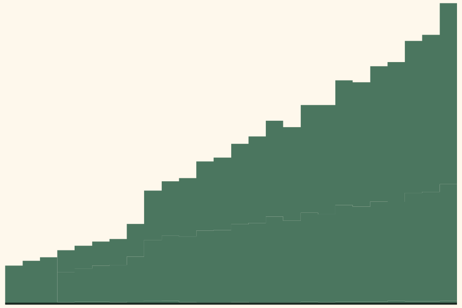
Economic & Business Model Constraints



Though Roblox's take rates cover many of a developer's operating expenses (e.g. servers, customer service, engine and tools), while also providing developers access to its enormous social graph and userbase, developers receive only ~25% of the revenues they generate versus 70% on mobile/console and up to 100% on PC.

Roblox also controls what business models, prices, and products a developer can deploy — and how

Platform-Only Players



Roblox has more users than any rival AAA ecosystem — or several of them combined. However, a Roblox developer cannot own, access, contact, or even "share" these players with Roblox as they might when distributing their titles on mobile, console, or PC

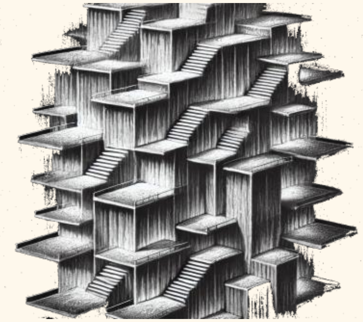
Moreover, a Roblox developer's playerbase is partly limited to the players already on Roblox as would-be players cannot "directly" download a Roblox game

Platform Tech, Pipeline, & Priorities

Roblox's $1.5B in annual R&D affords most developers capabilities far beyond what they might develop, let alone quickly — and sometimes beyond what's available through any third-party technology/tools provider

At the same time, Roblox developers are dependent upon Roblox's technical preferences, including which systems, conventions, and bets the company does and doesn't make, as well as which technologies Roblox prioritizes, deprioritizes, delivers on time and at expectation, etc.

Strategic Platform Dependency



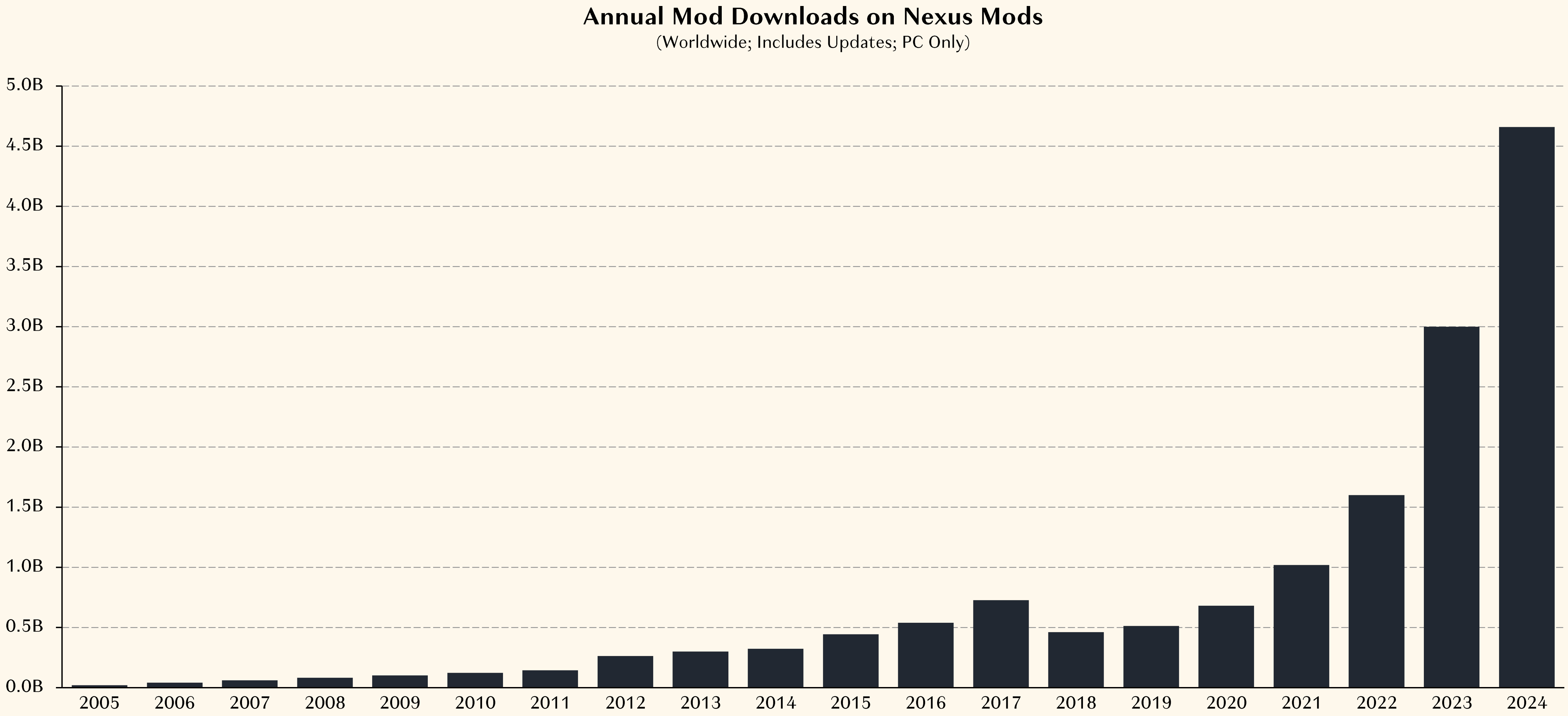
As is the case whenever a developer uses a closed platform managed by a for profit entity, the developer is subject to policy-related and/or commercial changes at Roblox. These may include the platform's approach to monetization and discovery, content and/or moderation rules, payments/royalties and other compensation structures, and so on.

v.1/18/2025

Source: Epyllion analysis

Like Roblox, usage and creation of UGC mods has substantially outpaced overall video gaming spend and time — all the while enriching gameplay (and publishers)

EPYLLION
By Matthew Ball



v.1/18/2025

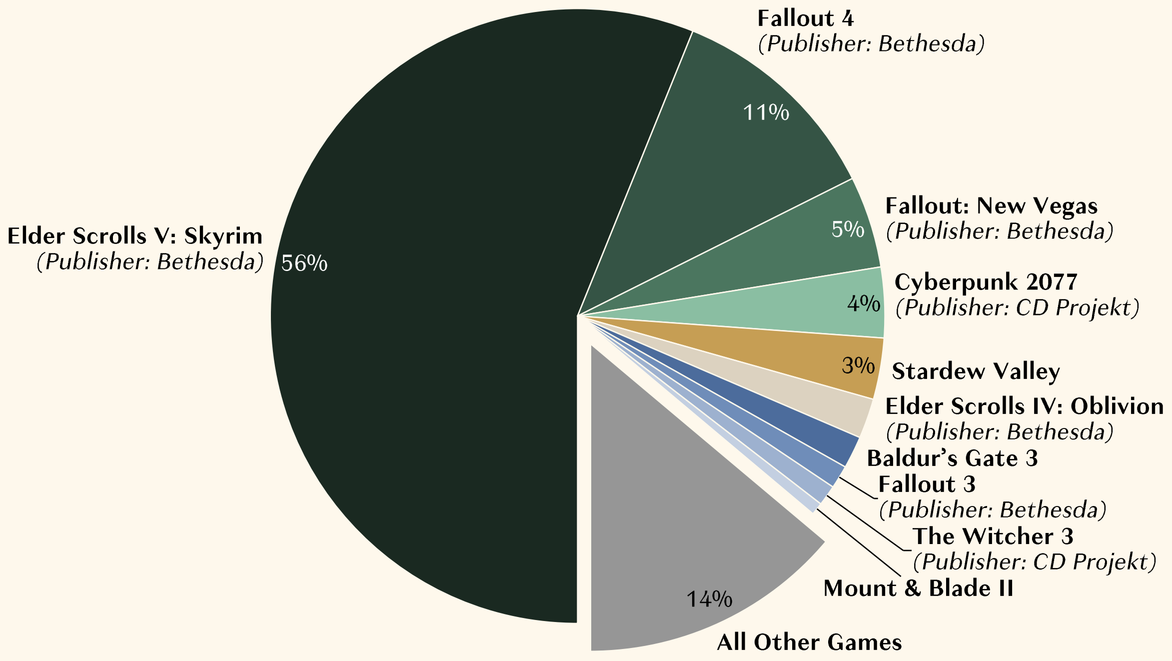
Sources: Nexus Mods, Epyllion analysis

Unsurprisingly, UGC modding is often hyper-concentrated to top titles — a reflection of which genres are suitable, Metcalfe's Law, and publisher policies

EPYLLION
BY MATTHEW BALL

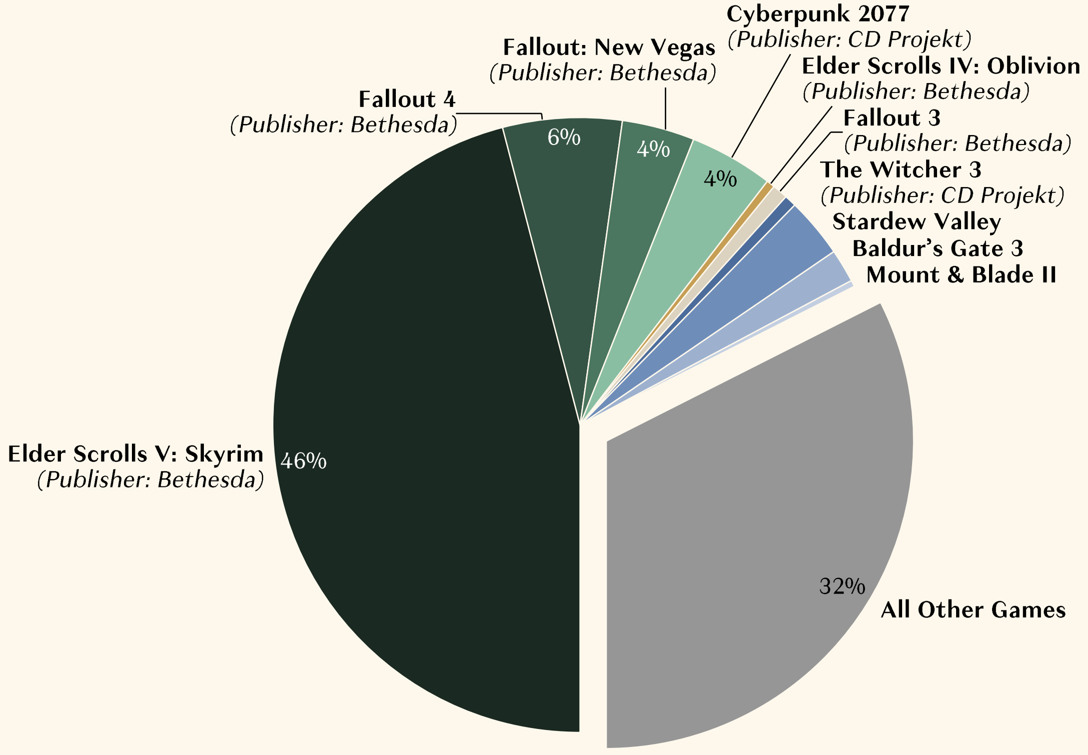
Share of Nexus Mods' Life-to-Date 15B Mod Downloads

(Worldwide; Includes Updates; PC Only)



Share of 2025 Downloads on Nexus Mods

(Worldwide; Includes Updates; Nexus Mods PC Only)



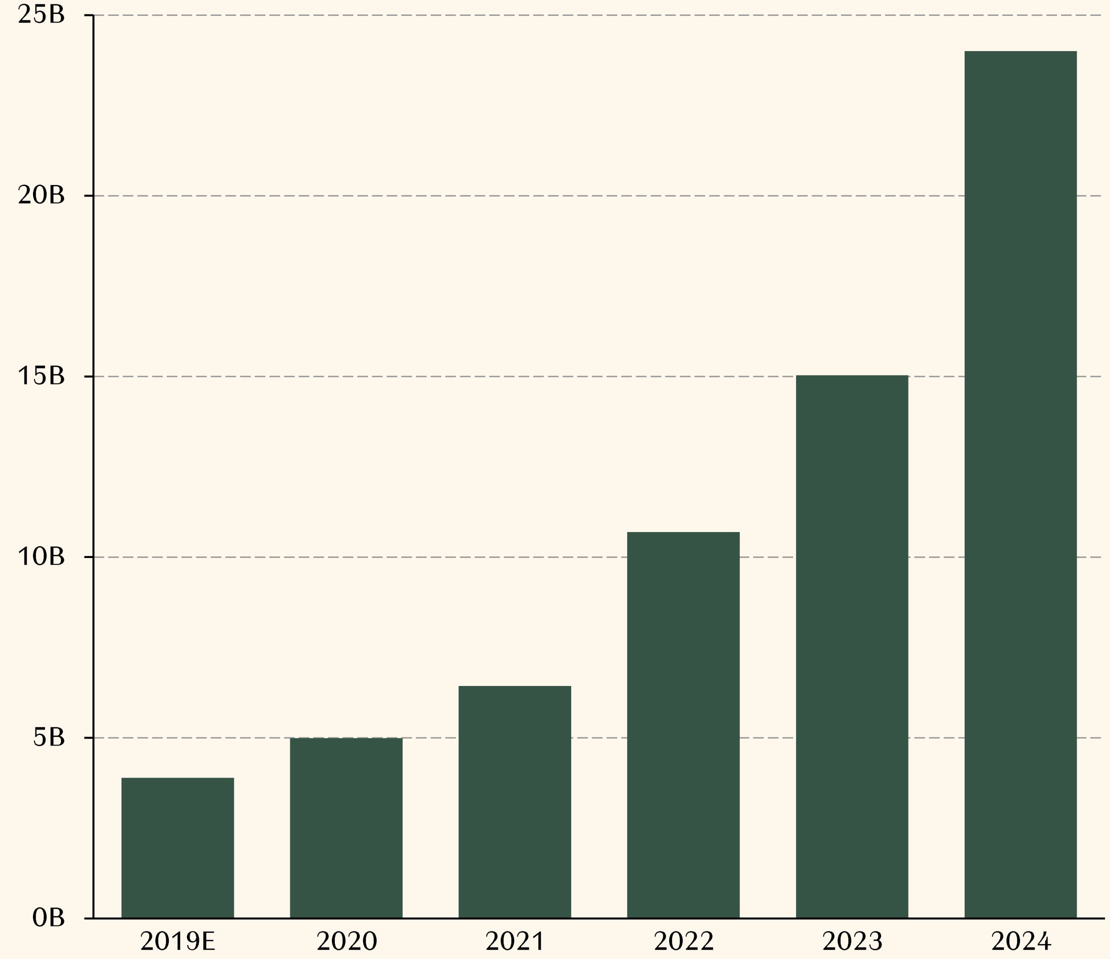
v.1/18/2025

Sources: Nexus Mods, Epyllion analysis

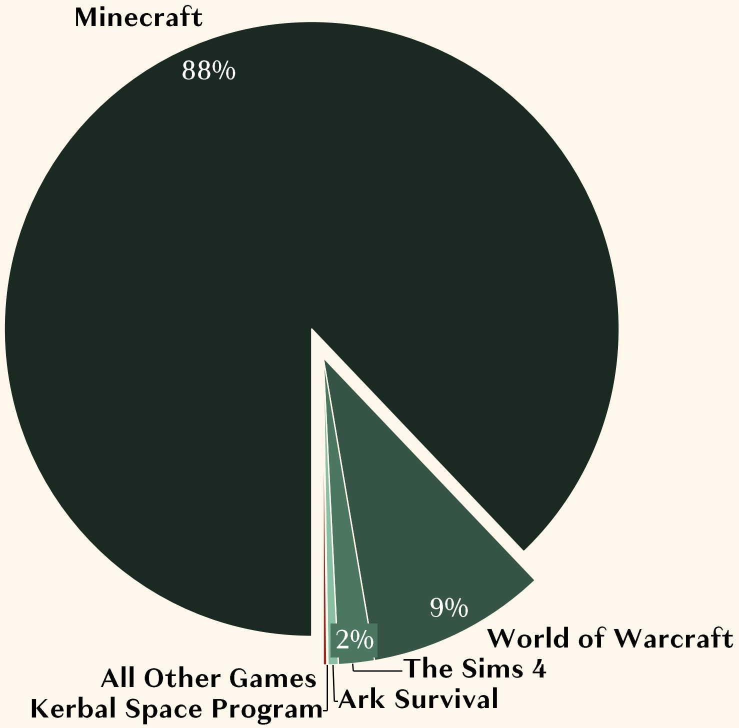
CurseForge has seen its annual mod downloads increase by more than 6x to 24B — primarily in support of the best-selling game in history, UGC platform Minecraft

EPYLLION
By Matthew Ball

Annual Mod Downloads on CurseForge
(Worldwide; Includes Updates; PC Only)



Share of CurseForge's Life-to-Date 79.5B Mod Downloads
(Worldwide; Includes Updates; PC Only)



v.1/18/2025

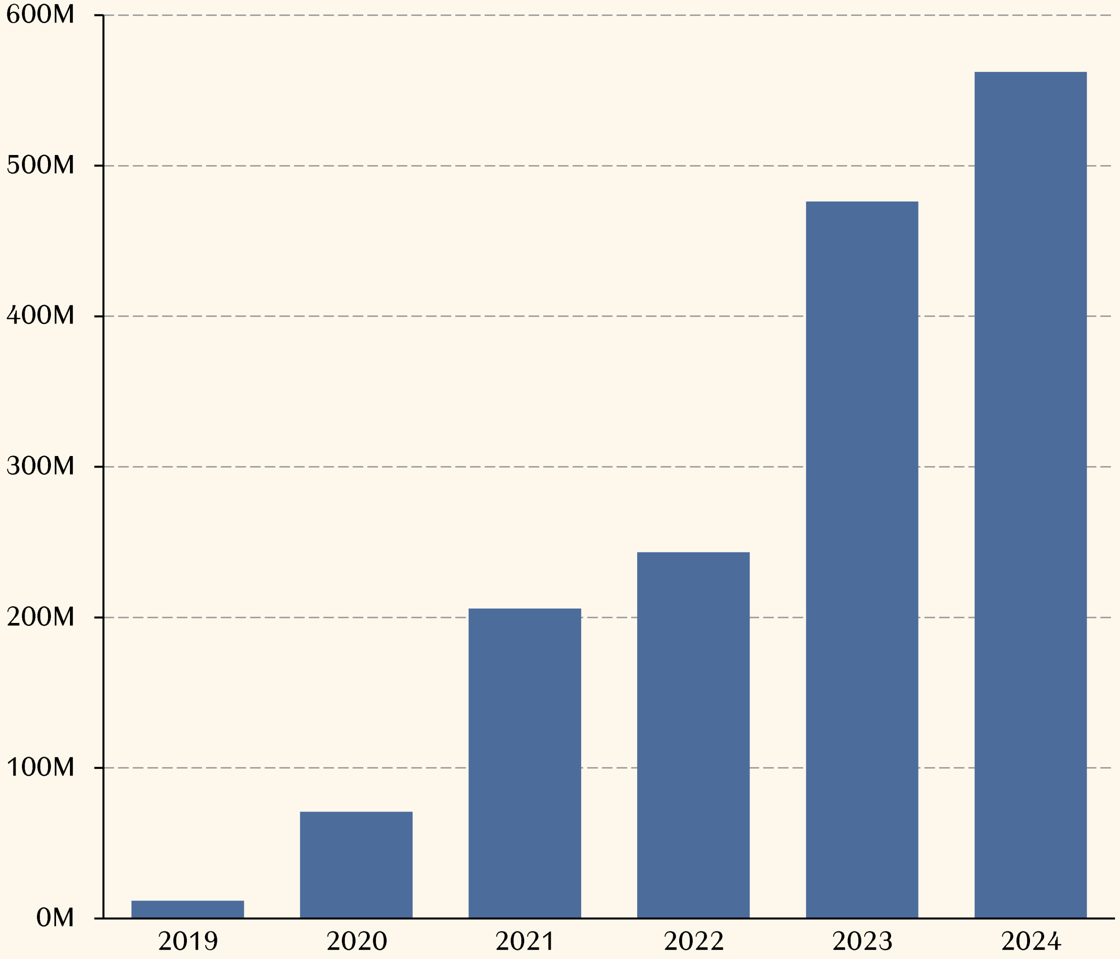
Sources: Overwolf, Epyllion analysis

Mod.io, too, has seen its annual mod downloads surge to over half a billion per year, supporting an average of 15MM MAUs by the end of 2024

EPYLLION
By Matthew Ball

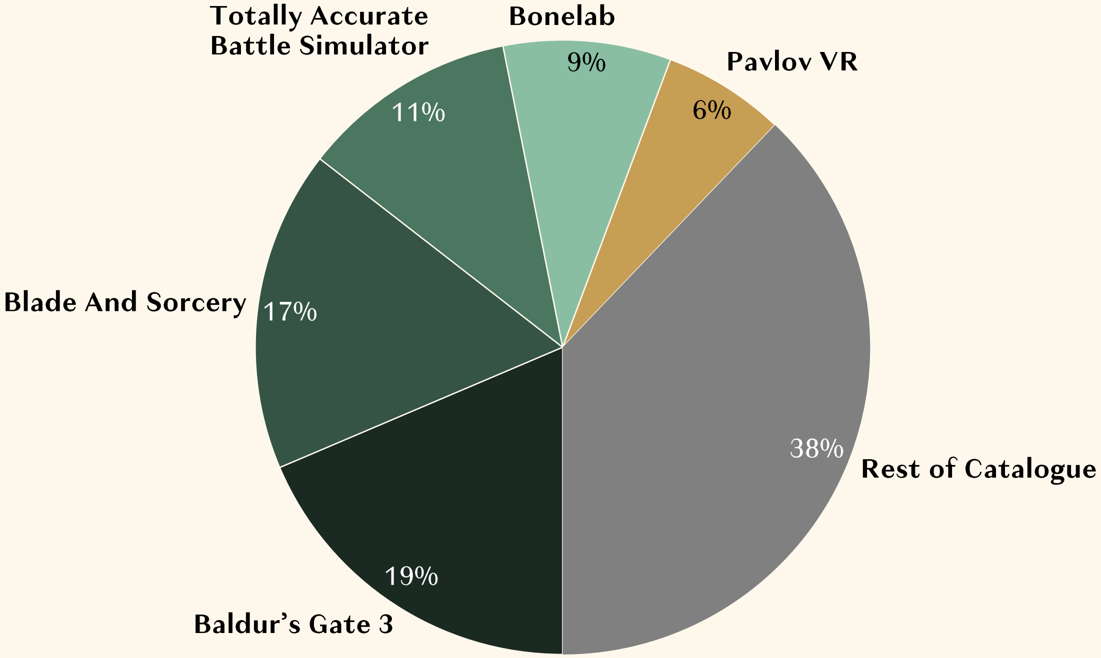
Annual Mod Downloads from Mod.io

(Worldwide; Includes Updates; PC Only)



Share of Mod.io's 550MM Mod Downloads in 2024

(Worldwide; Includes Updates; PC Only)



v.1/18/2025

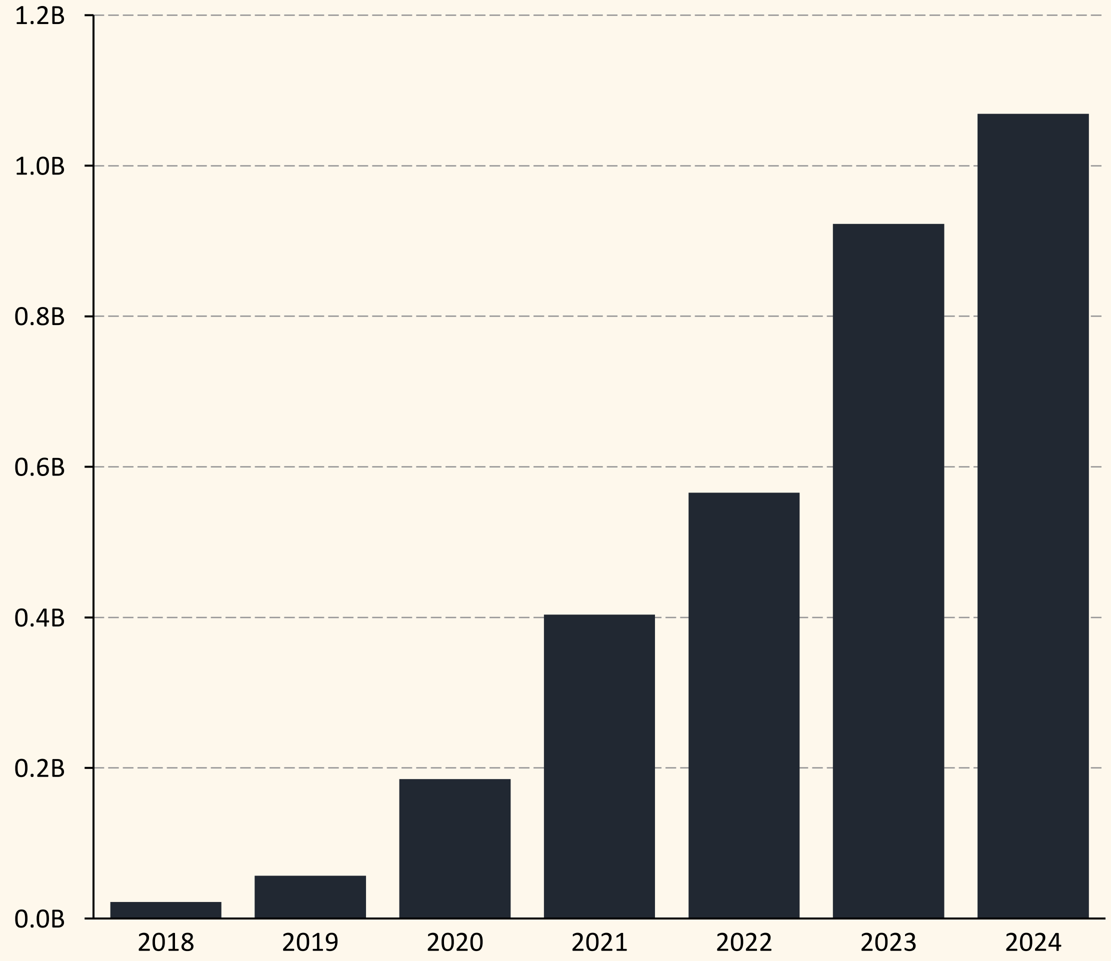
Source: Mod.io

Through real–time game assist (or challenge) mods for non–competitive games, WeMod is driving hundreds of millions of hours of diverse catalogue engagement

EPYLLION
By Matthew Ball

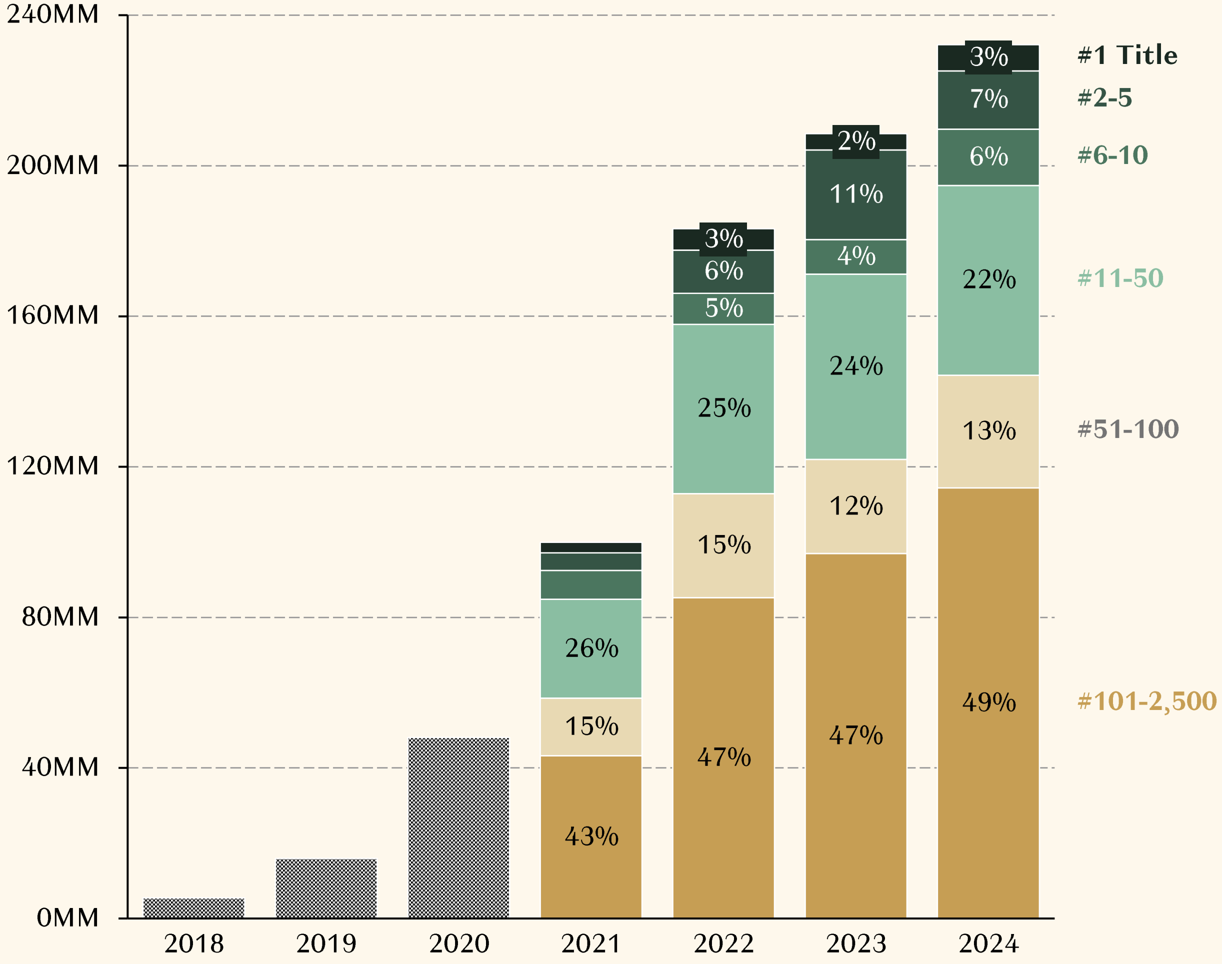
WeMod Total Mod Activations By Year

(Worldwide; PC Only)



Hours of WeMod Use by Title Popularity in Year

(Worldwide; PC Only)



v.1/18/2025

Source: WeMod, Epyllion analysis

Reviewing Potential New "Growth Engines"[1]

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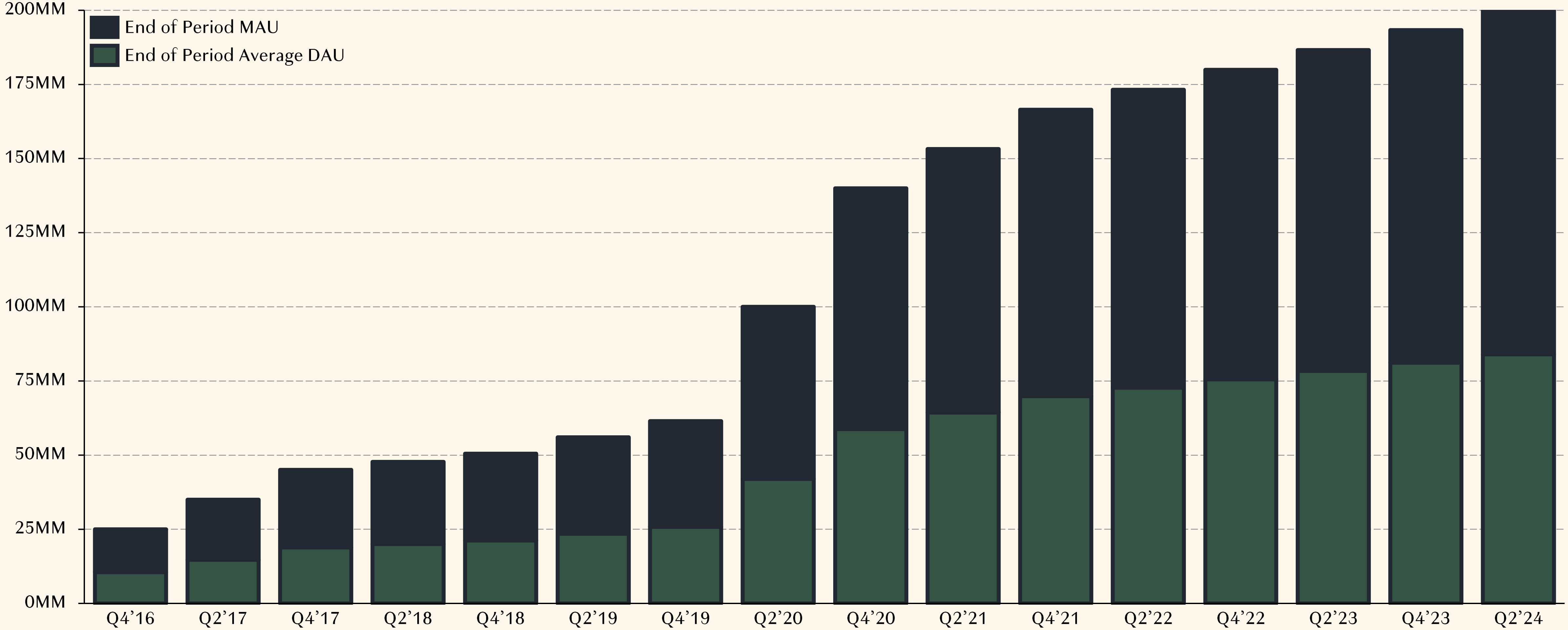
v.1/18/2025

Notes: [1] Ordered logically, rather than in order of monetary value, significance, timing, etc.; [2] This isn't to say I believe in each one, let alone to the degree sometimes argued, but I do think each is worth arguing

As video game players and playtime stagnated, social gaming services continued to grow both. At Discord, MAU and DAU are up ~20% vs mid–2021

EPYLLION
By Matthew Ball

Discord Monthly And Daily Active Users by Quarter End
(Worldwide)



v.1/18/2025

Sources: Business Insider, CNN, New York Times, Venture Beat, Discord, Epyllion analysis

Though broadly considered a communications platform, Discord is hyper-indexed to gamers — especially high-engagement, social, and multi-platform gamers

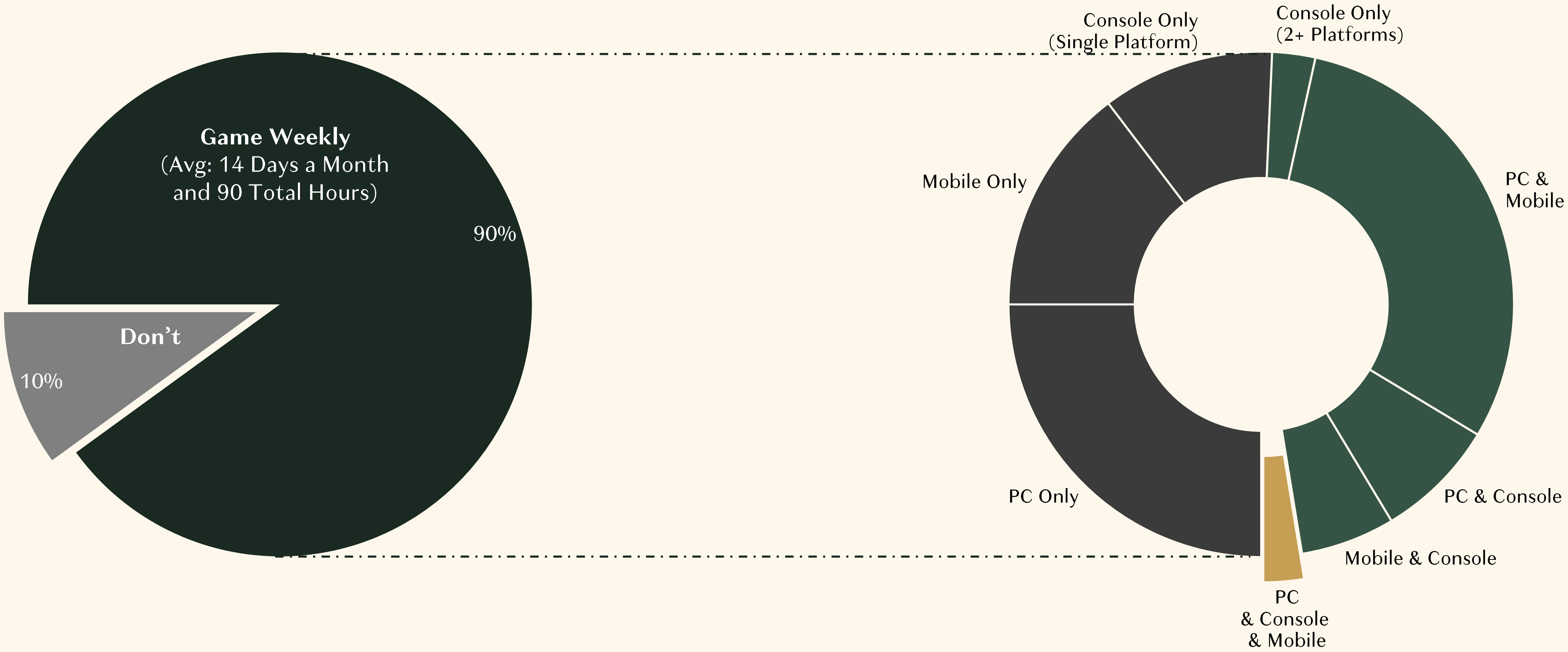
EPYLLION
By Matthew Ball

Discord WAU by Gaming Activity

(2024)

Discord Video Gaming WAU by Platforms Used in Week

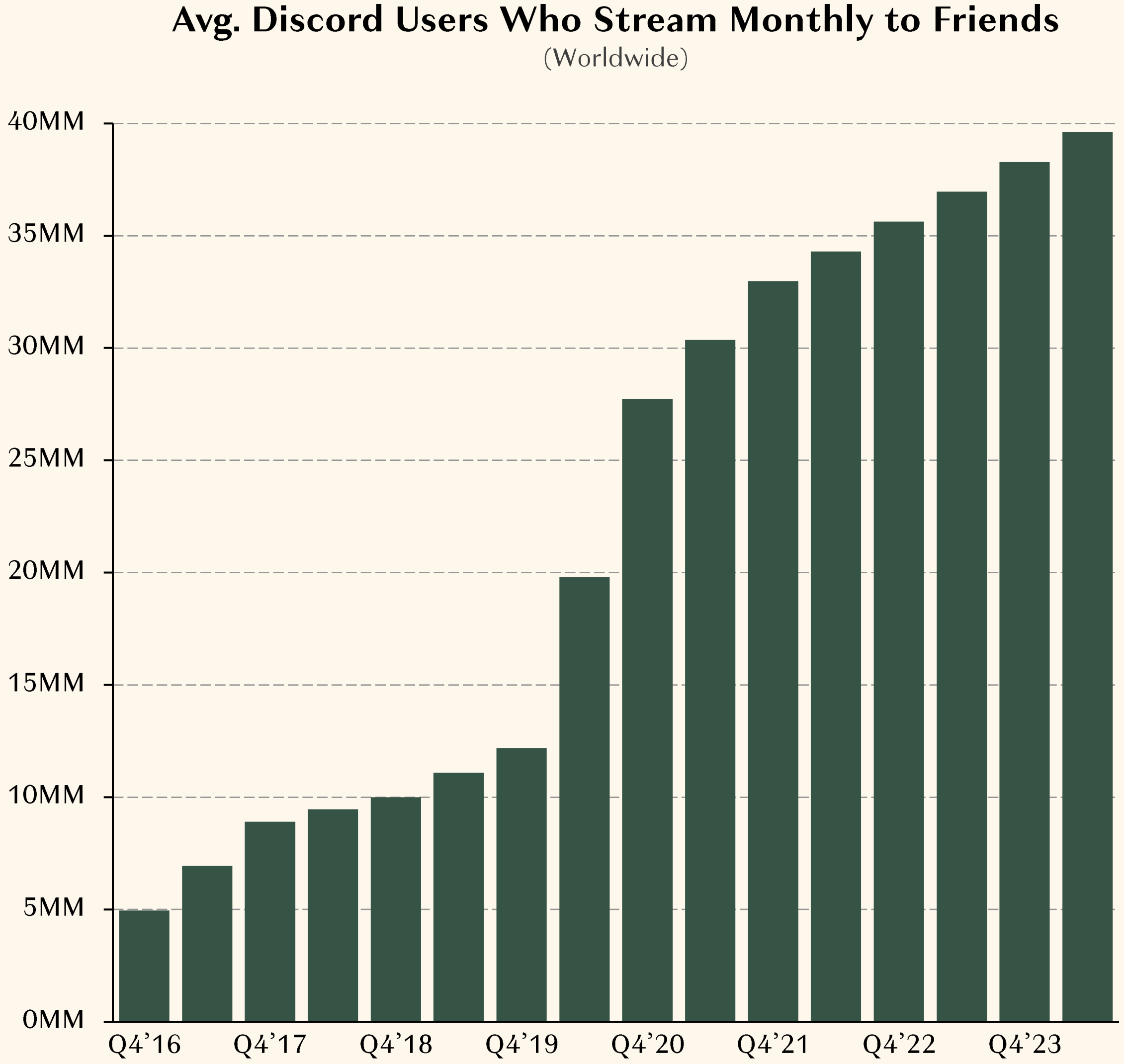
(Worldwide)



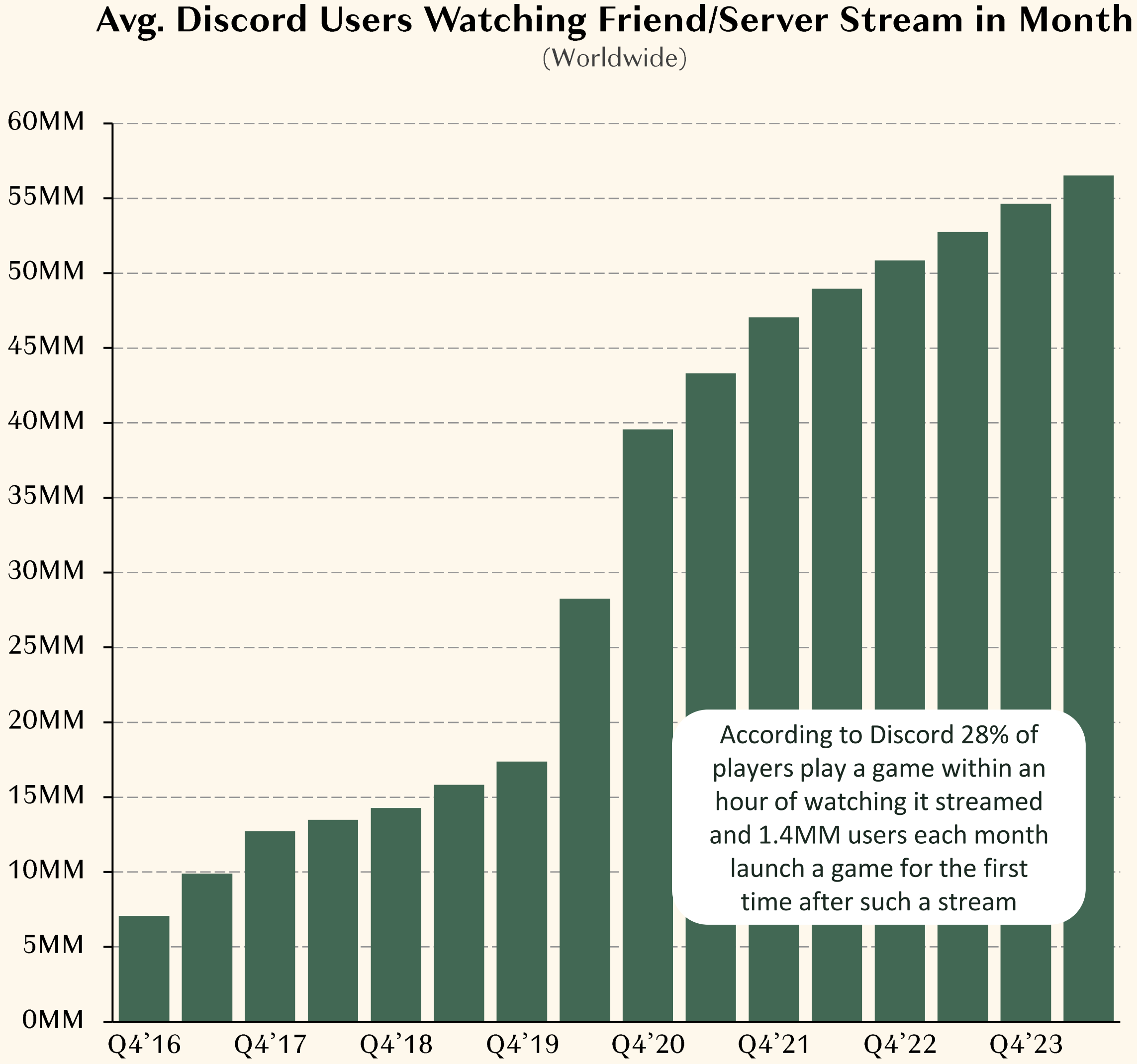
v.1/18/2025

Sources: Discord, Epyllion analysis

One in five Discord users (or 40MM total) use the app to stream gameplay to their friends each month — and just under one in three watches monthly


Avg. Discord Users Who Stream Monthly to Friends

(Worldwide)


Avg. Discord Users Watching Friend/Server Stream in Month

(Worldwide)

According to Discord 28% of players play a game within an hour of watching it streamed and 1.4MM users each month launch a game for the first time after such a stream

v.1/18/2025

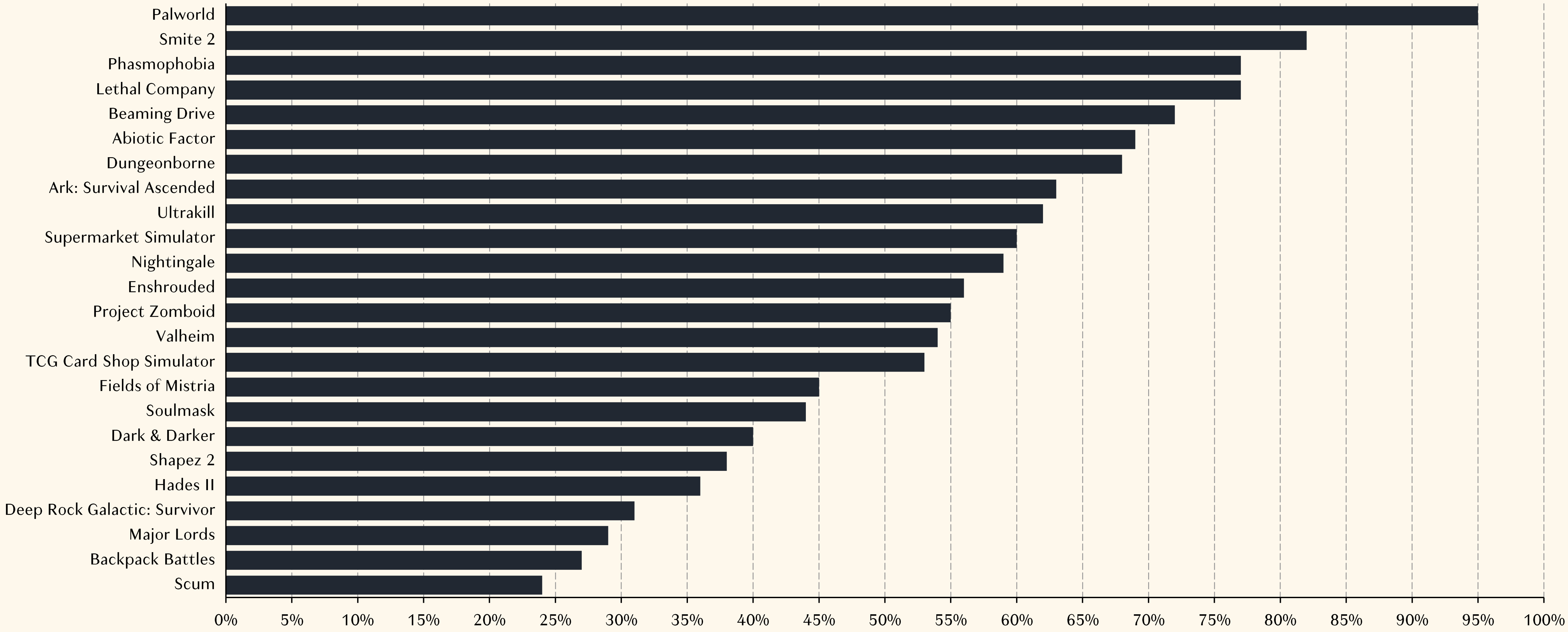
Sources: Business Insider, CNN, New York Times, Venture Beat, Discord, Epyllion analysis

Discord's group-based communications, organization, and social sharing results in disproportionate game discovery behavior — Reed's Law at work

EPYLLION
By Matthew Ball

Discord Users Playing Steam Early Access Titles As Share of Total Observed Players

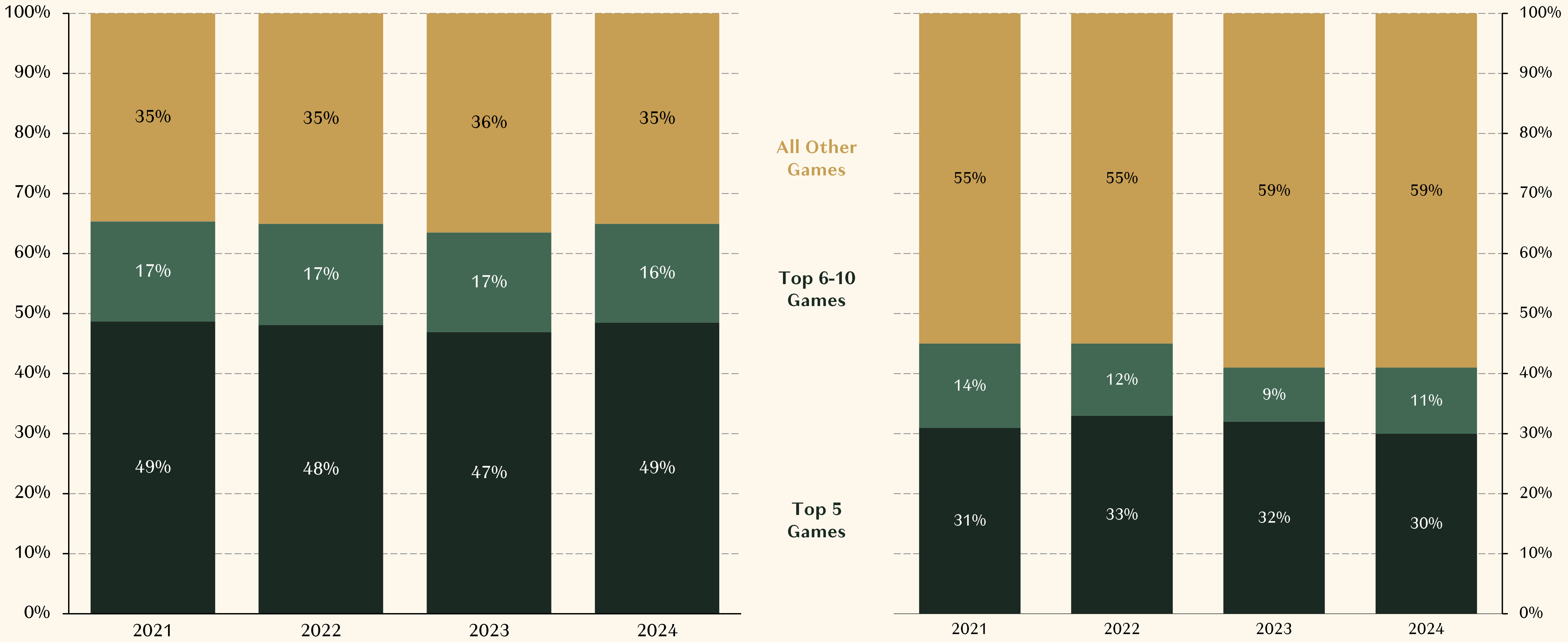
(Worldwide, PC Only, Q4 30-Day Lookback)



v.1/18/2025

Source: Discord

Unsurprisingly, Discord users have far greater gameplay diversification than typical gamers. Surprisingly, time has *diversified* as users scaled – not reverted to the mean

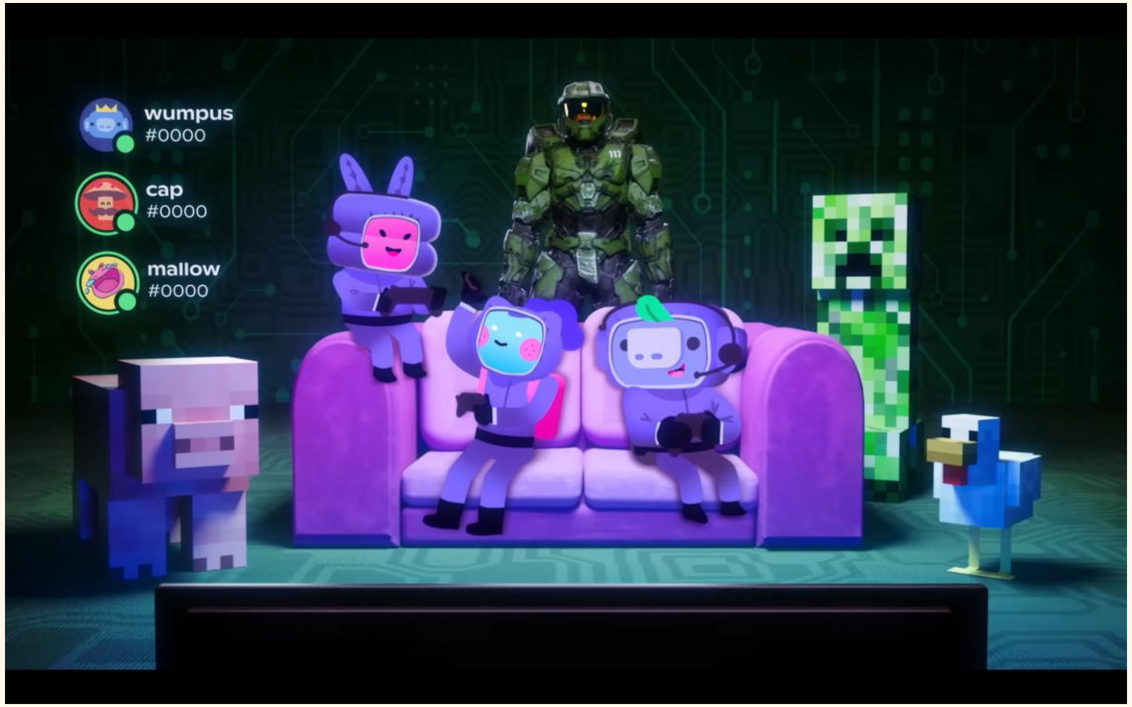


Distribution of Total PC Playtime by Rank in Year
(Worldwide; Users 18+; 37 Markets Total and Excludes India and China)

Discord Distribution of Total PC Playtime by Rank in Year
(Worldwide; All Users)

Sources: Newzoo, Discord, Epyllion analysis

Discord's scale and influence over game discovery, "squad formation," and cross–platform comms has even led PlayStation & Xbox to integrate Discord *natively*



Sources: Sony, Microsoft

Discord's new ad product, Quests, is (naturally) commercial in nature — but it monetizes by (and rewards users for) game-discovery, sharing, and engagement

Discord Quests Overview Video

WATCH: https://youtu.be/k0jPVvT4n0c and https://youtu.be/RWLXsSMDSrk

v.1/18/2025

Source: Discord

Reviewing Potential New "Growth Engines"[1]

- "Non-Core" Markets
- UGC Platforms & Tools
- Social Game Services
- Switch 2
- Other New Handhelds & Devices
- AA/AAA Mobile Gaming
- App Store Regulation
- New Game Genres
- AI
- Advertising
- GTA VI Pricing

v.1/18/2025

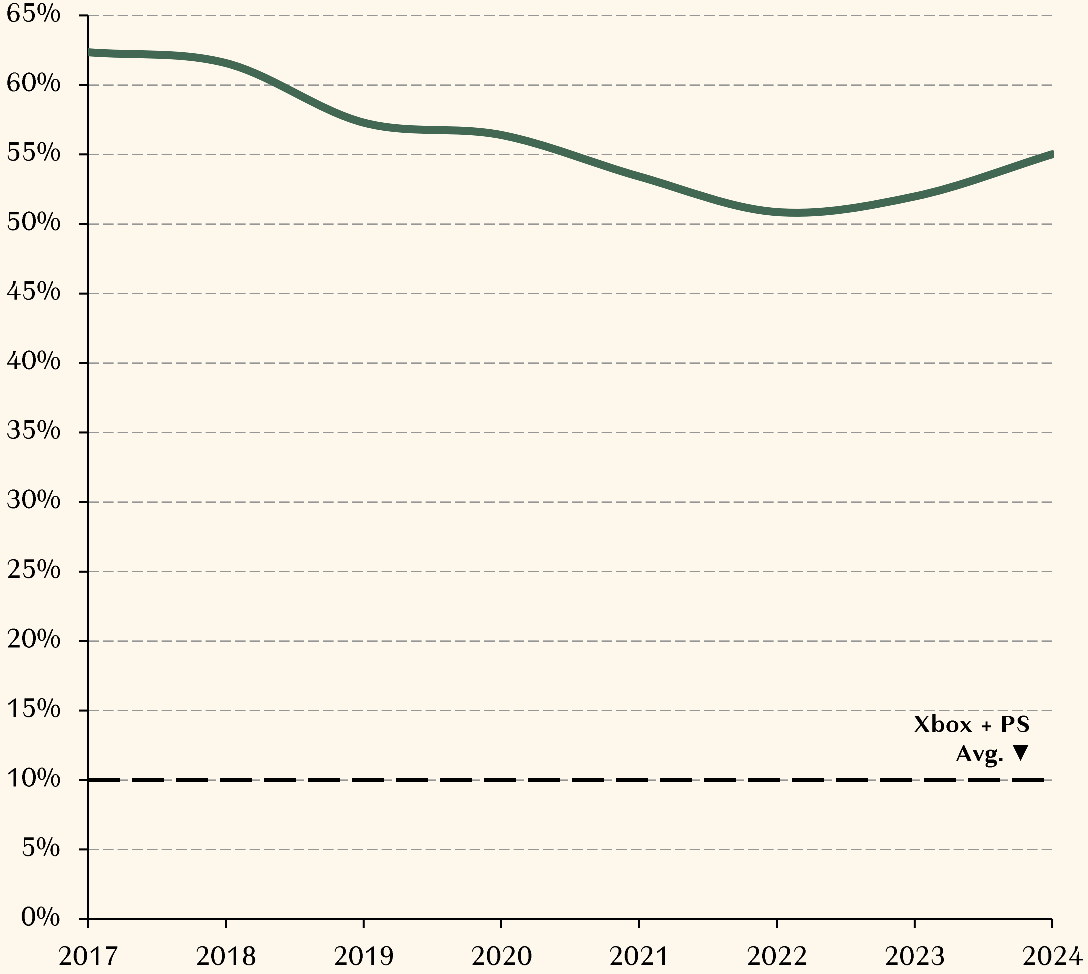
Notes: [1]Ordered logically, rather than in order of monetary value, significance, timing, etc.; [2]This isn't to say I believe in each one, let alone to the degree sometimes argued, but I do think each is worth arguing

Nintendo's own games dominated Switch content sales in part because many of the top multiplatform games aren't on the device. Why? Many can't even run on it!

EPYLLION
By Matthew Ball

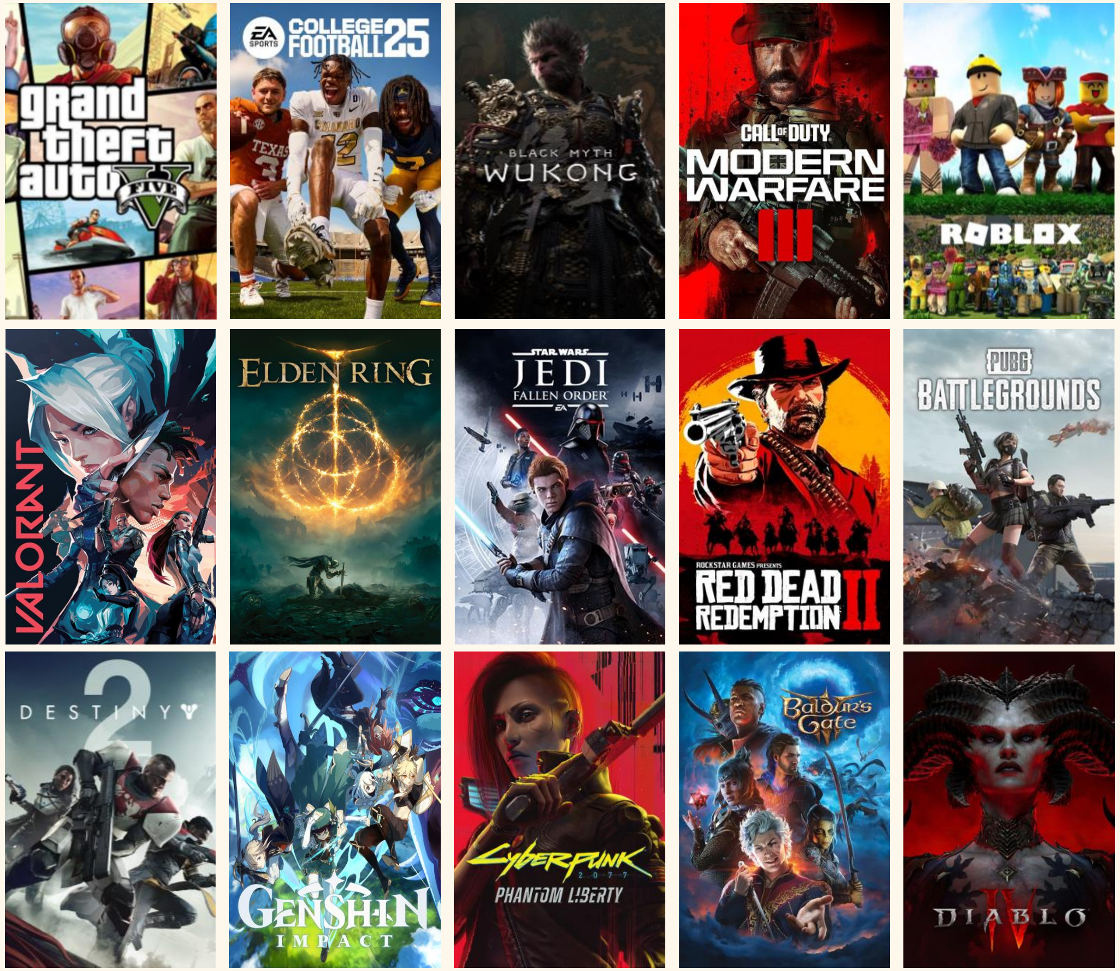
1st-Party Share of Total Switch Content Revenues

(By Fiscal Year)



Notable Multiplatform Hits not on Nintendo Switch

(As of December 15, 2024)



v.1/18/2025

Sources: Nintendo, Niko Partners & Daniel Ahmad, Epyllion analysis

And while many hits *are* available on the Switch, the enormous performance drop tends to drive players who *can* play on another device *to* play on another device

Sources: Epic Games, WB Games

Part of the Switch's success stems from the same reason its 3rd-party support was so modest — it launched with a 3-year-old, mid-range, and underclocked GPU

Switch, 2017–
(Confirmed)

Modified 2017 Tegra X1 (Model T210)

- Two Clusters (256 CUDA Cores + 256 Shader Cores)
- GPU 700-900MHz
- 64-bit Memory Interface
- 25.6 GBps Bandwidth
- No ray tracing capability
- No DL/DLSS AI rendering

Lower Device Cost
(GPU, Battery, Display)
▶
Increase Sales
(Easier to afford, buy one per child, replace when broken or upgrade, etc.)

Light and Small
(Smaller fan, heat sink, and battery needed)
▶
Easy to Travel With and Use Handheld
(Drives value proposition, new use case scenarios)

Low-Powered
(GPU, Battery, Display)
▶
Long Battery life
(2.5–7 hours by title and brightness, enabling actual portable use)

v.1/18/2025

Sources: Nvidia, iFixit, Digital Foundry, Kernel.org, Eurogamer

Though Switch 2's GPU is also expected to be "underweight" in 2025, it should adequately support most modern games — thus making them all "portable"

EPYLLION
By Matthew Ball

Switch, 2017–
(Confirmed)

Modified 2017 Tegra X1 (Model T210)

- Two Clusters (256 CUDA Cores + 256 Shader Cores)
- GPU 700-900MHz
- 64-bit Memory Interface
- 25.6 GBps Bandwidth
- No ray tracing capability
- No DL/DLSS AI rendering

Switch 2, 2025–
(Rumored)

Modified 2022/23 Tegra Orin (Model T239)

- One Cluster (1,536 CUDA Cores + 256 Shader Cores)
- GPU 1.5-1.6 GHz
- 128-bit Memory Interface
- 102 GBps Bandwidth
- 2nd Gen ray tracing
- 3rd Gen DL/DLSS AI rendering

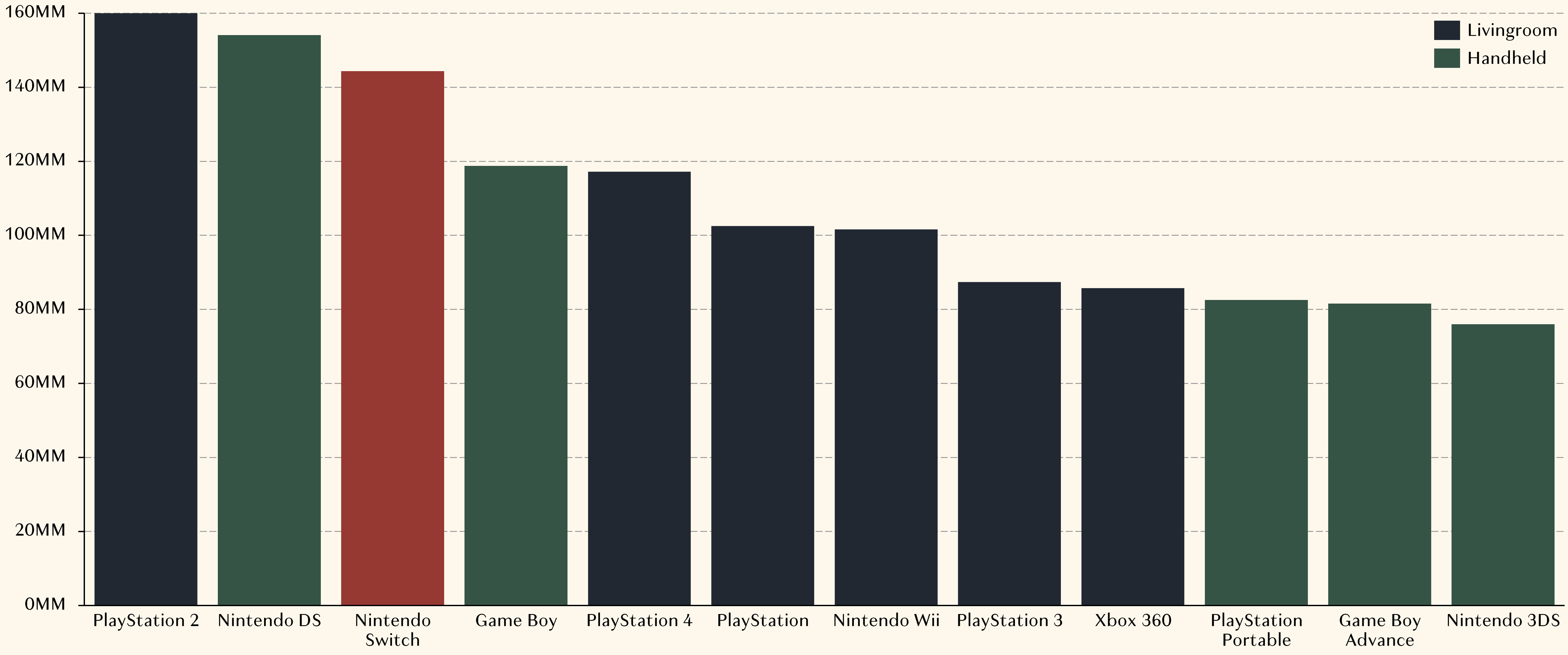
v.1/18/2025

Sources: Nvidia, iFixit, Digital Foundry, Kernel.org, Eurogamer, u/MHN1994, Epyllion analysis

And as the Switch is the #2 livingroom console ever, the *sole* growth driver in most markets, and also fully portable, a more 3rd-party capable Switch 2 is a Big Deal

EPYLLION
By Matthew Ball

Lifetime Unit Sales for the 12 Best-Selling Consoles
(Worldwide)



v.1/18/2025

Source: VGChartz

Reviewing Potential New “Growth Engines”[1]

EPYLLION
By Matthew Ball

- "Non-Core" Markets
- UGC Platforms & Tools
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v.1/18/2025

Notes: [1] Ordered logically, rather than in order of monetary value, significance, timing, etc.; [2] This isn’t to say I believe in each one, let alone to the degree sometimes argued, but I do think each is worth arguing

The success of Switch and Steam Deck, advances in mobile GPUs, plus livingroom console stagnation have made handhelds a renewed area of opportunity and focus

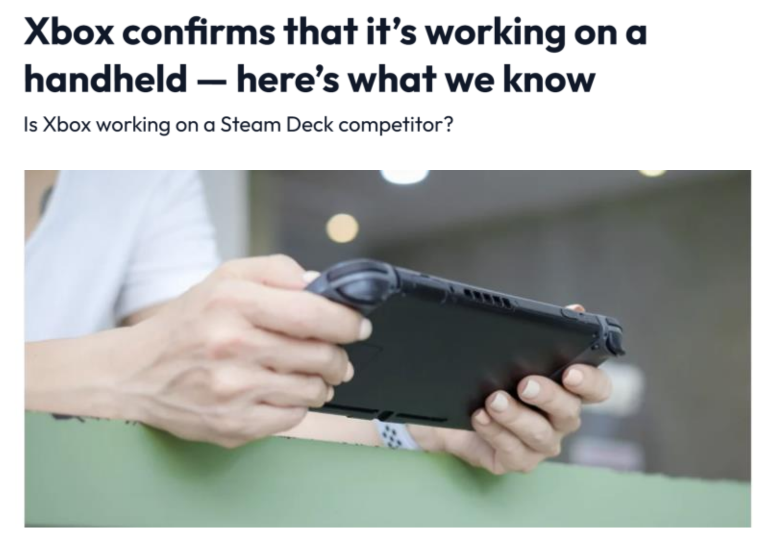
EPYLLION
By Matthew Ball

Published 09:50 23 Oct 2024 GMT+1

Steam Deck 2 officially confirmed by Valve

Sony Working on Handheld Console for PS5 Games to Rival Switch

- Nintendo's Switch has dominated mobile console space for years

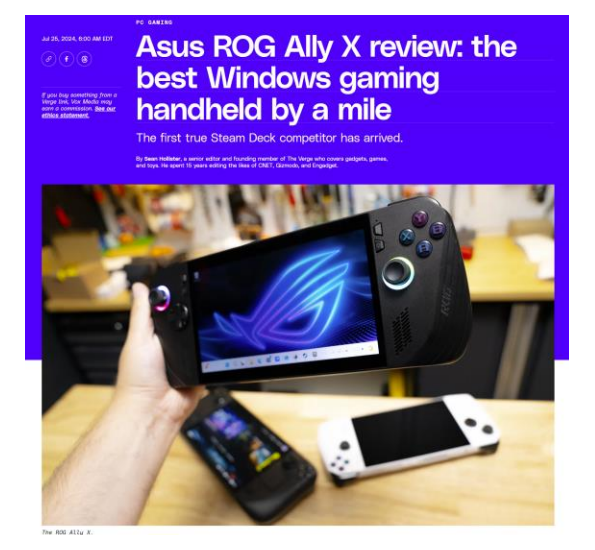


Xbox confirms that it's working on a handheld — here's what we know

Is Xbox working on a Steam Deck competitor?

Sony's new PlayStation Portal update lets you stream PS5 games from the cloud /

PlayStation Plus Premium subscribers can beta test Cloud Streaming for portable gaming that isn't tied to their PS5.



PC GAMING

Jul 25, 2024, 6:00 AM EDT

If you buy something from a Verge link, Vox Media may earn a commission. See our ethics statement.

Asus ROG Ally X review: the best Windows gaming handheld by a mile

The first true Steam Deck competitor has arrived.

By Sean Hollister, a senior editor and founding member of The Verge who covers gadgets, games, and toys. He spent 15 years editing the likes of CNET, Gizmodo, and Engadget.

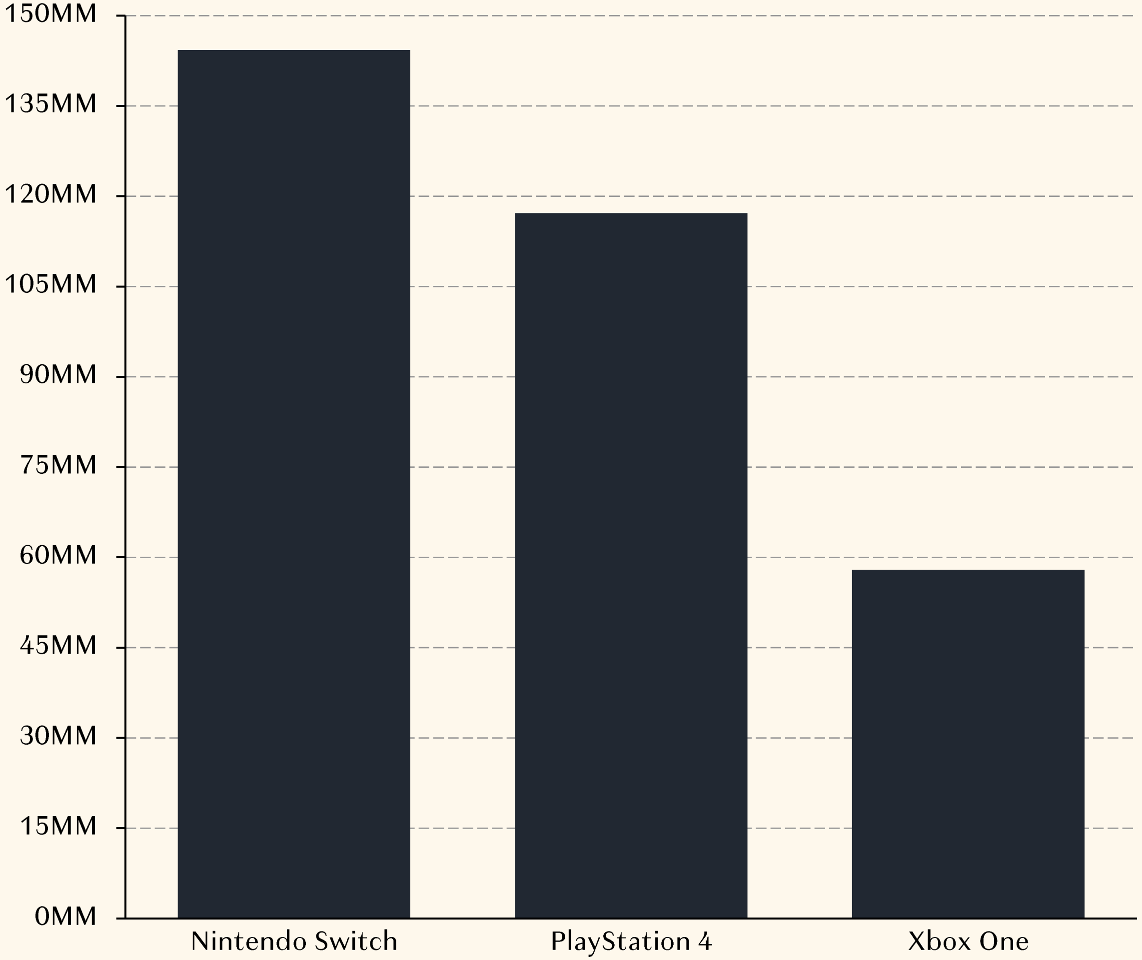
The ROG Ally X.

Sources: Gaming Bible, Bloomberg, The Verge, Mashable

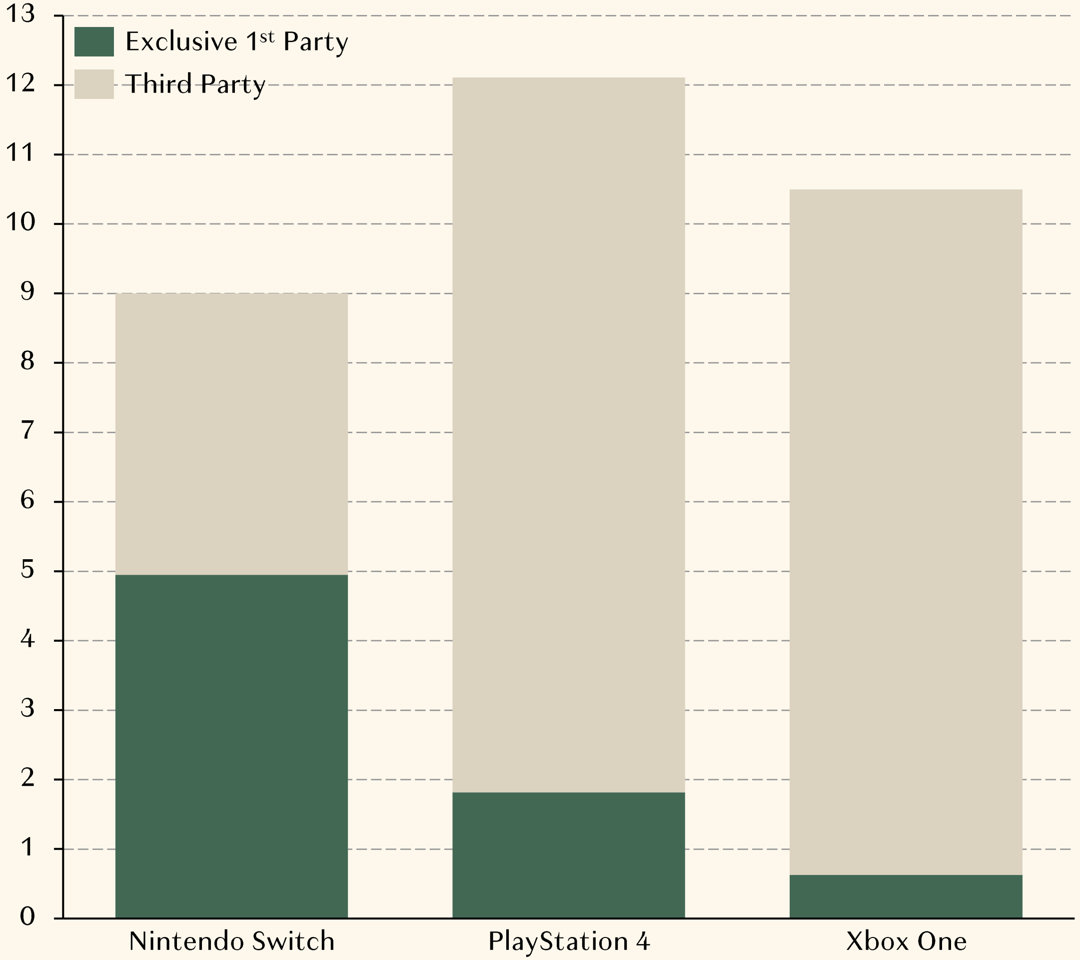
But Switch wasn't a success just due to form factor. Users bought it for *Nintendo* games —an average of 5 per device vs. 1.5–2 Sony/Microsoft 1P titles on PS/Xbox

EPYLLION
By Matthew Ball

Gen 8 Console Units Sold
(Worldwide)



Gen 8 Software Units Shipped per Hardware Sale
(Worldwide)



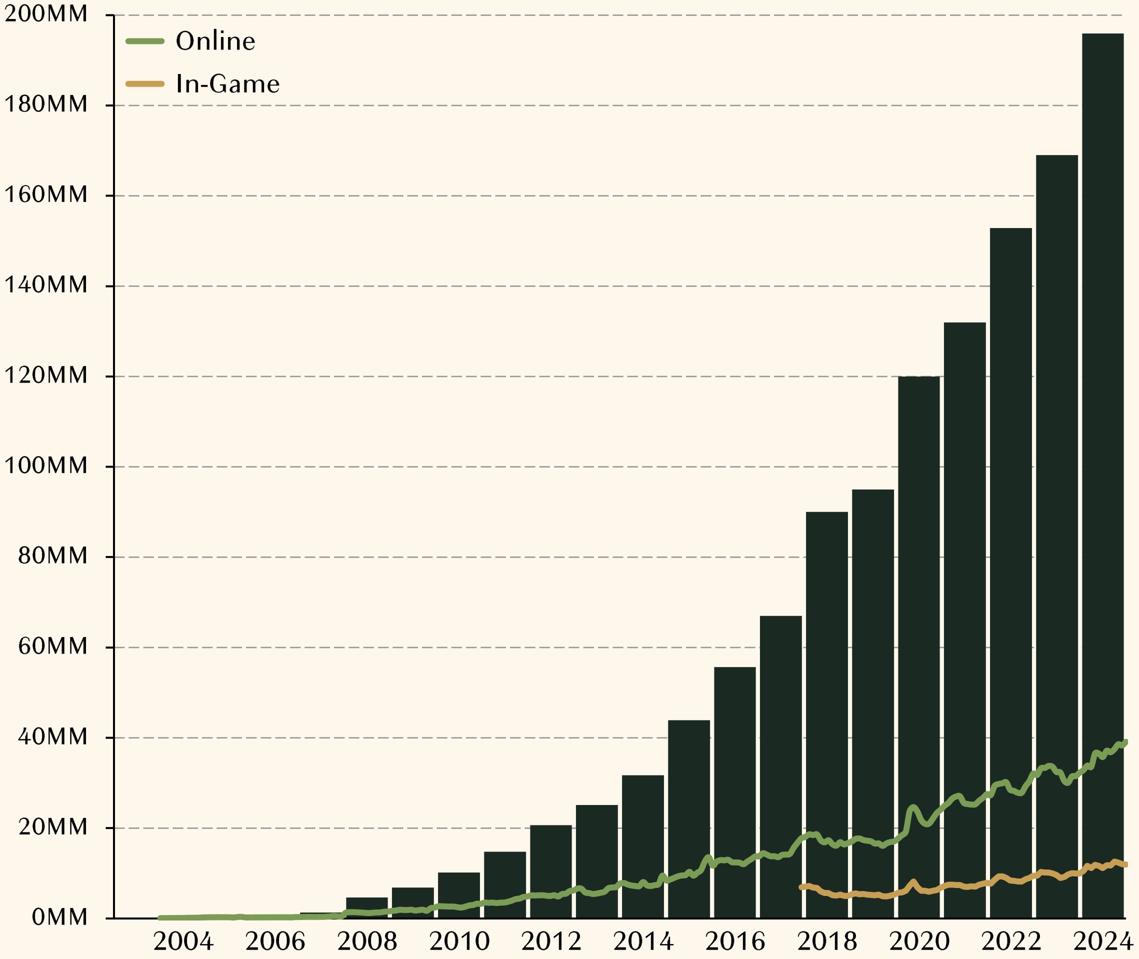
v.1/18/2025

Sources: Nintendo, Sony, Microsoft, VGChartz

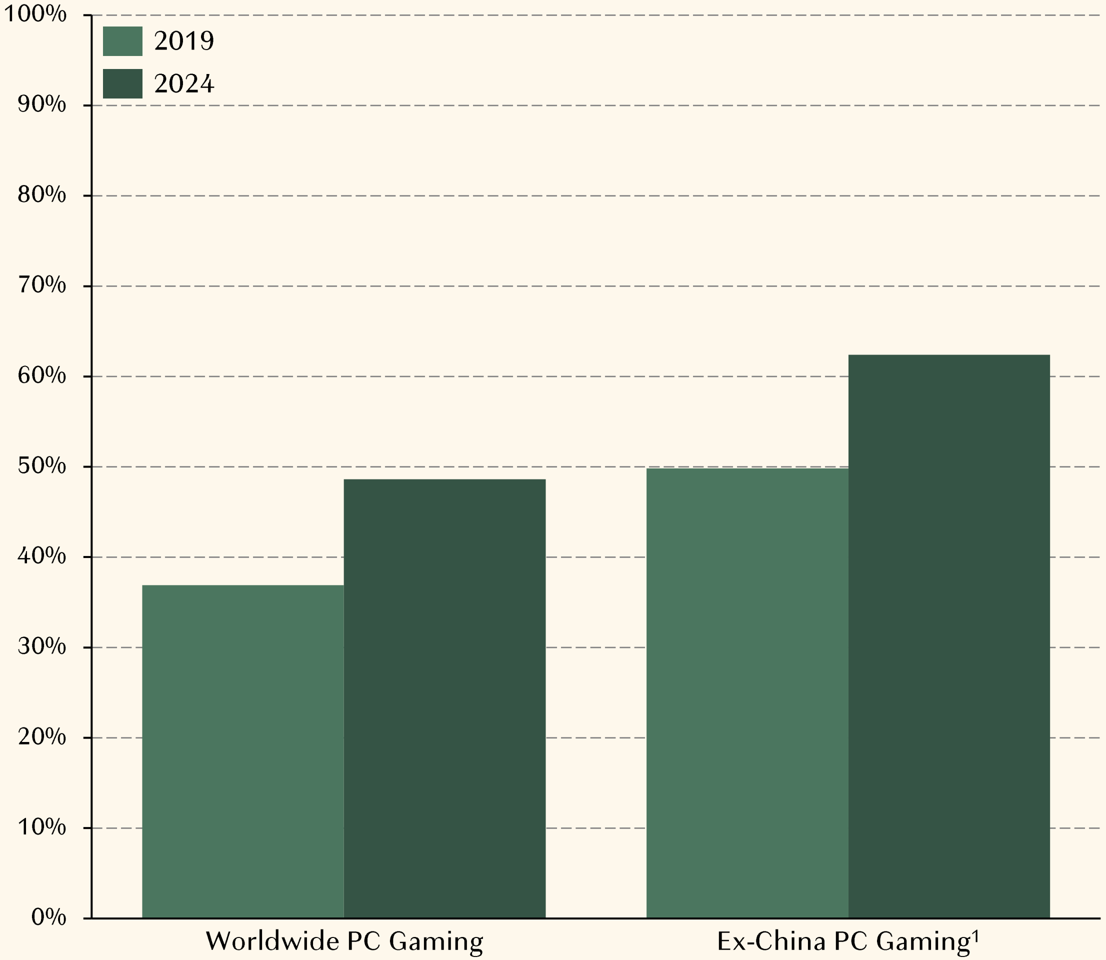
Valve is another unique handheld beneficiary, as Steam boasts PC's largest social graph, game library, and sales platform — by far — with share accelerating

EPYLLION
BY MATTHEW BALL

Estimated Steam MAUs and Peak CCUs by Month
(Worldwide)



Steam Share of Total Game Sales by Market Category
(Worldwide)



v.1/18/2025

Notes: [1]Some of Steam's revenue comes from Chinese players who use a VPN and foreign payment mechanism in order to work around the national firewall. As such, Steam's share of Ex-China revenue is likely partly overstated as it includes spend from China.

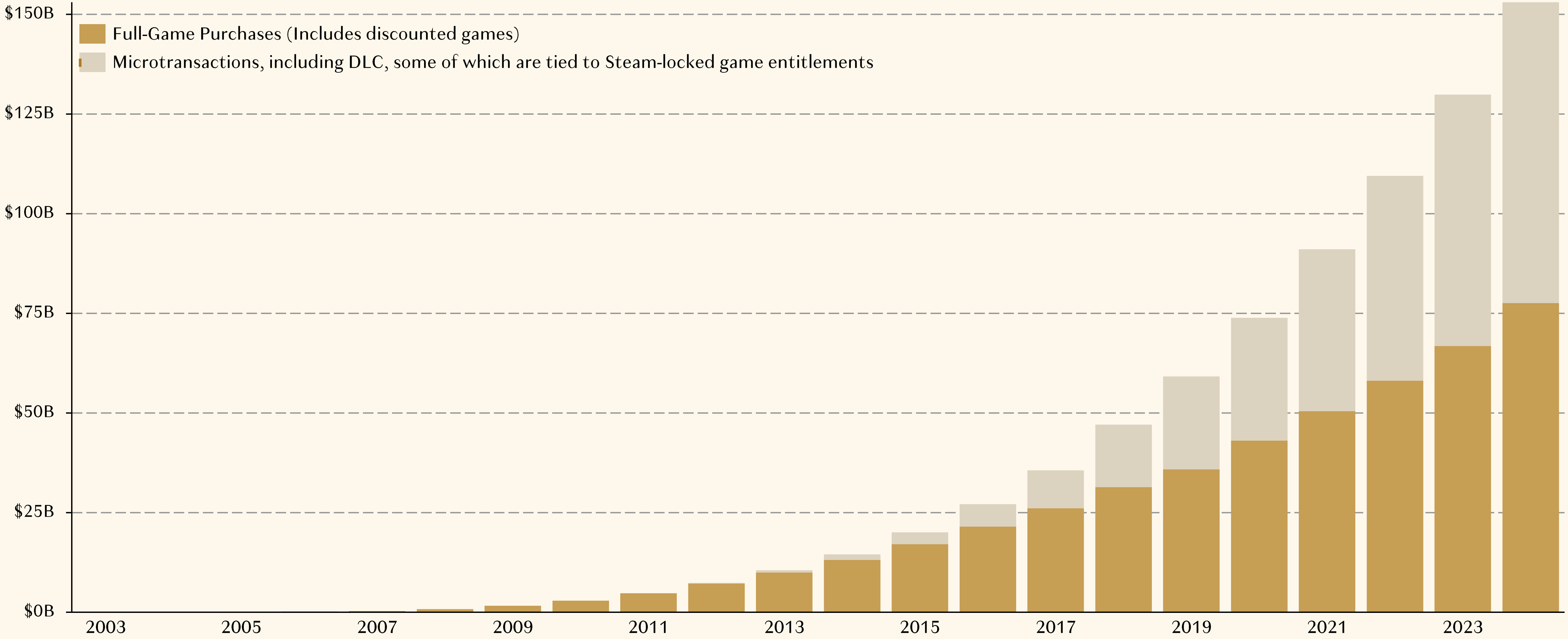
Sources: IDG, Epic Games, SteamDB, Valve, Tencent, Pelham Smithers / Bloomberg, Newzoo

Steam-based handhelds give players access to $75-150B in game entitlements locked to Steam (*plus* Steamworks/Keys) and its full player and achievements graph

EPYLLION
By Matthew Ball

Estimated Cumulative Player Spend on Steam

(USD; Nominal Prices)



v.1/18/2025

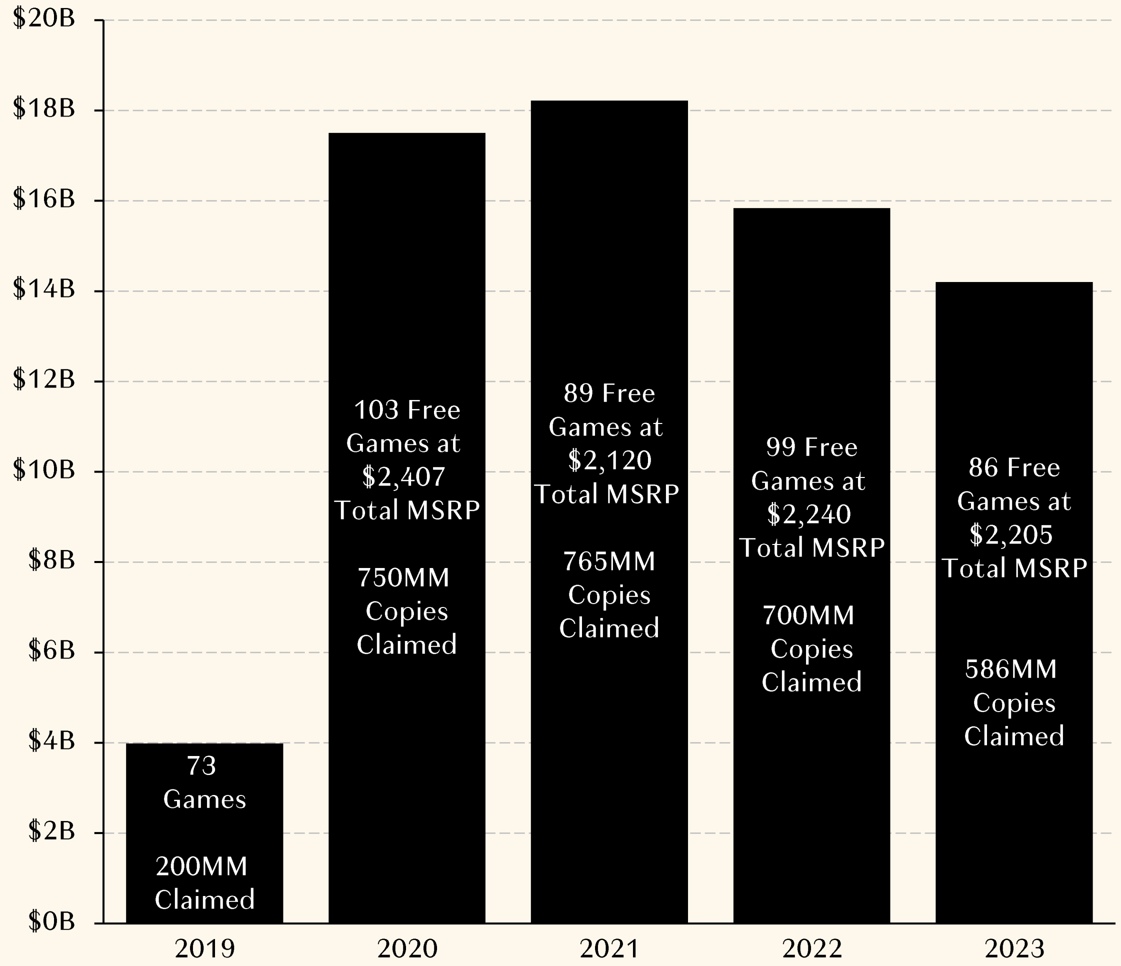
Sources: IDG, Epic Games Store, Video Game Insights, Epyllion analysis

The potency of Steam’s lock-in explains Epic’s PC store challenge — despite ~$70B in game giveaways (by MSRP), it’s generating only ~$300MM in 3rd-party spend/year

EPYLLION
By Matthew Ball

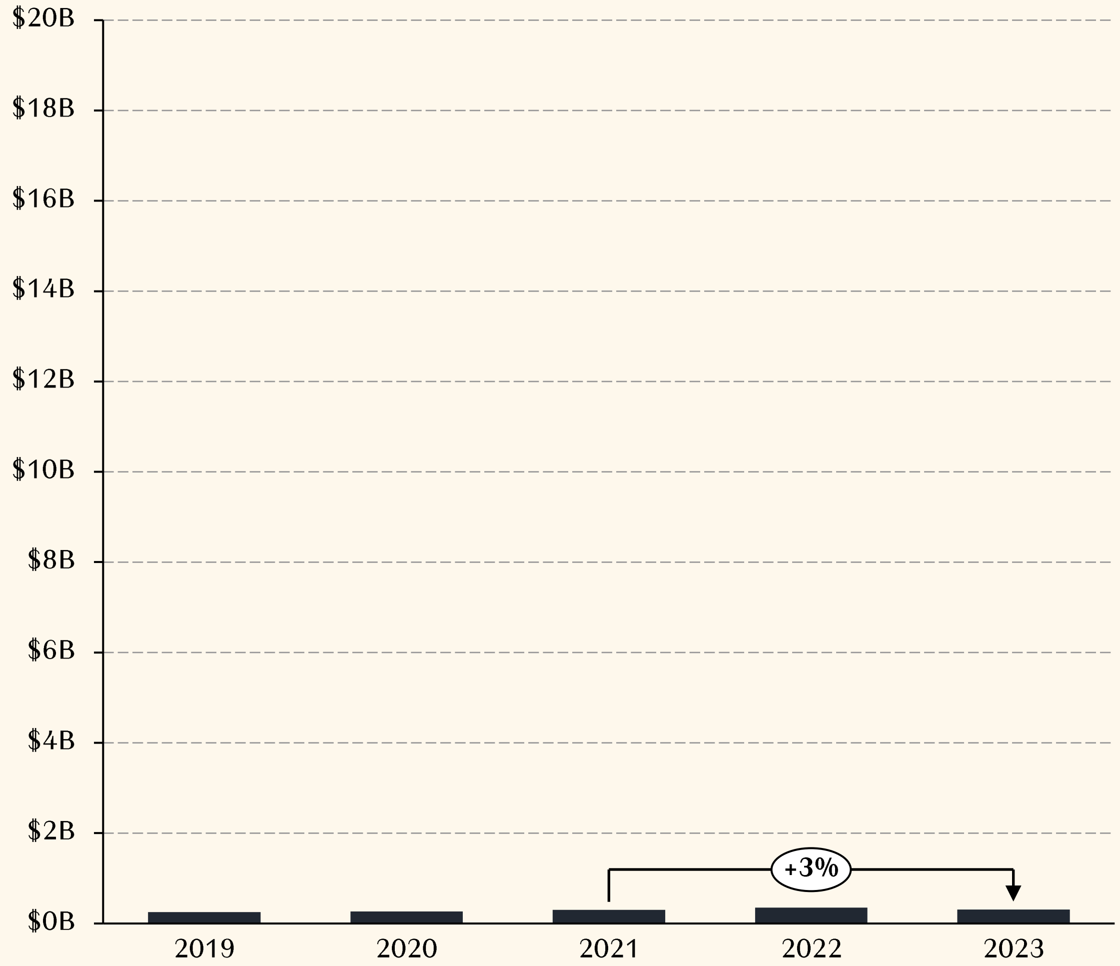
Epic Games Store: Retail Value of Annual Game Giveaways

(Epic’s Wholesale Cost Would Be a Small Fraction of this Sum)



Epic Games Store: Player Spending on 3rd Party Games

(Epic’s Net Revenue Would be ~10% of these Figures or Less)

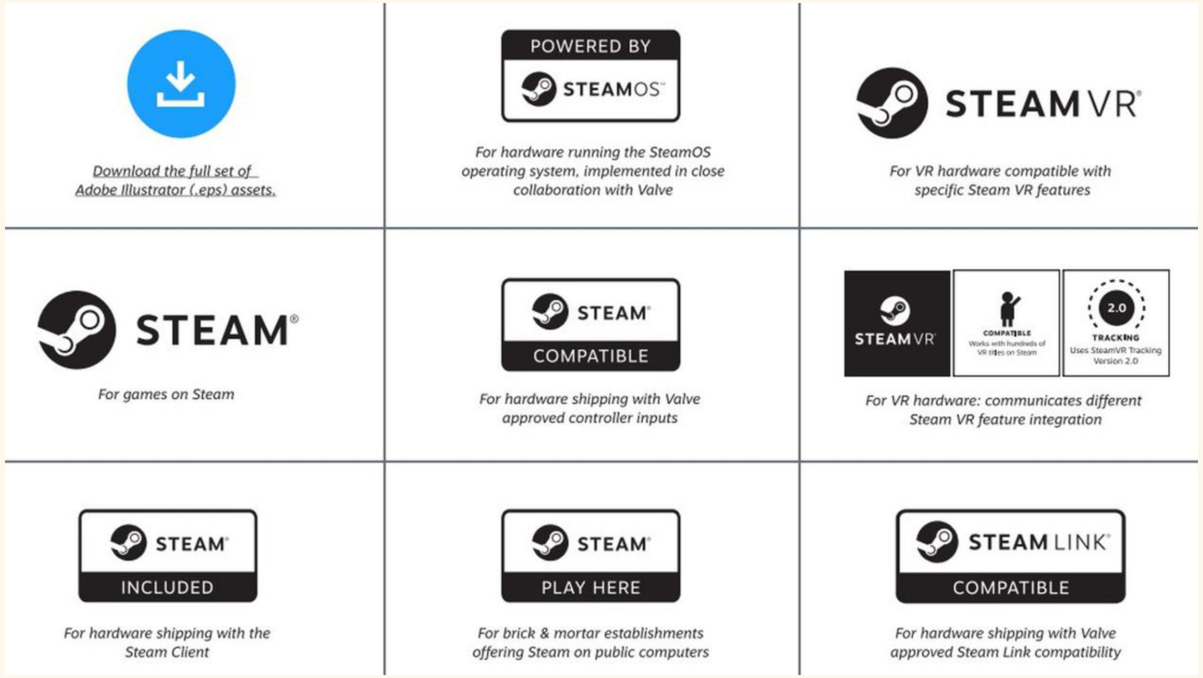


v.1/18/2025

Source: Epic Games, Epyllion analysis

Valve is also set to disrupt livingroom consoles – bringing its $100B in entitlements to the TV, plus its super-scaled social graph and PC-functionality/social integrations

New Branding Guidelines for Hardware Running the SteamOS in "close collaboration with Valve" and/or Shipping with "Valve approved controller inputs"



Download the full set of Adobe Illustrator (.eps) assets.

For hardware running the SteamOS operating system, implemented in close collaboration with Valve

For VR hardware compatible with specific Steam VR features

For games on Steam

For hardware shipping with Valve approved controller inputs

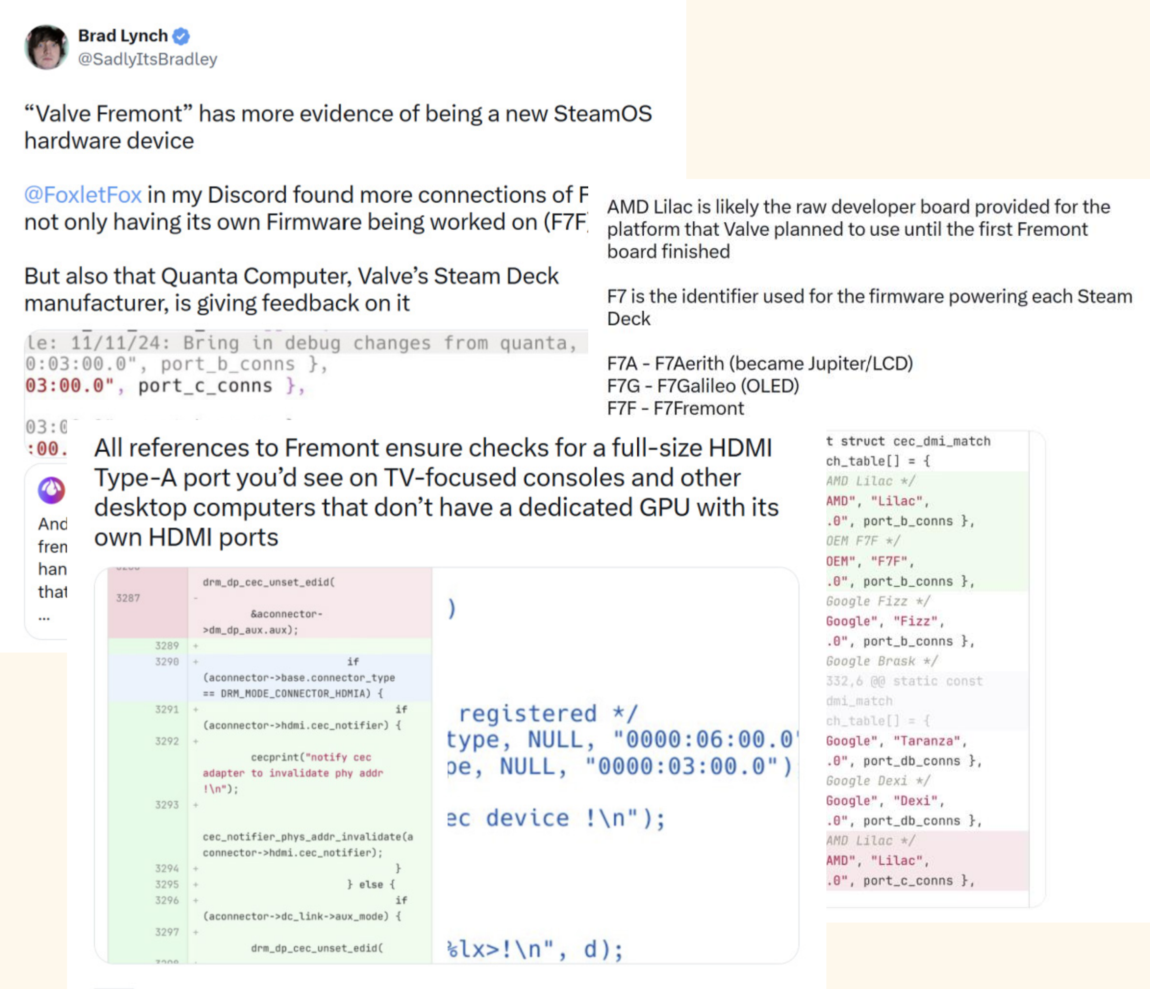
For VR hardware: communicates different Steam VR feature integration

For hardware shipping with the Steam Client

For brick & mortar establishments offering Steam on public computers

For hardware shipping with Valve approved Steam Link compatibility

Code-based Evidence of a Steam Console/Platform



Brad Lynch
@SadlyItsBradley

"Valve Fremont" has more evidence of being a new SteamOS hardware device

@FoxletFox in my Discord found more connections of F
not only having its own Firmware being worked on (F7F

But also that Quanta Computer, Valve's Steam Deck manufacturer, is giving feedback on it

```
le: 11/11/24: Bring in debug changes from quanta,
0:03:00.0", port_b_conns },
03:00.0", port_c_conns },

03:0
:00.
```

And
fren
han
that
...

AMD Lilac is likely the raw developer board provided for the platform that Valve planned to use until the first Fremont board finished

F7 is the identifier used for the firmware powering each Steam Deck

F7A - F7Aerith (became Jupiter/LCD)
F7G - F7Galileo (OLED)
F7F - F7Fremont

All references to Fremont ensure checks for a full-size HDMI Type-A port you'd see on TV-focused consoles and other desktop computers that don't have a dedicated GPU with its own HDMI ports

```
  drm_dp_cec_unset_edid(
-
        &aconnector-
  >dm_dp_aux.aux);
+
+                       if
  (aconnector->base.connector_type
  == DRM_MODE_CONNECTOR_HDMIA) {
+                              if
  (aconnector->hdmi.cec_notifier) {
+
        cecprint("notify cec
  adapter to invalidate phy addr
  !\n");
+

  cec_notifier_phys_addr_invalidate(a
  connector->hdmi.cec_notifier);
+                              }
+                       } else {
+                              if
  (aconnector->dc_link->aux_mode) {
+
        drm_dp_cec_unset_edid(
```

```
)

 registered */
type, NULL, "0000:06:00.0'
pe, NULL, "0000:03:00.0")

ec device !\n");

%lx>!\n", d);
```

```
t struct cec_dmi_match
ch_table[] = {
AMD Lilac */
AMD", "Lilac",
.0", port_b_conns },
OEM F7F */
OEM", "F7F",
.0", port_b_conns },
Google Fizz */
Google", "Fizz",
.0", port_b_conns },
Google Brask */
332,6 @@ static const
dmi_match
ch_table[] = {
Google", "Taranza",
.0", port_db_conns },
Google Dexi */
Google", "Dexi",
.0", port_db_conns },
AMD Lilac */
AMD", "Lilac",
.0", port_c_conns },
```

Sources: Valve, The Verge, Brad Lynch

Reviewing Potential New “Growth Engines”[1]

- "Non-Core" Markets
- UGC Platforms & Tools
- Social Game Services
- Switch 2
- Other New Handhelds & Devices
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- GTA VI Pricing

v.1/18/2025

Notes: [1] *Ordered logically, rather than in order of monetary value, significance, timing, etc.;* [2] *This isn’t to say I believe in each one, let alone to the degree sometimes argued, but I do think each is worth arguing*

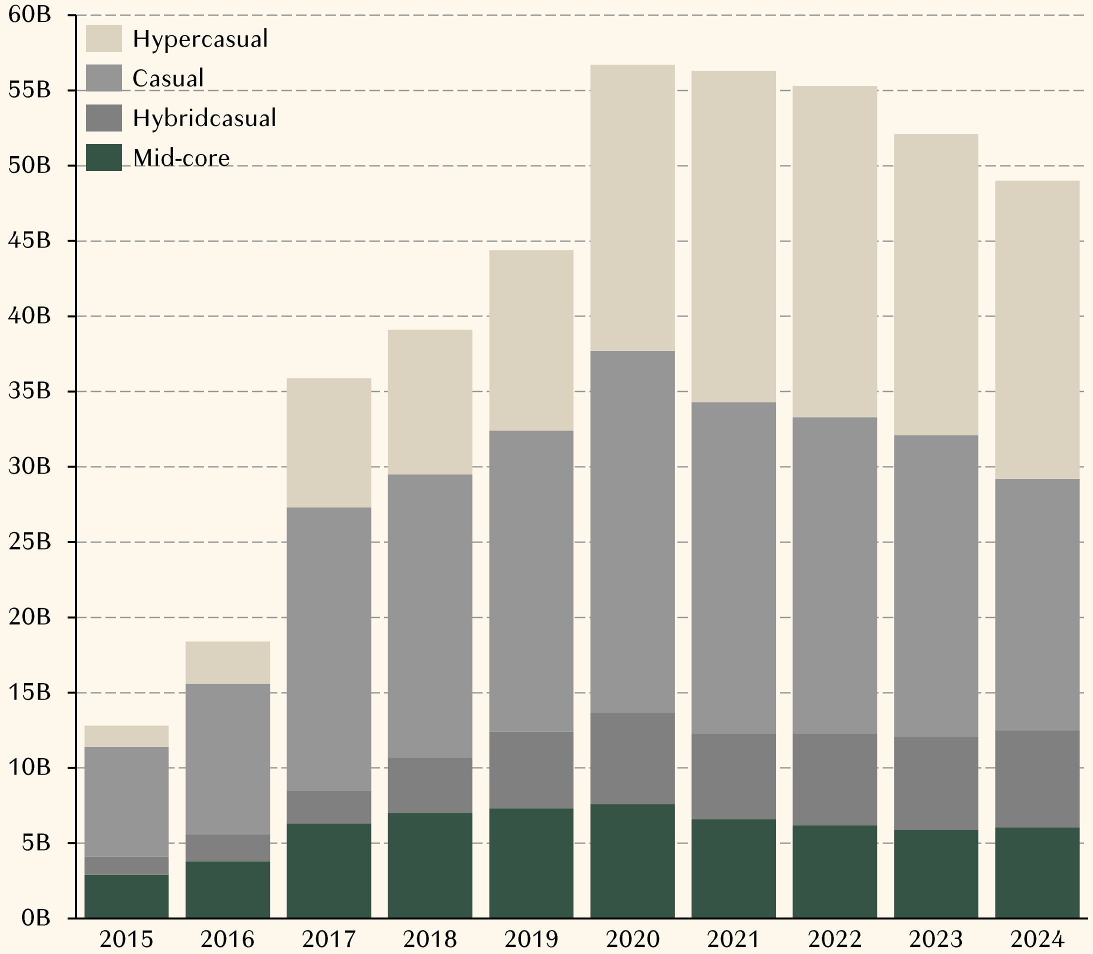
There is a sense of an "unfulfilled promise" that mobile gaming should have onboarded millions to higher fidelity (or AA/AAA) gaming

v.1/18/2025

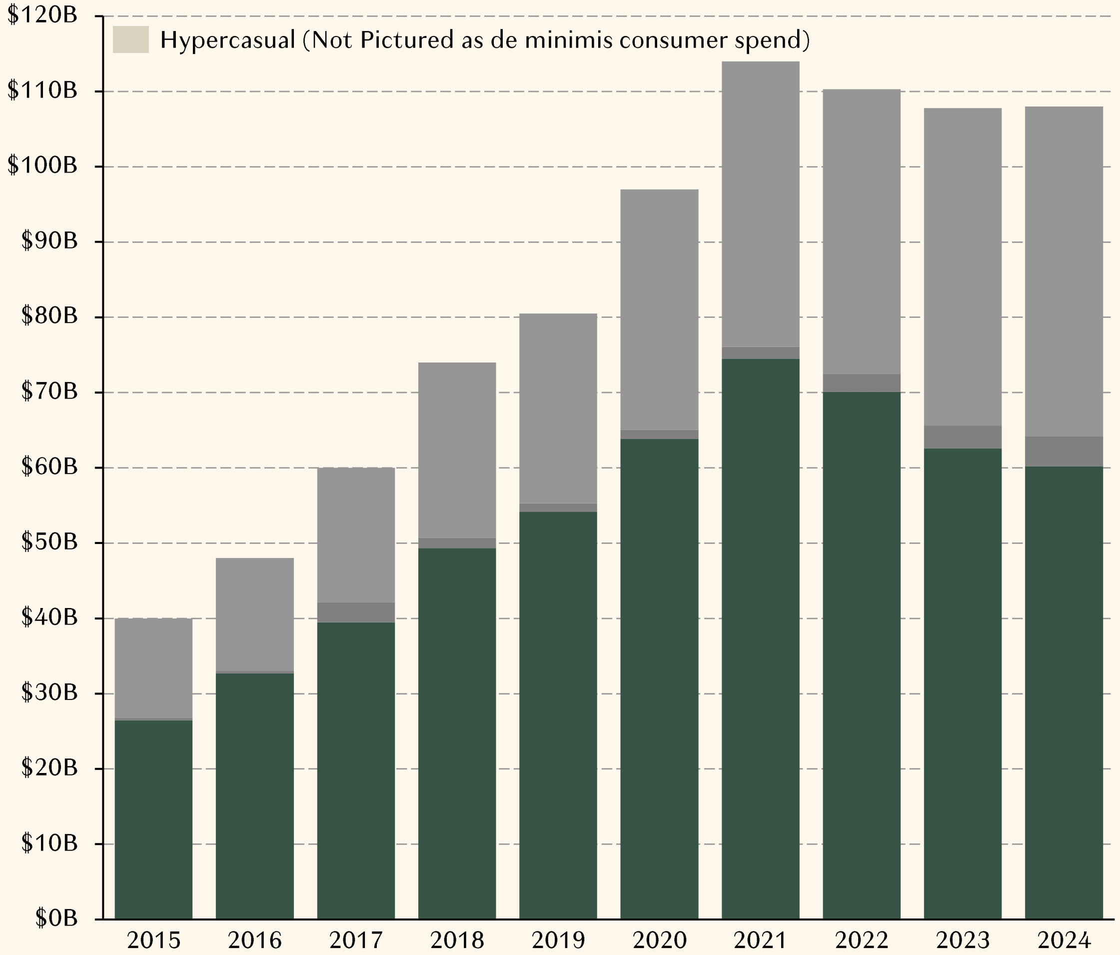
…But mobile *did* grow the high-fidelity gaming audience. "Mid-Core" titles are 12% of downloads across 3B mobile gamers, but over 50% of revenues

EPYLLION
By Matthew Ball

Annual Mobile Game Downloads by Type
(Worldwide)



Worldwide Mobile Gaming Revenues
(Select Categories Only)

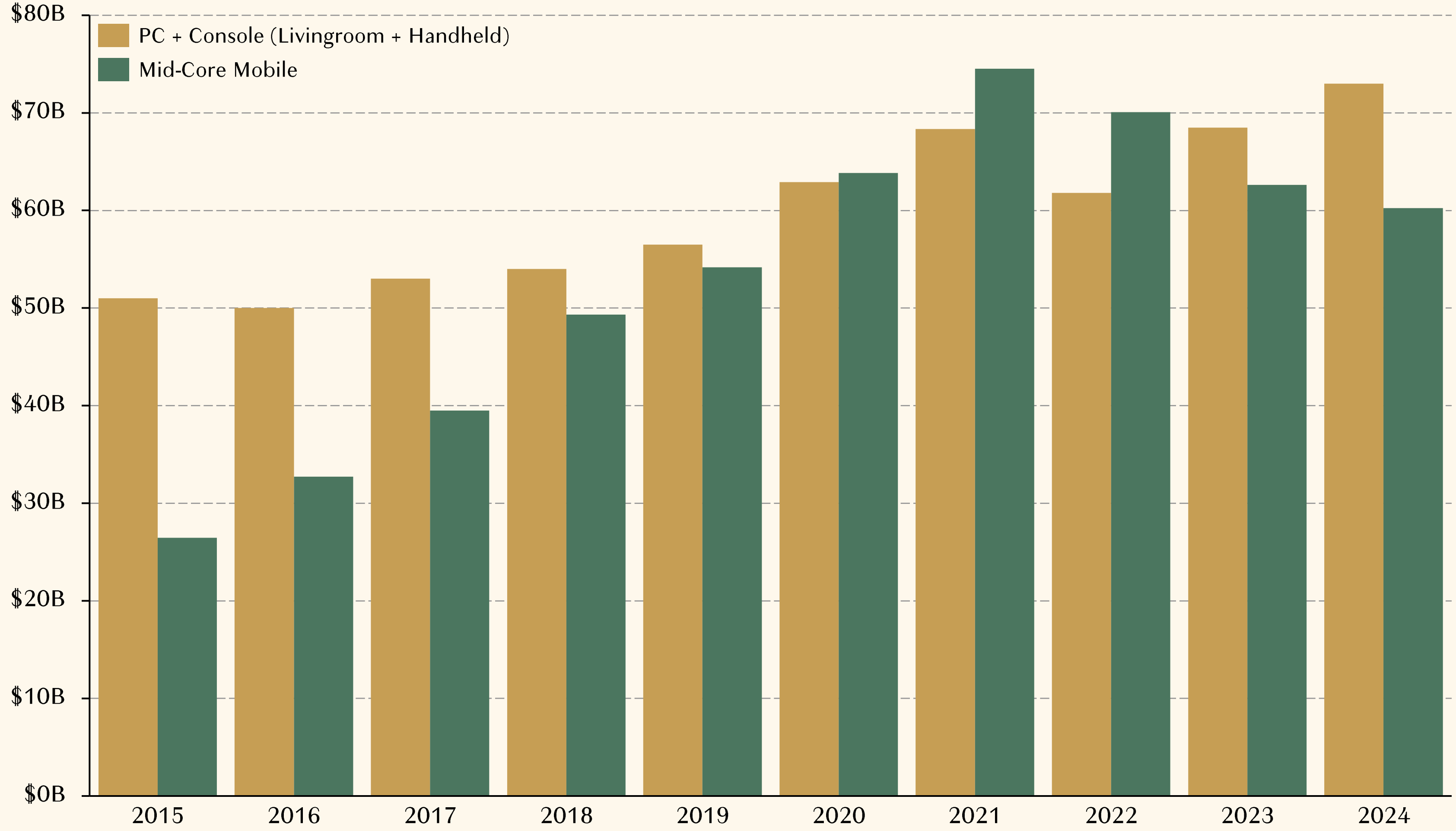


v.1/18/2025

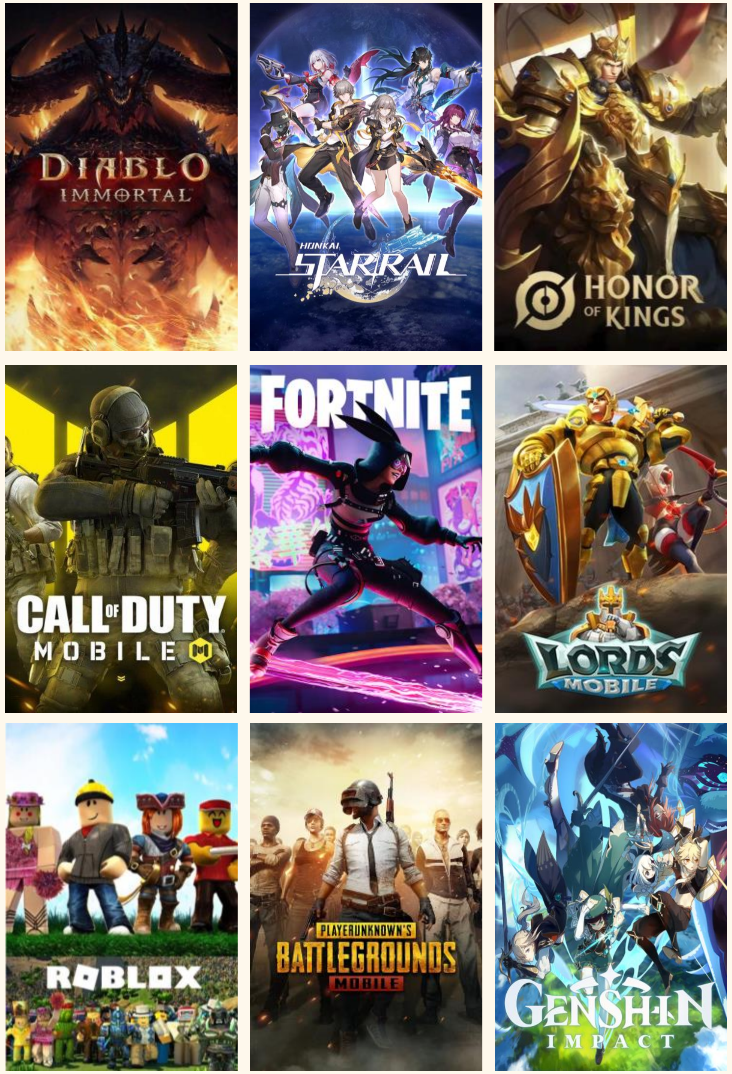
Sources: Sensor Tower, Epyllion analysis

Indeed, annual spend on mid-core (including some de facto *hardcore*) mobile games once passed, and is now not far from total spend on Console/PC content

EPYLLION
By Matthew Ball



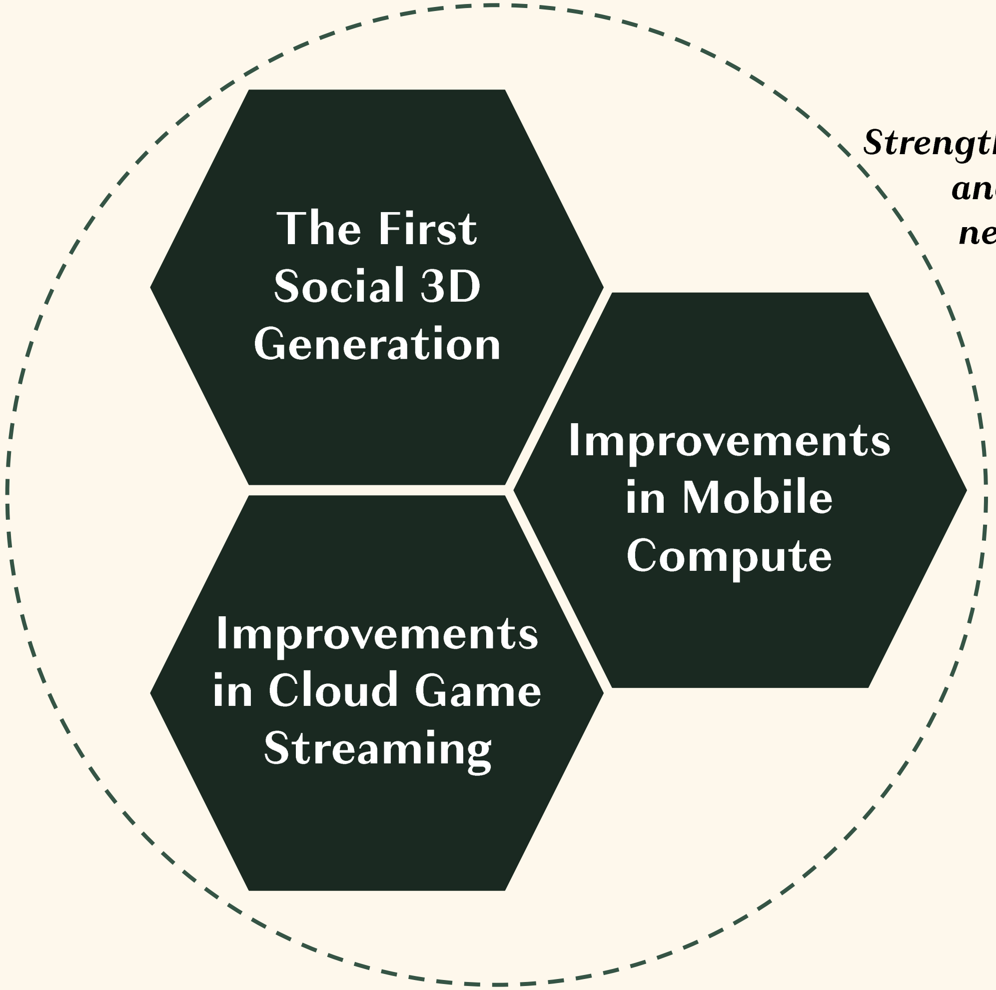
Worldwide Consumer Spending on Video Game Content, Select Categories
(Nominal Prices)



v.1/18/2025

Sources: Sensor Tower, Epyllion analysis

Though downloads and revenue for mid-core/hardcore mobile titles have stalled and shrunk in recent years, there are four potential drivers of future growth



The First Social 3D Generation

Improvements in Mobile Compute

Improvements in Cloud Game Streaming

Strengthened mobile and non-mobile network effects

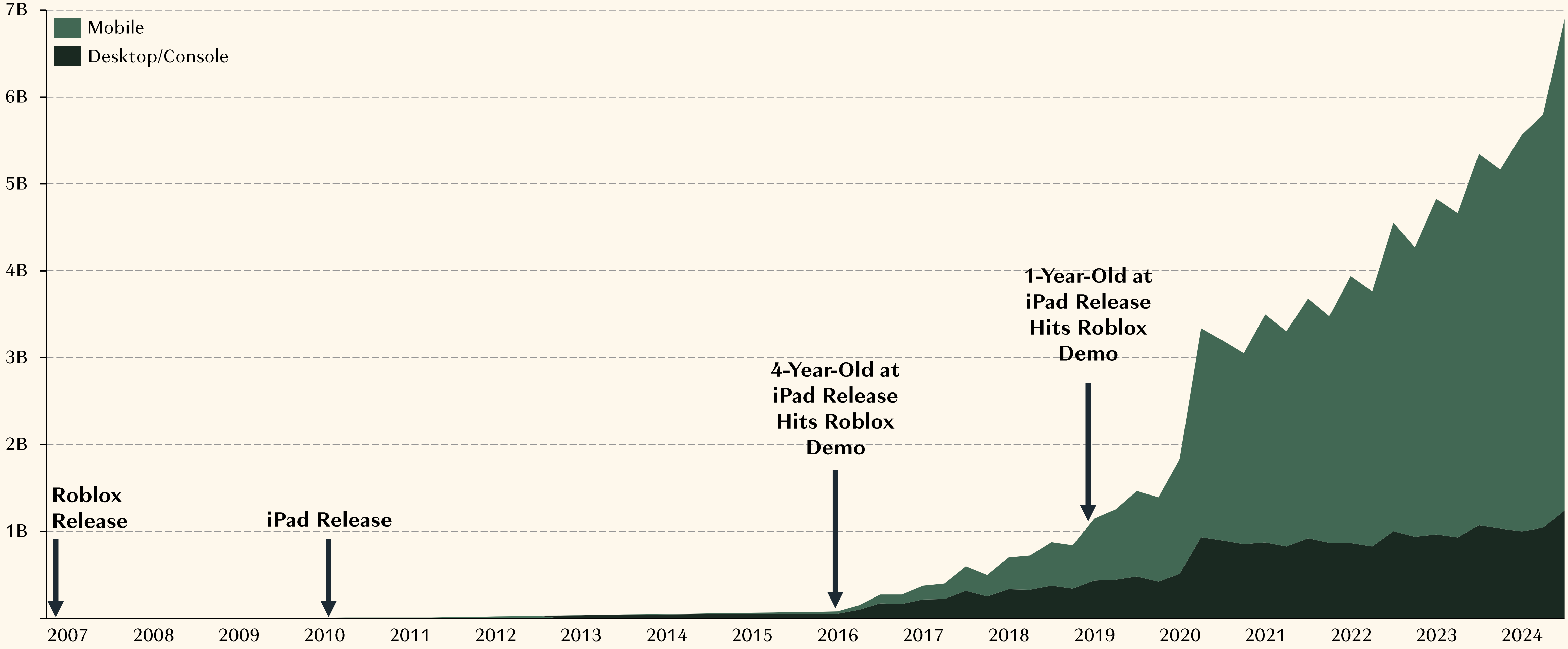
Source: Epyllion analysis

While prior mobile gaming growth relied mostly on non-gamer adults adopting casual mobile titles, generations now grow up *native* to *3D* gameplay and *on mobile*

EPYLLION
By Matthew Ball

Roblox Avg. Monthly Hours of Engagement

(Launch to Date; Excludes Off-Platform Engagement such as YouTube and Twitch; Mobile Share of Engagement by Year Average)

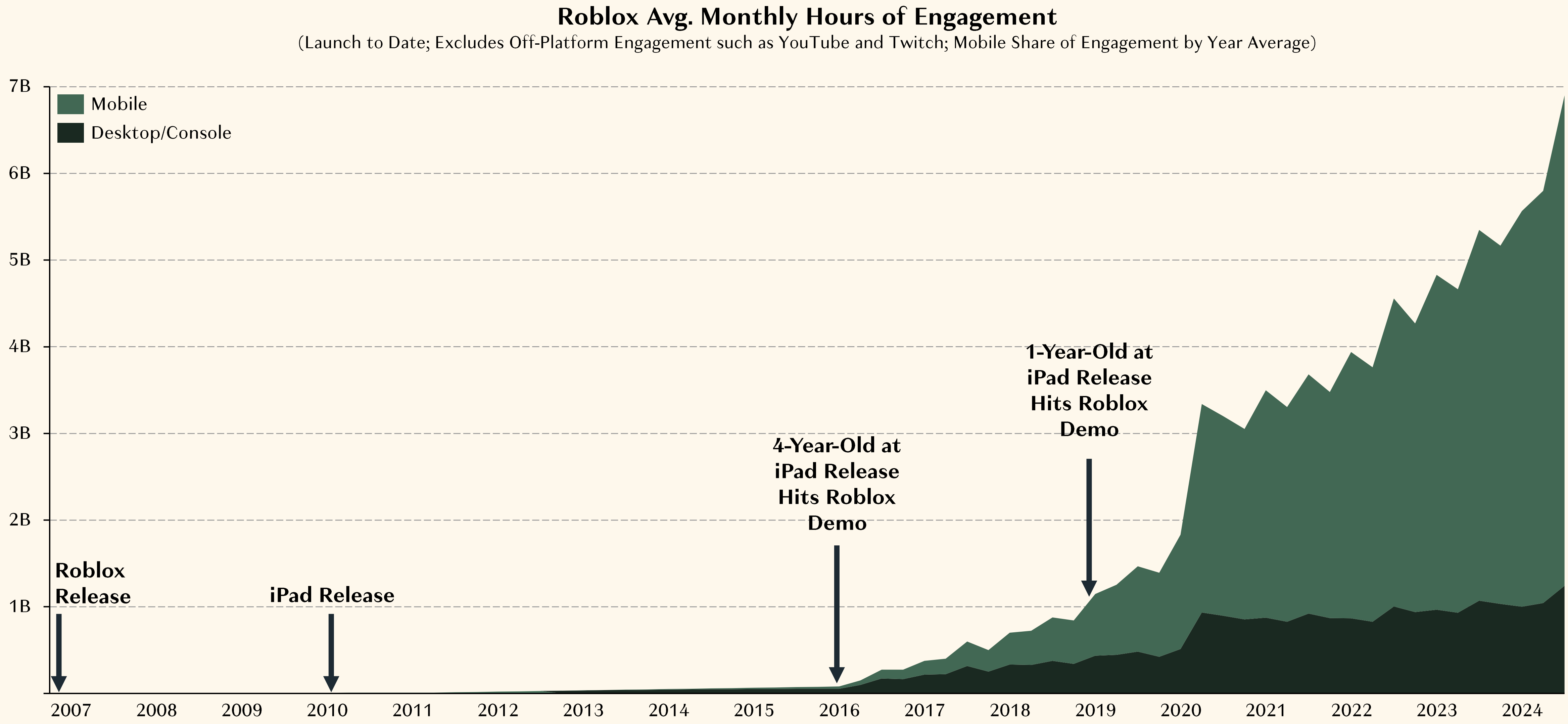


v.1/18/2025

Sources: Roblox, Epyllion analysis

But for a generation that grew up playing 3D free-to-play titles on a hand-me-down iPad, spending $500 on a gaming-only console just to be *able to play…* is absurd

EPYLLION
BY MATTHEW BALL


Roblox Avg. Monthly Hours of Engagement

(Launch to Date; Excludes Off-Platform Engagement such as YouTube and Twitch; Mobile Share of Engagement by Year Average)

v.1/18/2025

Sources: Roblox, Epyllion analysis

Today, ~40 million people own a mobile device capable of running games with mid-grade Gen 8 console specs. By 2030, a billion people will have such a device

Assassin's Creed Mirage (2023) on Top of Line 2023 iPhone

Resident Evil: Village (2021) on Top of Line 2023 iPhone

v.1/18/2025

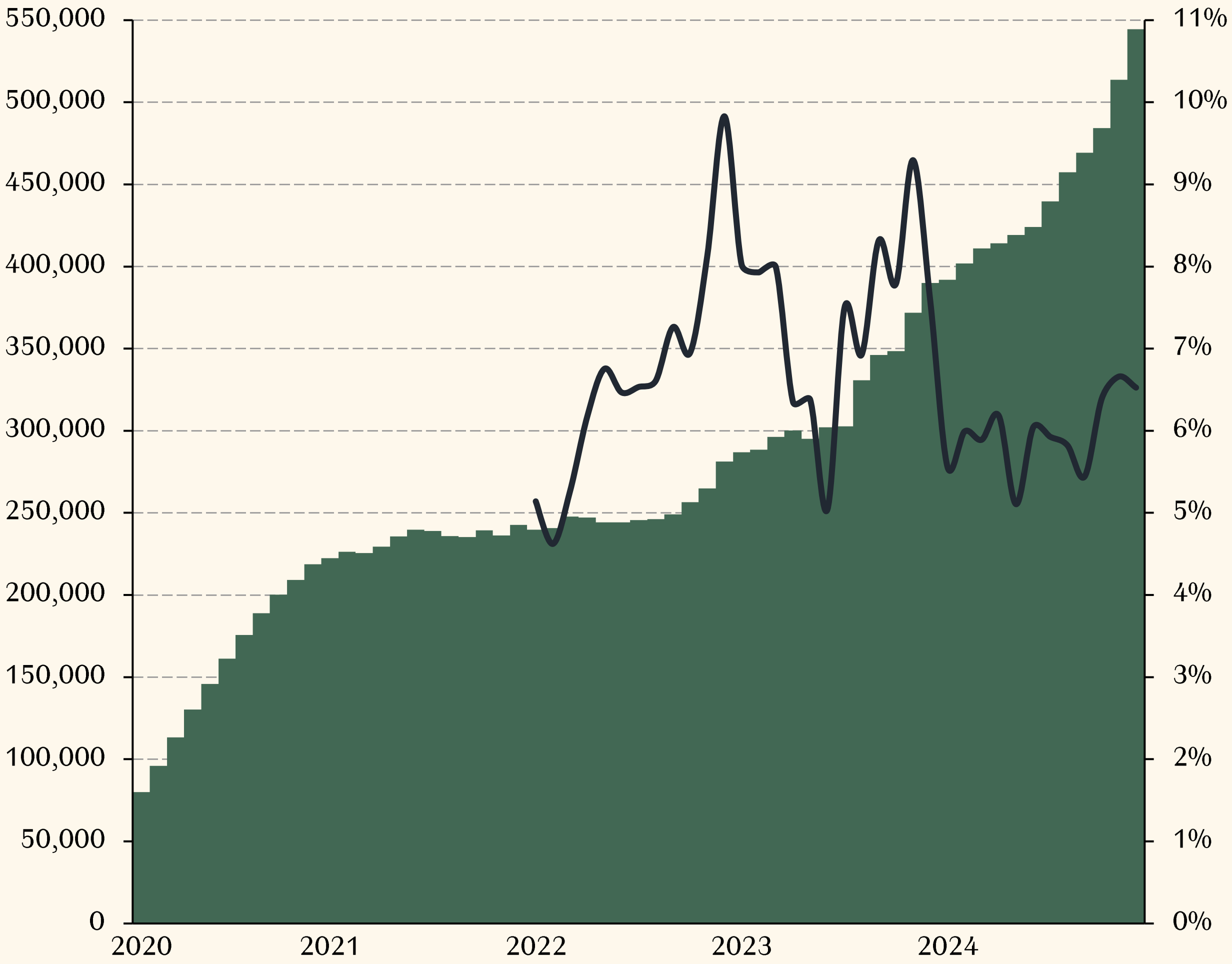
Sources: Perfect Gaming (YouTube), Apple, Epyllion analysis

Meanwhile, cloud gaming continues to scale as latency and broadband improve, PC stores connect their entitlements, and regulators open up mobile devices

"I think [cloud gaming] is years away from being a mainstream way people play. And I mean years, like years and years…. Let's take Netflix… It's 20 years old at this point, so it took two decades for us to get to the point where shows like *House of Cards* and *Game of Thrones* are some of the biggest shows in the planet and mainly watched via streaming. I think game streaming will get there faster than 20 years, but it's not going to be two years. This is a technological change…

I'm not trying to say go sell your consoles today and switch over to streaming. The experience just isn't the same as playing on your consol… we'll have a global service that can reach everybody and the infrastructure to reach any customer with a consistent and high-quality internet service, but that's going to take time."
– Phil Spencer, Microsoft Gaming CEO, in 2019

GeForce Now U.S. Paid Subscriptions & Monthly Churn



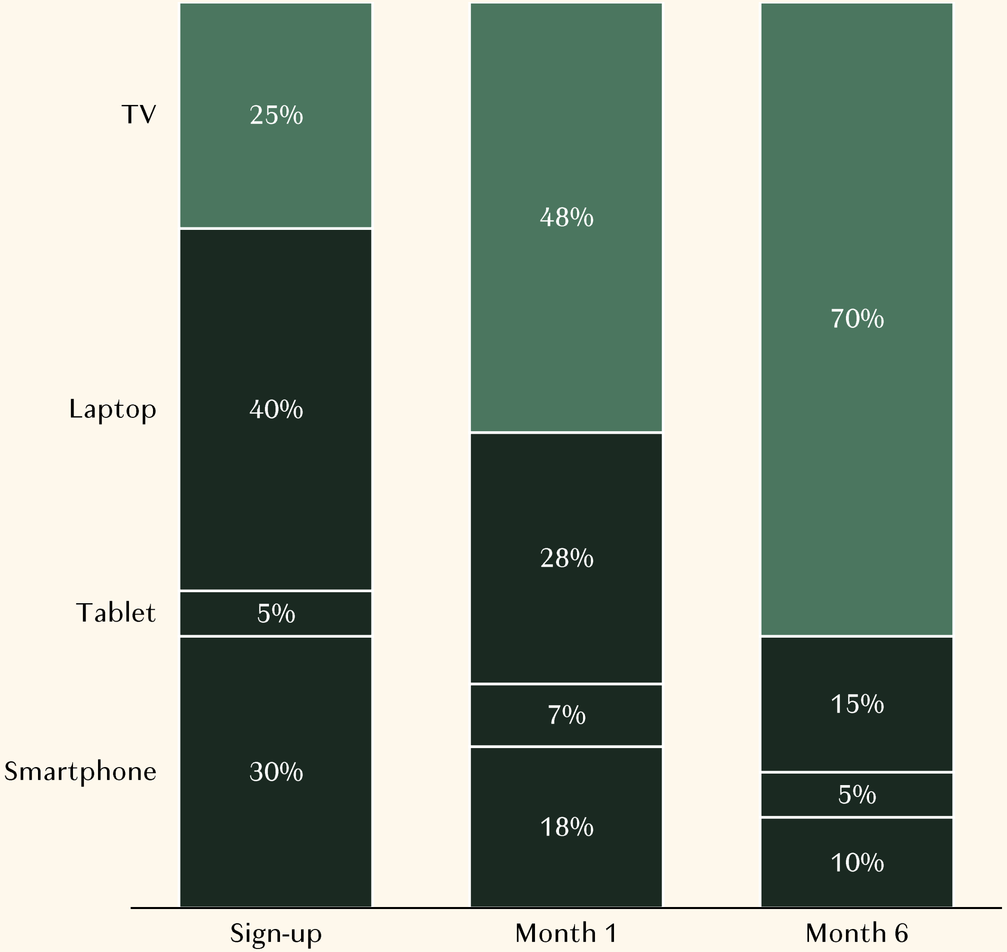
Sources: GameSpot, Antenna, Epyllion analysis

And as users embrace new forms of consumption, their engagement tends to migrate to the "best possible screen"

EPYLLION
BY MATTHEW BALL

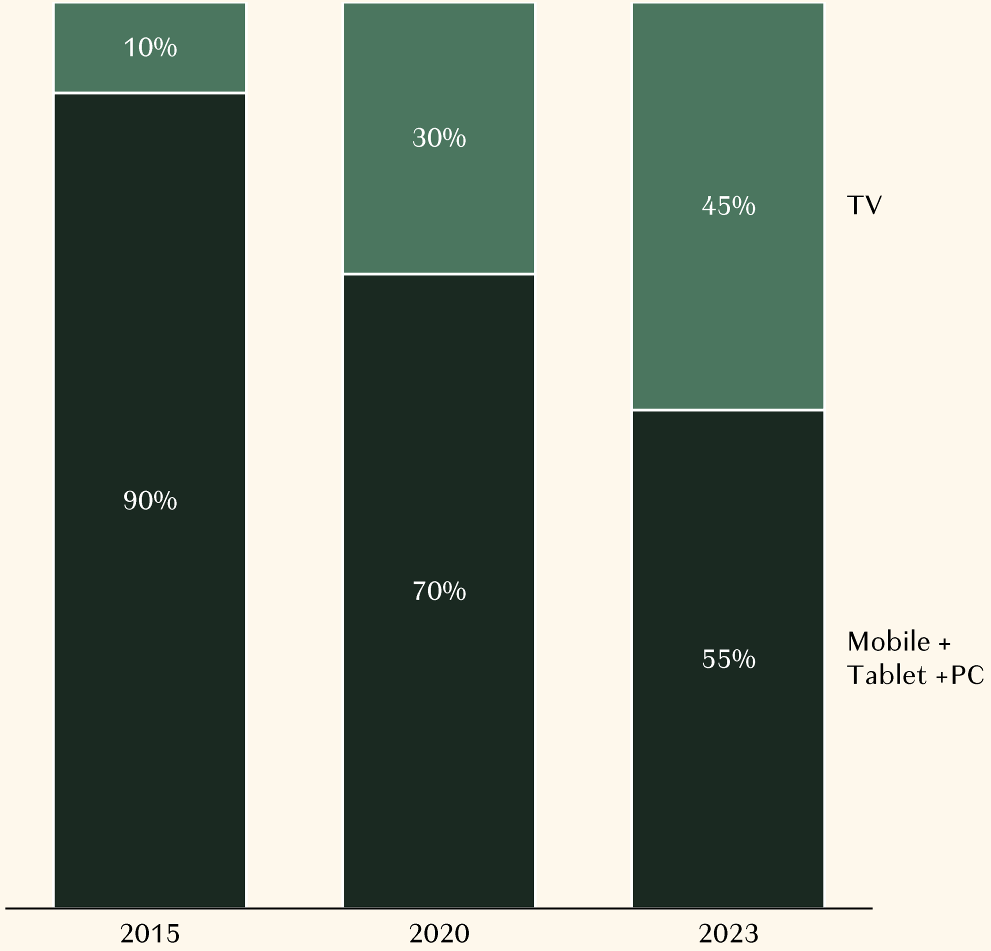
Netflix: Global Sign-Ups v Usage by Device

(Worldwide; As of May 2018)



YouTube's Share of Total Watch Time By Device Type

(US Only)

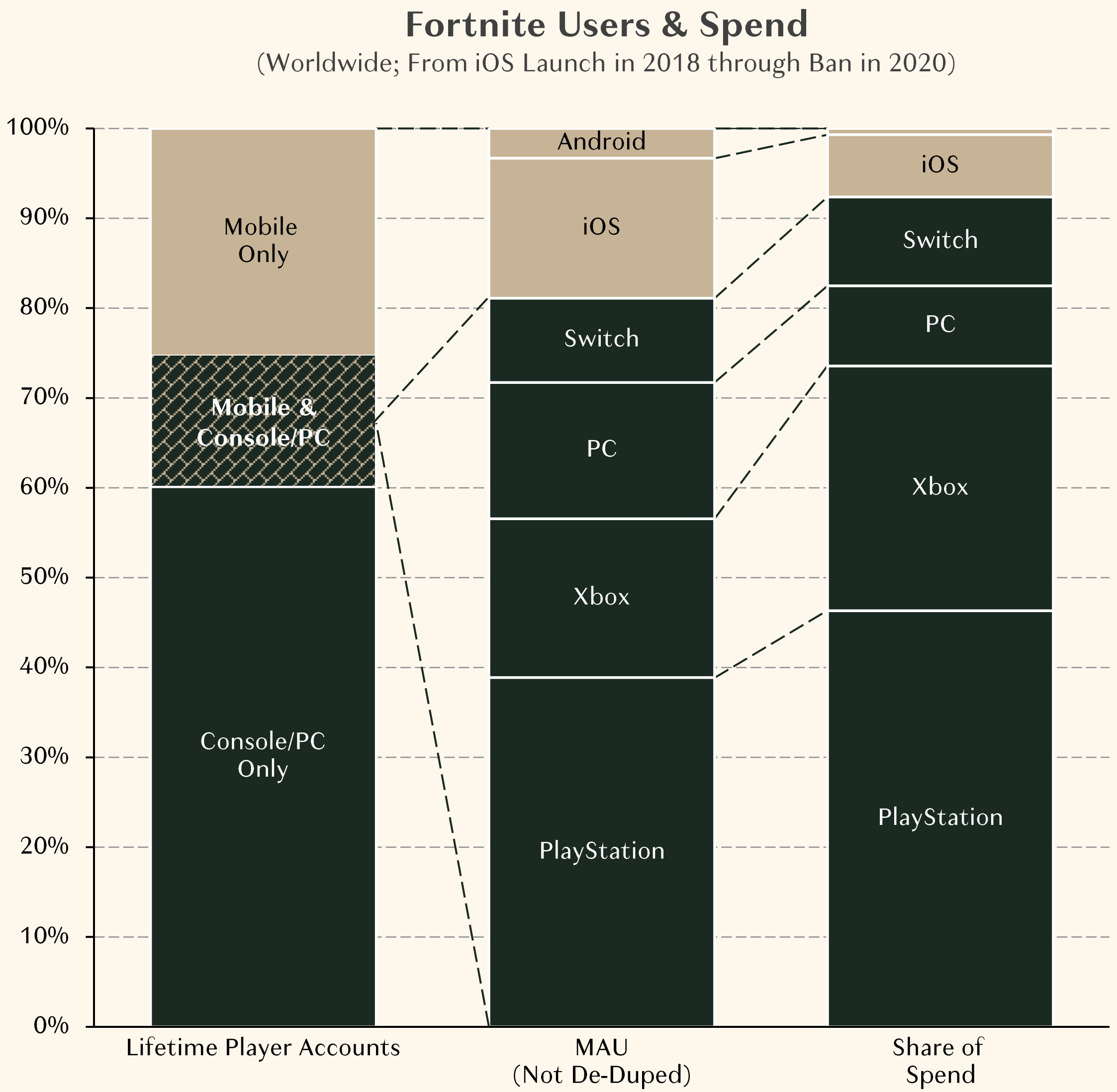


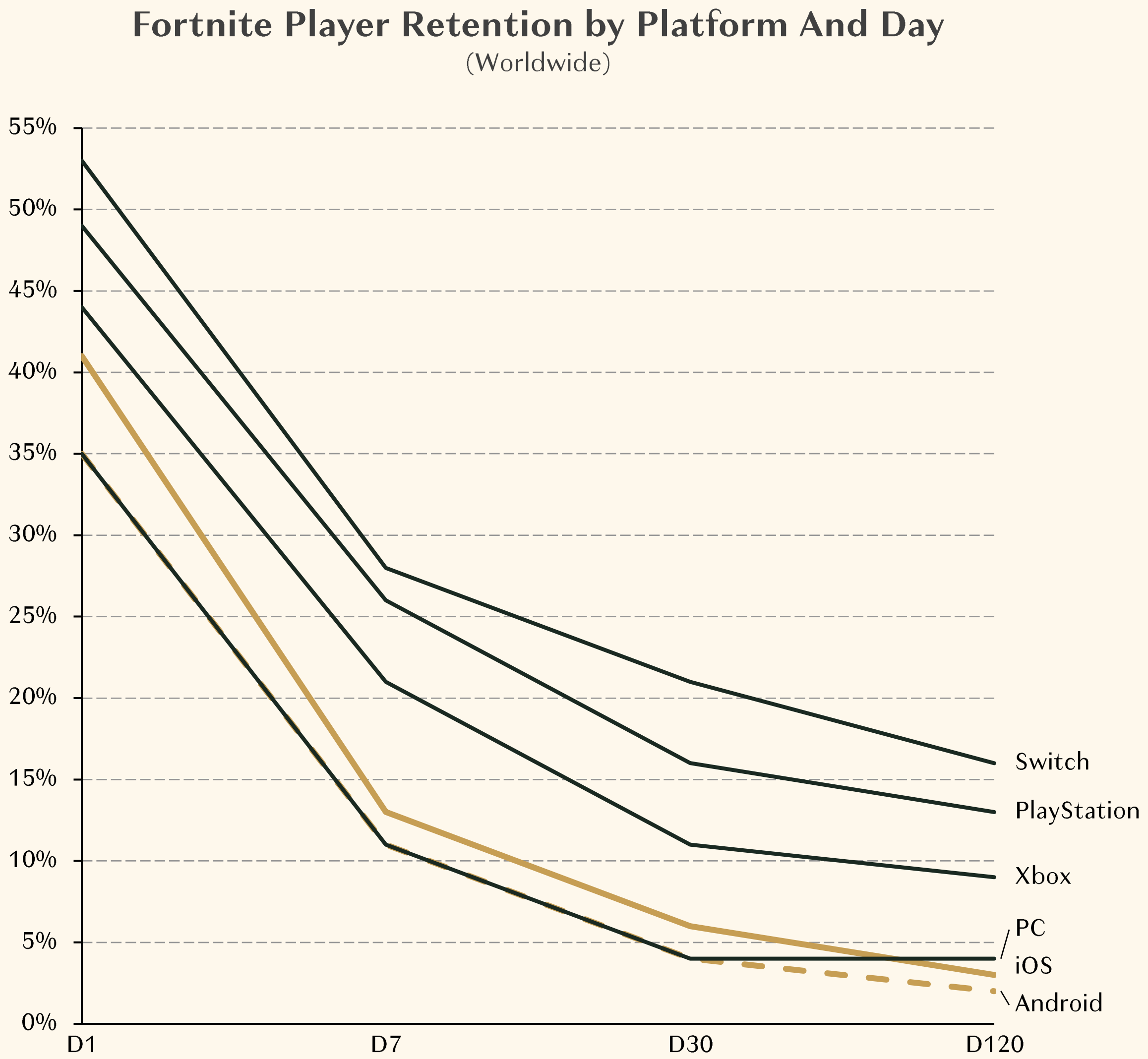
v.1/18/2025

Sources: YouTube, WSJ, The Information

And though there tend to be high creative, technical, and financial costs to adapt Console/PC-centric titles to mobile — and for seemingly low ARPU and retention…

EPYLLION
By Matthew Ball





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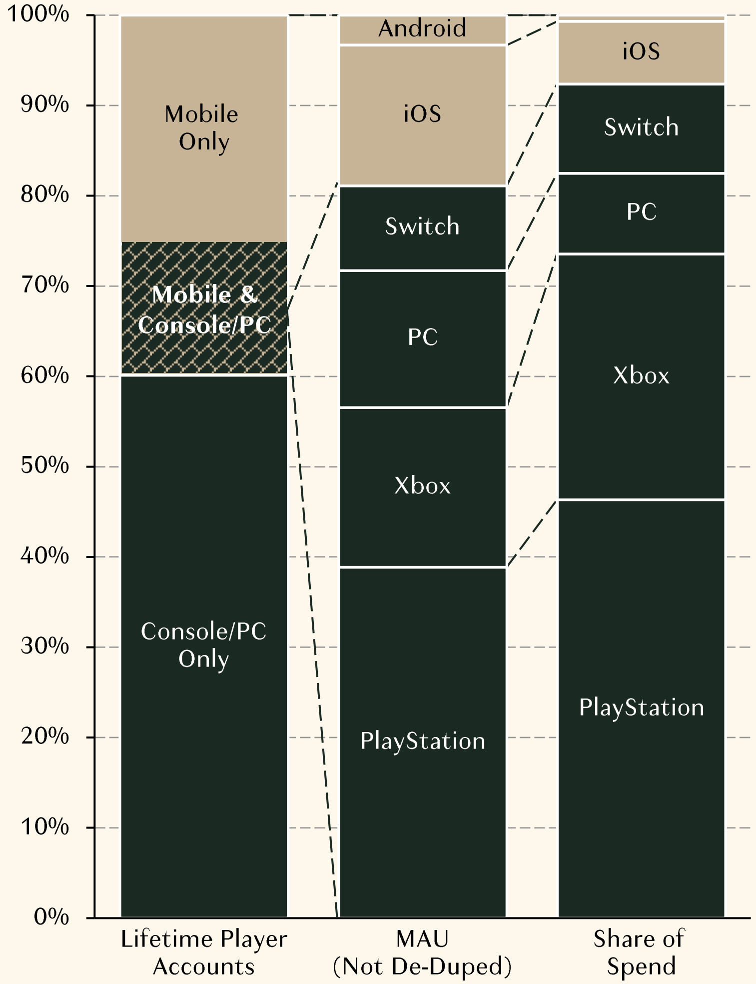
Sources: Epic Games, Epyllion analysis

…focusing on the direct share of unique users + spend is too narrow, especially for multiplayer titles. Reed’s Law: network value grows *exponentially* with users

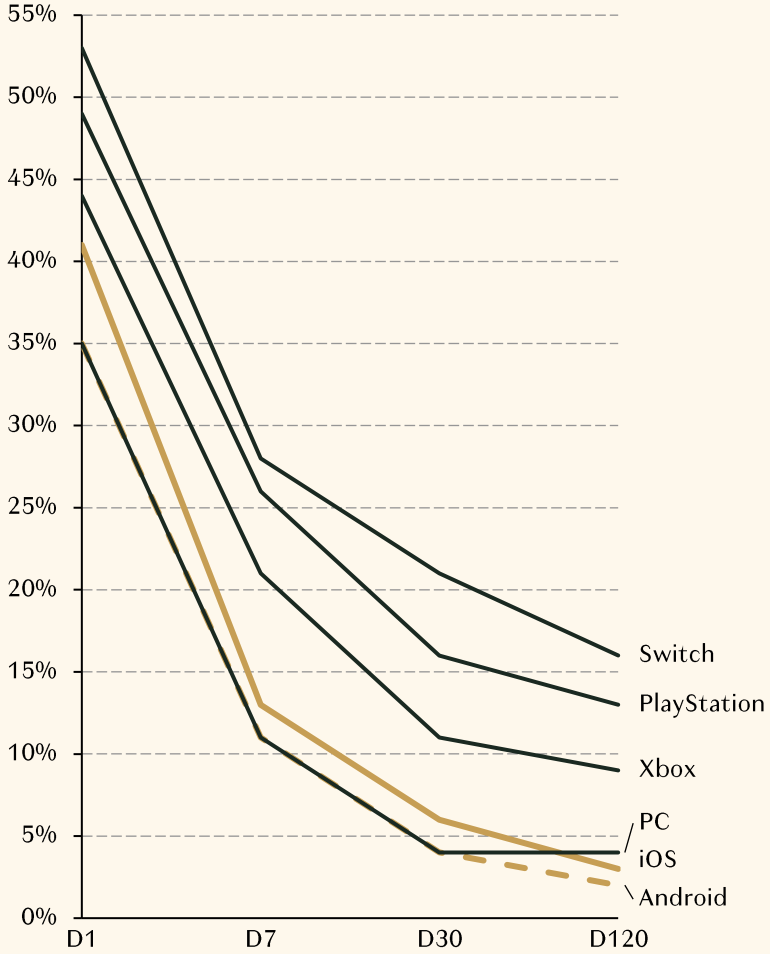
Fortnite Users & Spend

(Worldide; From iOS Launch in 2018 through Ban in 2020)



Fortnite Player Retention by Platform

(Worldwide)



- **~10%** of Fortnite players played *more* through mobile, which should increase their propensity to buy Battle Passes and cosmetics
- **18%** more total users should mean that the other 84% are likely to play more (driving Battle Pass and cosmetic sales) and receive more value from purchases (driving Battle Passes and cosmetics)
- **100%** have additional reasons to play *this* battle royale, rather than an alternative

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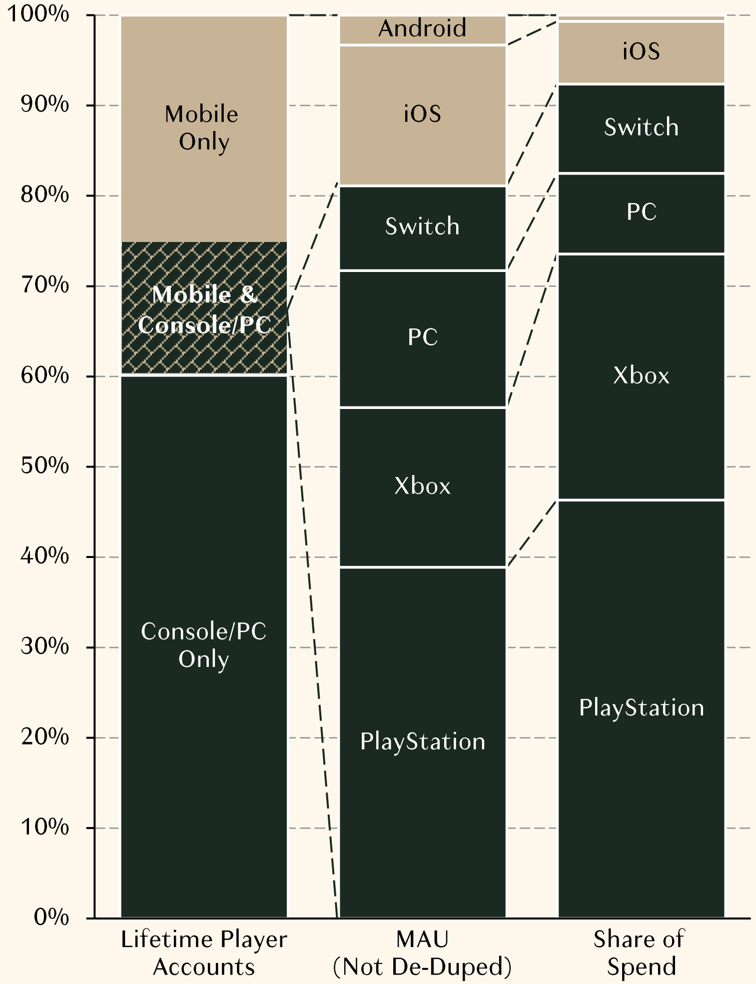
Sources: Epic Games, Epyllion analysis

In other words, mobile may have been a small share of Fortnite revenues — but this is partly because it so substantially *grew* non-mobile revenues, too

EPYLLION
By Matthew Ball

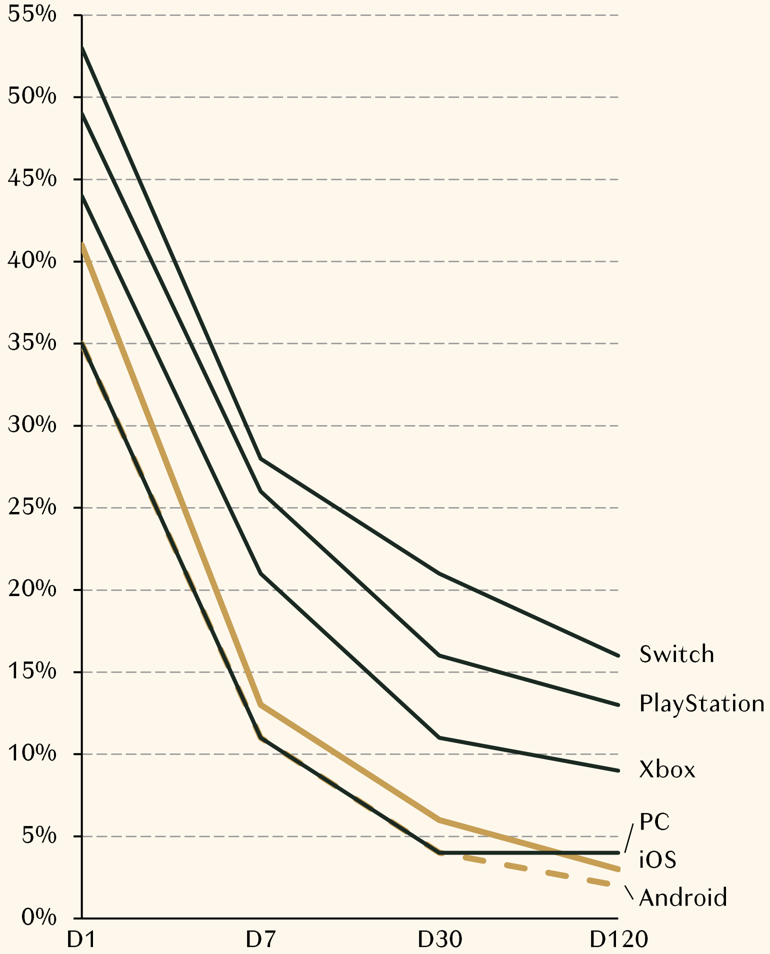
Fortnite Users & Spend

(Worldiwde; From iOS Launch in 2018 through Ban in 2020)



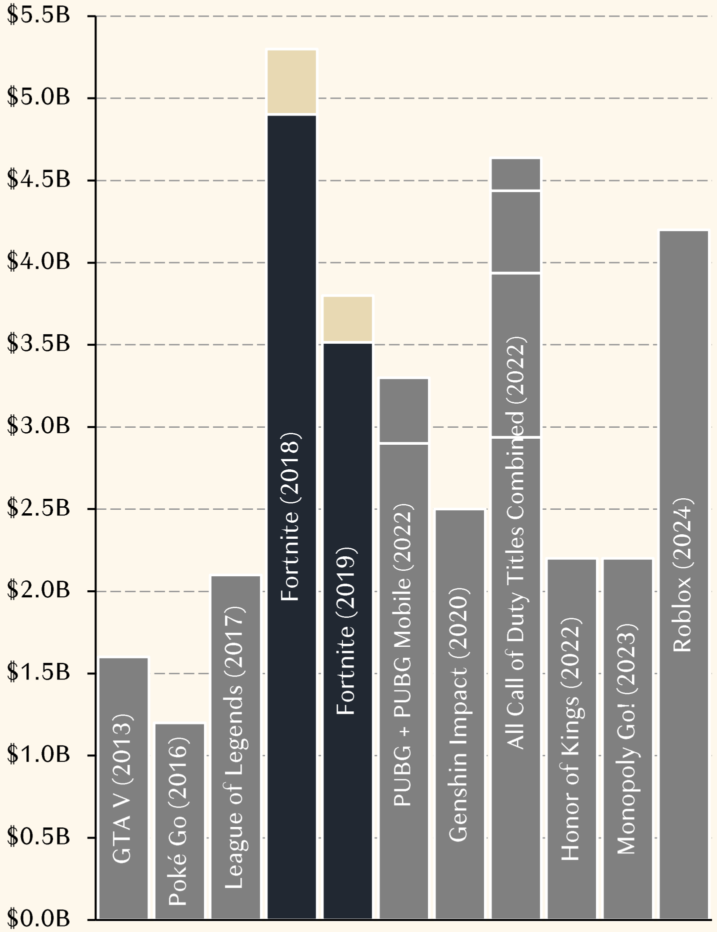
Fortnite Player Retention by Platform

(Worldwide)



Highest-Grossing Games in 12 Months

(Worldwide, Order of Peak Year on Record)



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Sources: Epic Games, AppMagic, Sensor Tower, App Annie, Krafton, Supercell, Roblox, Gamefile, Riot, Financial Times, VGSales, Epyllion analysis

Reviewing Potential New “Growth Engines”[1]

- "Non-Core" Markets
- UGC Platforms & Tools
- Social Game Services
- Switch 2
- Other New Handhelds & Devices
- AA/AAA Mobile Gaming
- App Store Regulation
- New Game Genres
- AI
- Advertising
- GTA VI Pricing

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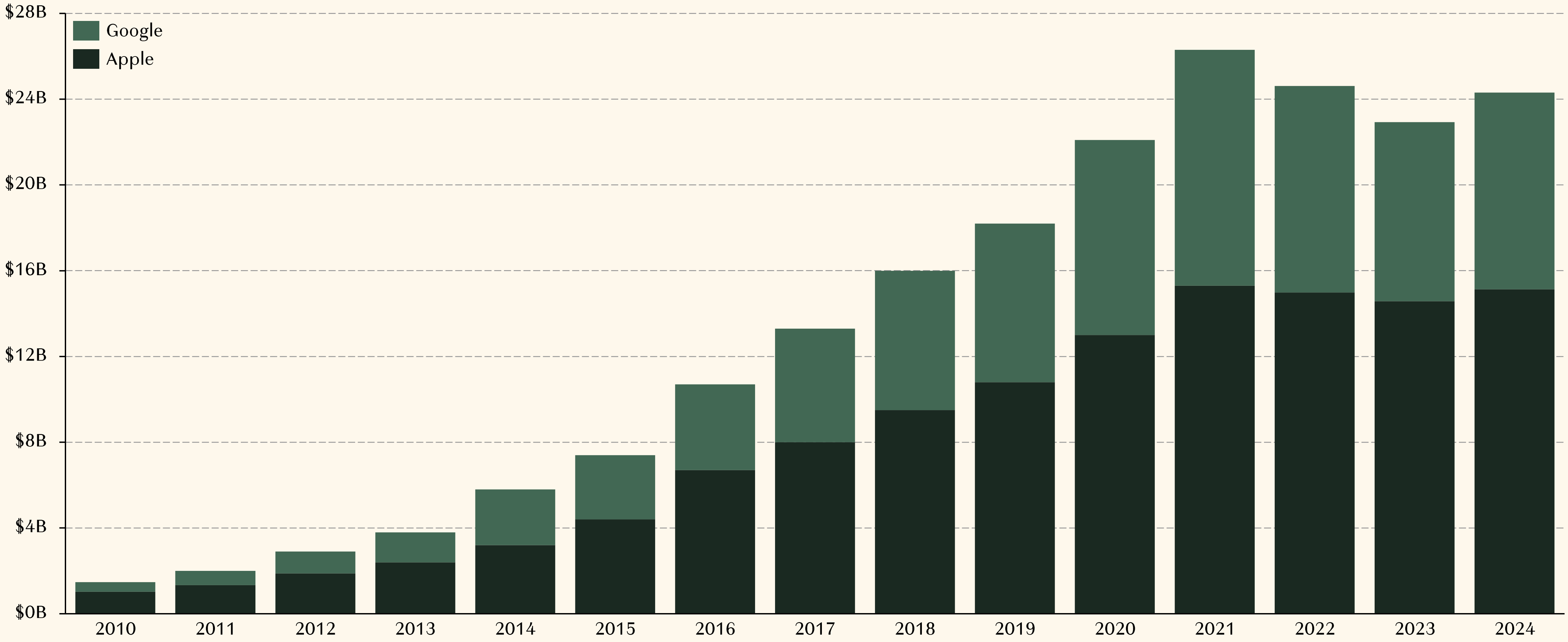
Notes: [1] Ordered logically, rather than in order of monetary value, significance, timing, etc.; [2] This isn’t to say I believe in each one, let alone to the degree sometimes argued, but I do think each is worth arguing

Recall that while mobile gaming spend has stalled and discovery/supply shriveled, app store profits exceed those of all (non-China) publishers/platforms in total

EPYLLION
By Matthew Ball

Total Worldwide App Store Revenue from Video Game Commissions

(Nominal Prices; Revenue Typically Estimated at 75-85% Profit Margins)



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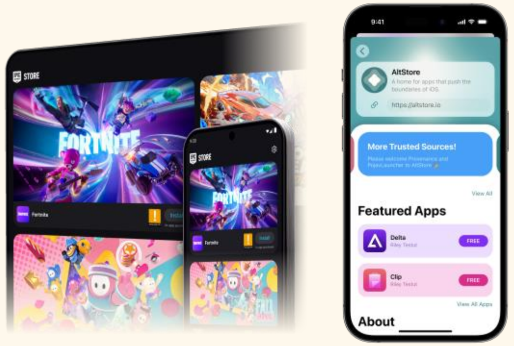
Sources: Newzoo, Pelham Smithers / Bloomberg, Epic Games, Epyllion analysis

Opening up iOS/Android's app platforms could revive install growth, improve gamemaker margins, and renew innovations in over half the video game market

EPYLLION
BY MATTHEW BALL

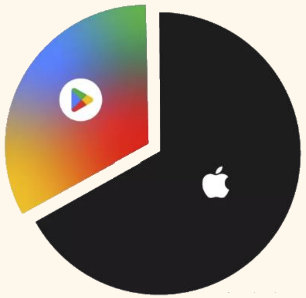
Improved/New Discovery & Competition to Drive Downloads



The proliferation of new app stores — especially those focused on mobile gaming — should lead to improvements in game discovery and acquisition costs

These new stores should lead to increases in discovery surface area and provider gamemakers with access to more tailored game audiences (and shelter from competition with non-gaming substitutes). Moreover, these platforms will have a much stronger incentive to drive installs (especially *new installs*) rather than serve their hardware and/or OS ecosystem.

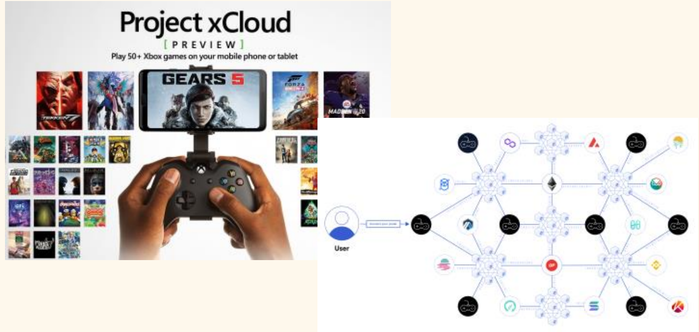
10–20% Higher Net Revenue Margins



With greater competition between stores, as well as freer rules for direct in-app payment processing, many developers hope that their effective share of gross revenues might climb from 70% to 80–90%

It's likely that the biggest games and publishers see the greatest margin growth, and gains will vary by country and platform, and come with some new costs, too. However, all improvements will help fund more game investments (development and marketing), plus experimentation and risk-taking

Greater Business Model & Technological Flexibility & Experimentation



Many would-be video game business models and/or technologies are literally or practically prohibited on the major mobile app stores. This includes game subscriptions, cloud gaming, WebGL/OpenGL-based titles, and NFTs/Web3

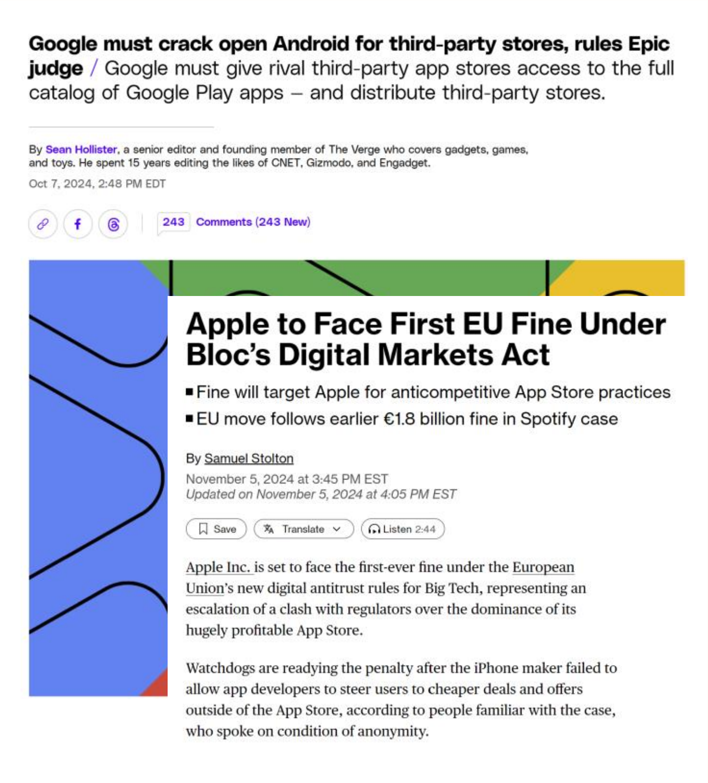
However one feels about the viability, let alone significance of these theories, the inability for new ideas to be fully tested (and in failure, learned from) is stifling — and fundamentally problematic for a stagnant and/or declining category. Worse still is the plausibility that some of these prohibitions are motivate by the desire to maintain store revenues and margins

v.1/18/2025

Source: Epyllion analysis

After years of false progress, there's evidence that iOS/Android's app platforms might soon start to open up

Accelerating Regulatory Action



Google must crack open Android for third-party stores, rules Epic judge / Google must give rival third-party app stores access to the full catalog of Google Play apps – and distribute third-party stores.

By Sean Hollister, a senior editor and founding member of The Verge who covers gadgets, games, and toys. He spent 15 years editing the likes of CNET, Gizmodo, and Engadget.

Oct 7, 2024, 2:48 PM EDT

243 Comments (243 New)

Apple to Face First EU Fine Under Bloc's Digital Markets Act

- Fine will target Apple for anticompetitive App Store practices
- EU move follows earlier €1.8 billion fine in Spotify case

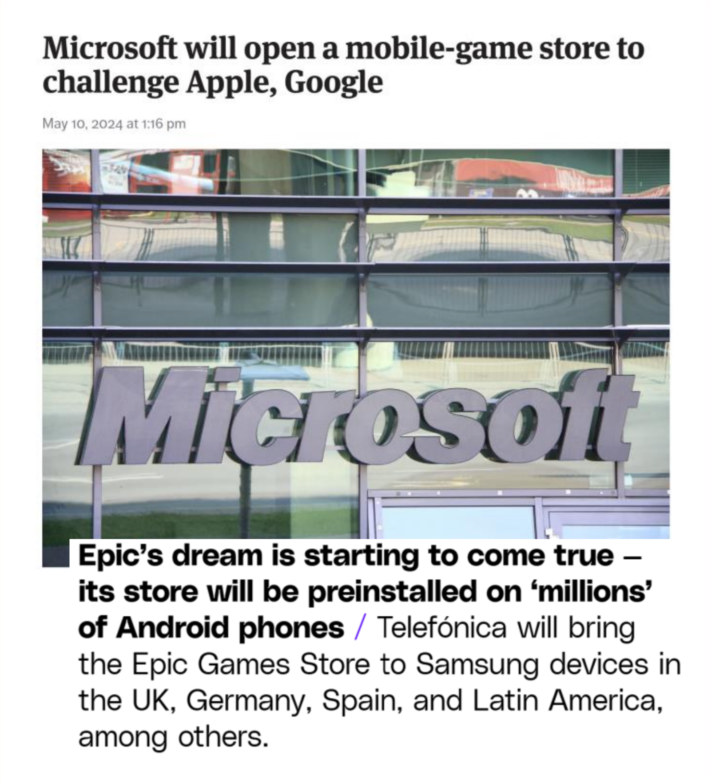
By Samuel Stolton
November 5, 2024 at 3:45 PM EST
Updated on November 5, 2024 at 4:05 PM EST

Save Translate Listen 2:44

Apple Inc. is set to face the first-ever fine under the European Union's new digital antitrust rules for Big Tech, representing an escalation of a clash with regulators over the dominance of its hugely profitable App Store.

Watchdogs are readying the penalty after the iPhone maker failed to allow app developers to steer users to cheaper deals and offers outside of the App Store, according to people familiar with the case, who spoke on condition of anonymity.

High-Profile App Stores Are Launching

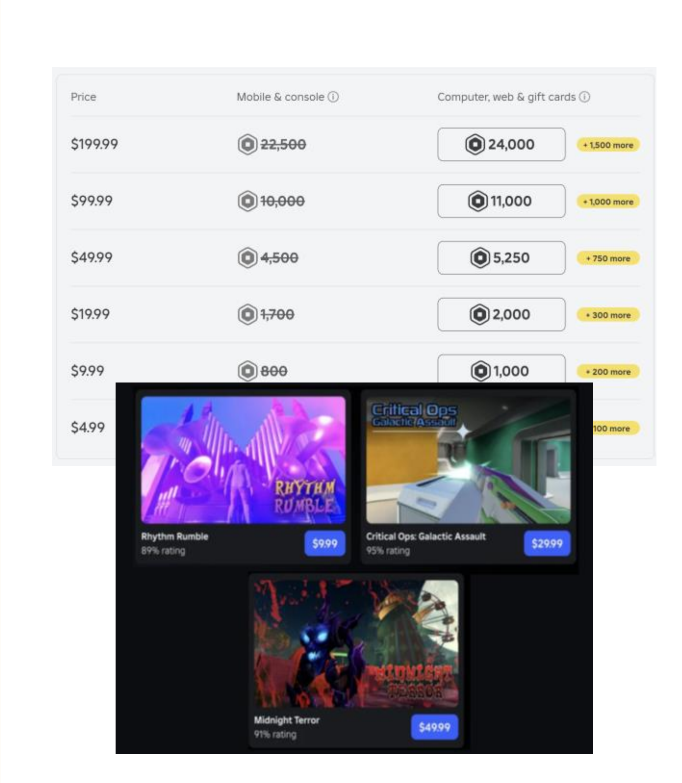


Microsoft will open a mobile-game store to challenge Apple, Google

May 10, 2024 at 1:16 pm

Epic's dream is starting to come true – its store will be preinstalled on 'millions' of Android phones / Telefónica will bring the Epic Games Store to Samsung devices in the UK, Germany, Spain, and Latin America, among others.

Roblox Now Offers 7–25% More Robux for Non-Mobile Purchases; Limits Game Buys to PC/Web



Price	Mobile & console	Computer, web & gift cards	
$199.99	~~22,500~~	24,000	+ 1,500 more
$99.99	~~10,000~~	11,000	+ 1,000 more
$49.99	~~4,500~~	5,250	+ 750 more
$19.99	~~1,700~~	2,000	+ 300 more
$9.99	~~800~~	1,000	+ 200 more
$4.99			100 more

Rhythm Rumble
89% rating
$9.99

Critical Ops: Galactic Assault
95% rating
$29.99

Midnight Terror
91% rating
$49.99

Source: Epyllion analysis

And as mobile opens, Steam has the opportunity to extend its entitlements and social platform to every device and nearly every game, user, hour, and achievement

EPYLLION
By Matthew Ball

$75-150B In Total Game Entitlements (Exc. Steamworks & Steam Keys)

↓

$200B per Year in Consumer Video Game Spending

200MM Players (& Billions of Connections)

↓

3B+ Players (& Trillions of Connections)

6B Monthly Hours

↓

6B Monthly Hours

PC & PC Handheld

↓

PC & PC Handheld

Notes

Source: Epyllion analysis

Reviewing Potential New “Growth Engines”[1]

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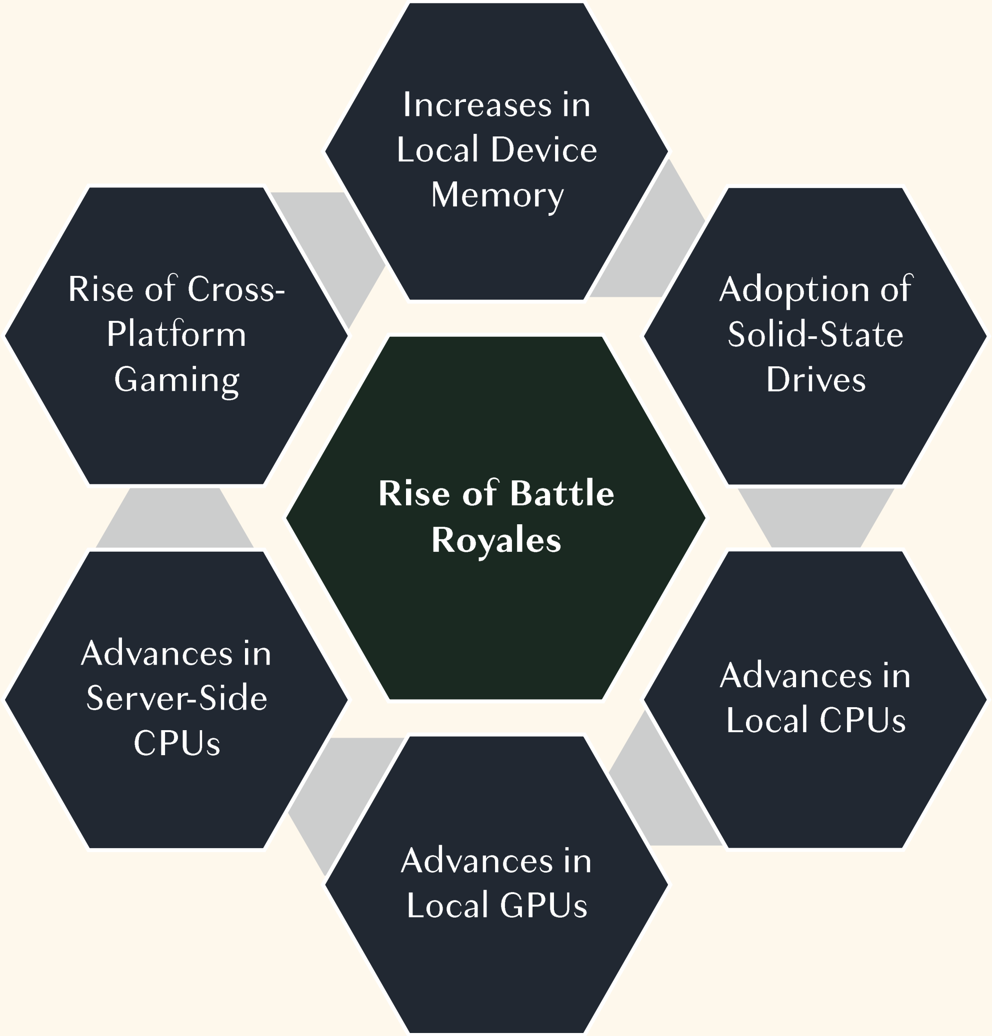
Over only a few years, indie-developed mods spawned the largest AAA game genre in history — one adapted (and/or created) by the very largest gamemakers globally

Development of the Battle Royale Genre
(Select Examples)

v.1/18/2025

Yet battle royales were not a new idea. Rather, they were newly *possible* ideas as a result of various technological advances

EPYLLION
By Matthew Ball



Rise of Battle Royales

Increases in Local Device Memory

Adoption of Solid-State Drives

Advances in Local CPUs

Advances in Local GPUs

Advances in Server-Side CPUs

Rise of Cross-Platform Gaming

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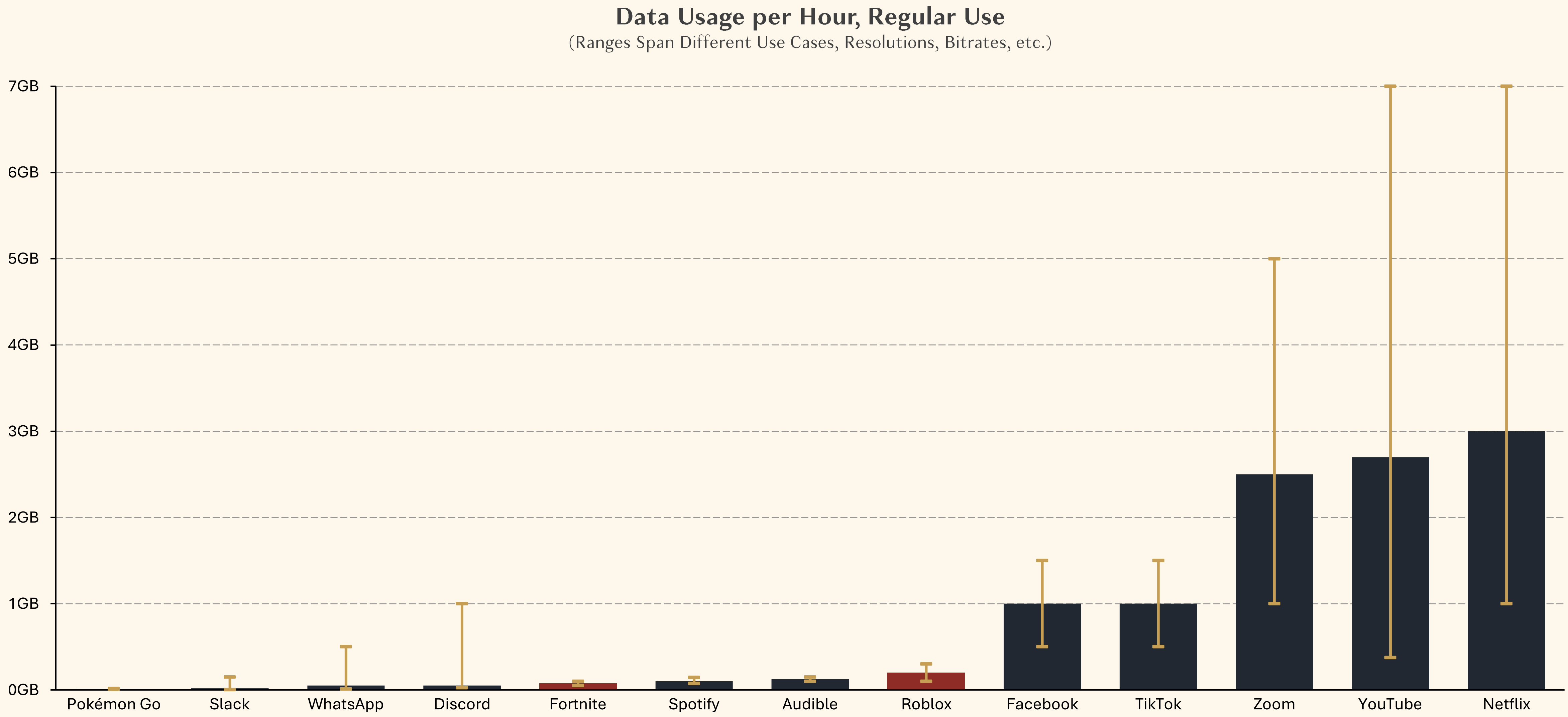
Source: Epyllion analysis

For all their sophistication, most of today's top games use less data than "legacy" apps like Facebook, and a 100th the data of top video calling and streaming apps

EPYLLION
By Matthew Ball

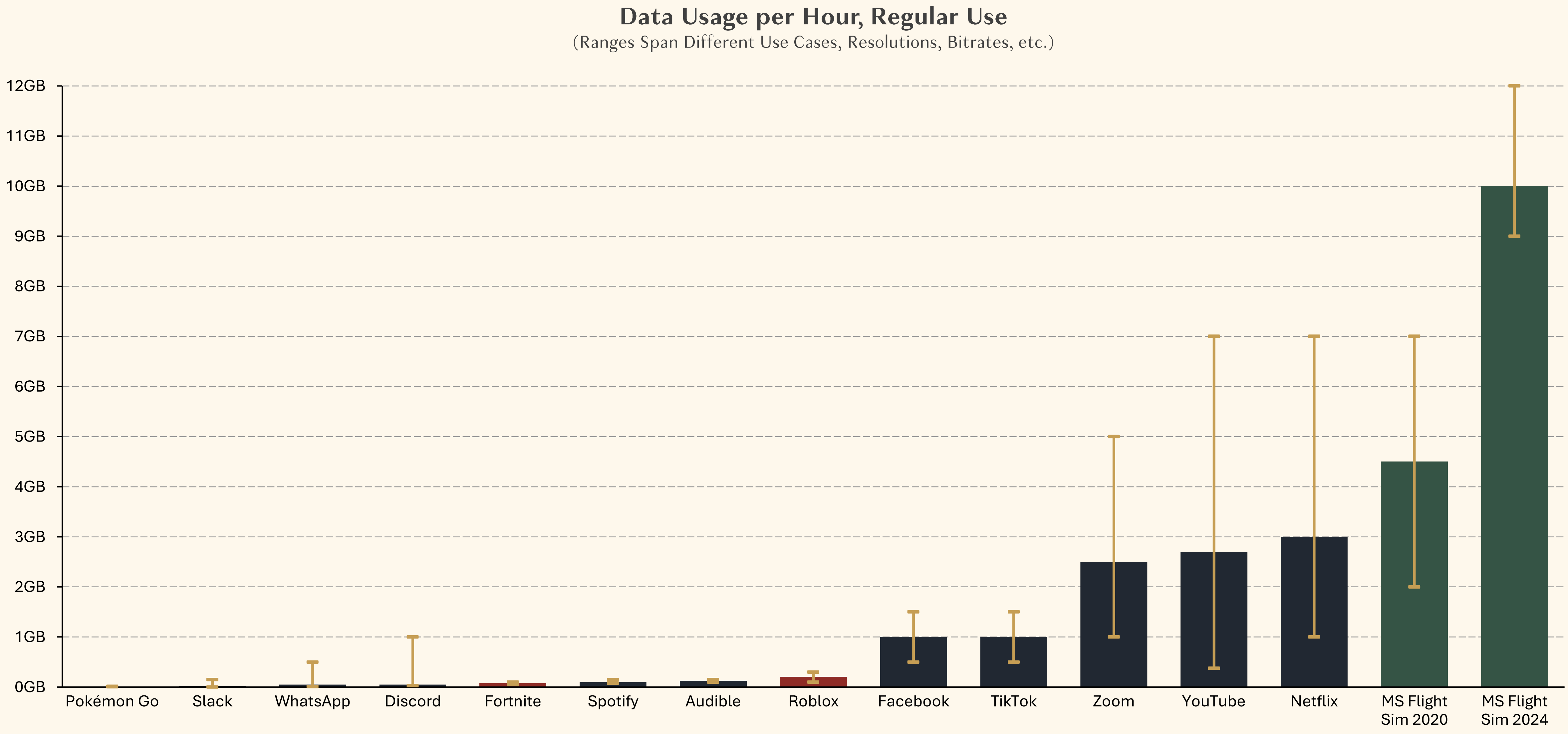


v.1/18/2025

Source: Epyllion analysis

Some new video games are cloud streaming 5–12 GB of data per hour, not as a rendering solution (à la Stadia) but for traditional local processing/rendering

EPYLLION
BY MATTHEW BALL



v.1/18/2025

Sources: Simulation Daily, Epyllion analysis

Microsoft Flight Sim 2020 runs a 500,000,000 km^2 and 2 petabyte (2 million GBs) map reproducing nearly all of our world (3T unique trees, 1.5B buildings, etc.)

MSFS 2020 v. Real Landing at San Jose (SJC)

WATCH: https://www.youtube.com/watch?v=DVNIyjo2Q44 or
https://tinyurl.com/StateofVideoGaming2025-MSFS

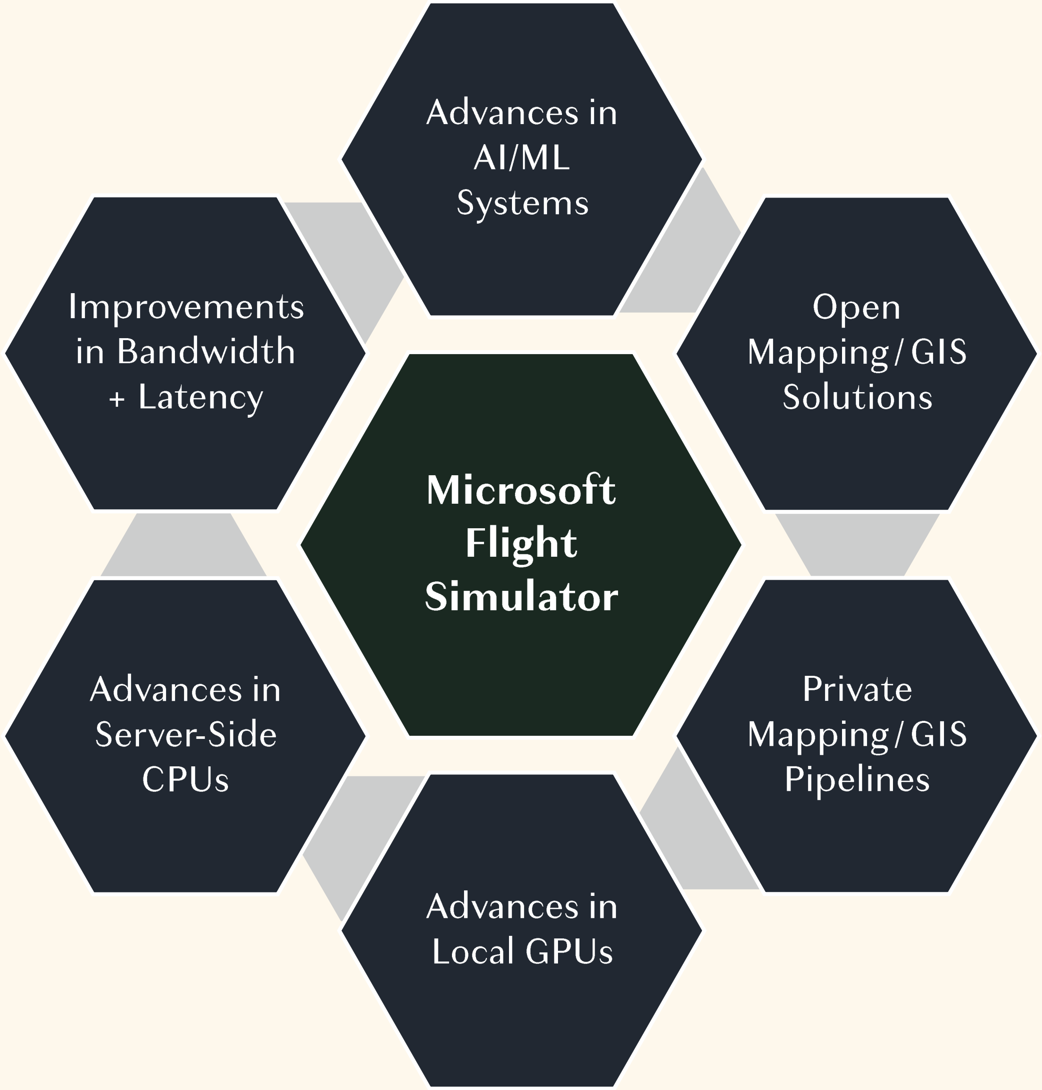
Sources: VentureBeat, Protocol, Microsoft

Flight Sim's 2024 update uses up to 5x the hourly data, enabling a 4,000x increase in environmental detail (e.g. lift is affected by heat density of 6,400 surfaces)

v.1/18/2025

Sources: VentureBeat, Protocol, Microsoft

Microsoft Flight Simulator is possible due to a vast number of solutions across Microsoft (Azure, Bing Maps) and beyond (telecoms, GIS pipelines, etc.)



Microsoft Flight Simulator

Advances in AI/ML Systems

Open Mapping / GIS Solutions

Private Mapping / GIS Pipelines

Advances in Local GPUs

Advances in Server-Side CPUs

Improvements in Bandwidth + Latency

v.1/18/2025

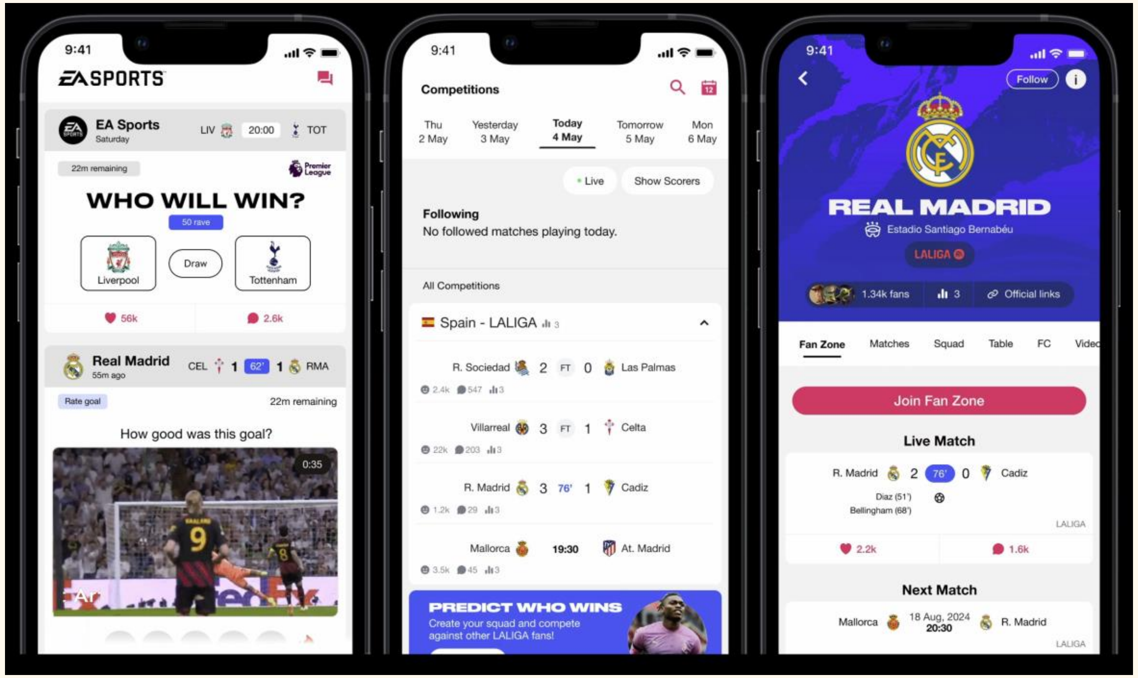
Sources: *Epyllion analysis*

In 2024, the U.S. Federal Aviation Administration announced helicopter pilots could receive credit toward their pilot ratings on Loft Dynamics VR systems

Source: Loft Dynamics

Even the “biggest” games in the world are working on new ways to expand their reach and role — in some cases, by going beyond the “game”

EA Sports’ New App: Includes “real world” team and match data, including schedules, video highlights, fantasy sports, and live community/fan clubs (might sports betting soon arrive?)



EA Sports’ Highlighter: Promises new functionality whereby users can replay “real” matches, but real-time and in-engine, affording any angle, change, substitution, etc.

WATCH: https://www.youtube.com/watch?v=hsvX8NMGUxI&t=7079s or https://tinyurl.com/StateofVideoGaming2025-EA

Source: EA Sports

It's possible to identify some technical catalysts for new genres, but not how far they must mature, their cross-dependencies (inc. with AI), or what they'll make

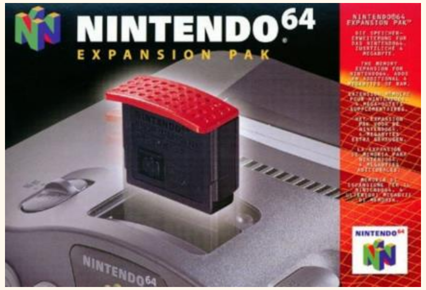
Mass Concurrency

Fortnite has 100 players per server because Epic "couldn't make 200 players work on a server." Though this is probably a slight simplification and exaggeration, there are still significant constraints to how many users can be in a shared simulation at once – constraints that shape fidelity, functionality, map size, genre, and gameplay mechanic. As this barrier grows, what might the new "battle royale" be? And how might it introduce new monetization models, cultural events, or players to video games?

High-Bandwidth Data Streaming

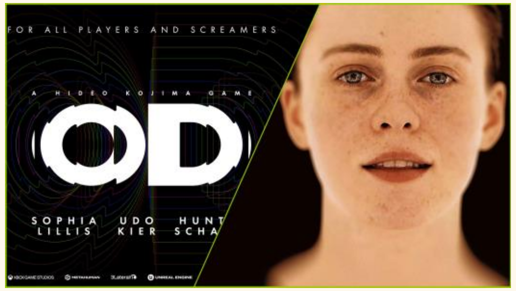
The fidelity, diversity, and "live" aspect of any game world today is currently limited by the fact that nearly all of that world is "pre-downloaded" and limited information is sent to the user as they play (e.g., positional data, select items or game data). Our very sense of what a world is, looks like, can do, etc., will change and grow

Higher-Persistence Game Worlds



Due to limitations in CPU/GPU power, hard drives, as well as bandwidth and latency, most video games have low levels of persistence. Most enemies defeated, conversations had, objects destroyed or created or changed, and other gameworld events are "forgotten" by the gameworld. As such, it's as though they never even happened – meaning the gameworld was never truly "living," either. What happens when a world "never forgets?" What is an MMO in a world that remembers, if not everything, most things?

Cloud Native Games



Cloud-native games are generally expected to focus on mass concurrency and high persistence (and, of course, they require high levels of bandwidth). Even so, there's a hope that games that are *built* for cloud streaming, rather than built for traditional rendering and then cloud streamed, might produce particularly unique, new gaming experiences.

(Pictured: Hideo Kojima's forthcoming cloud-native Xbox title, OD*, which Kojima claims will be a "new form of media" altogether)*

v.1/18/2025

Sources: Tim Sweeney, Microsoft, Kojima Productions, Epyllion analysis

Reviewing Potential New "Growth Engines"[1]

"Non-Core" Markets

UGC Platforms & Tools

Social Game Services

Switch 2

Other New Handhelds & Devices

AA/AAA Mobile Gaming

App Store Regulation

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To *some*, Generative AI may be a "Holy Grail" that helps halt cost escalation and reduces "minimum viable scale," and also grows players and per-player spend

Greater Production Efficiency

More Players & Playtime

Better Monetizing

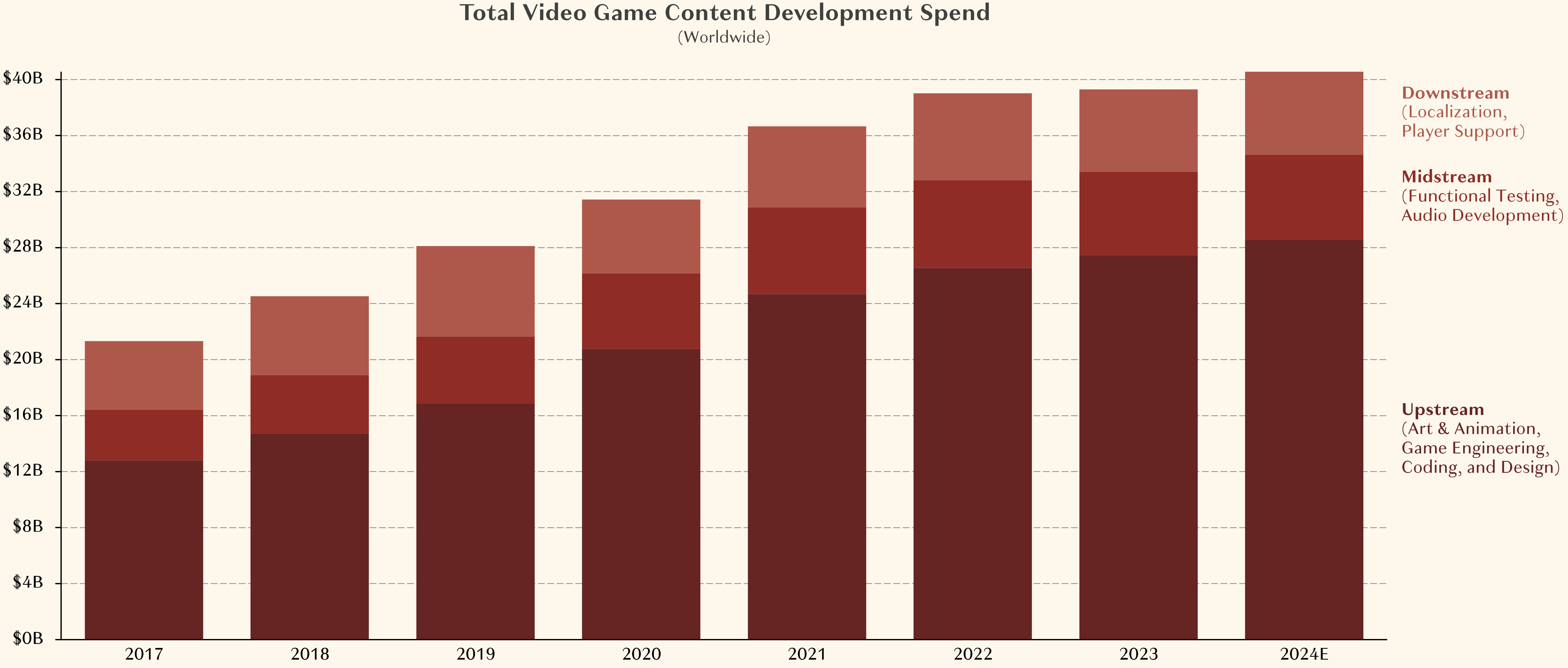
- Bring games to market faster (i.e. less delay to market trends);
- Lower cost of development and support (enabling viability at lower sales or userbases)
- More iteration (improving quality)

- Higher volumes of GAAS content (improving retention and engagement)
- Greater personalization (driving sense of immersion)
- Expanded UGC functionality and ease-of-use (improving engagement, quality, and developer economics)

- More time
- More content
- More items
- Better games
- Richer player experiences
- Larger and stronger UGC ecosystem

Reminder: industry-wide content development spend has surged 90% since 2017 — 1.6x the rate of consumer spend growth, and 2.1x that of Console/PC spend

EPYLLION
By Matthew Ball



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Sources: IDG Intelligence, Keywords, Epyllion analysis

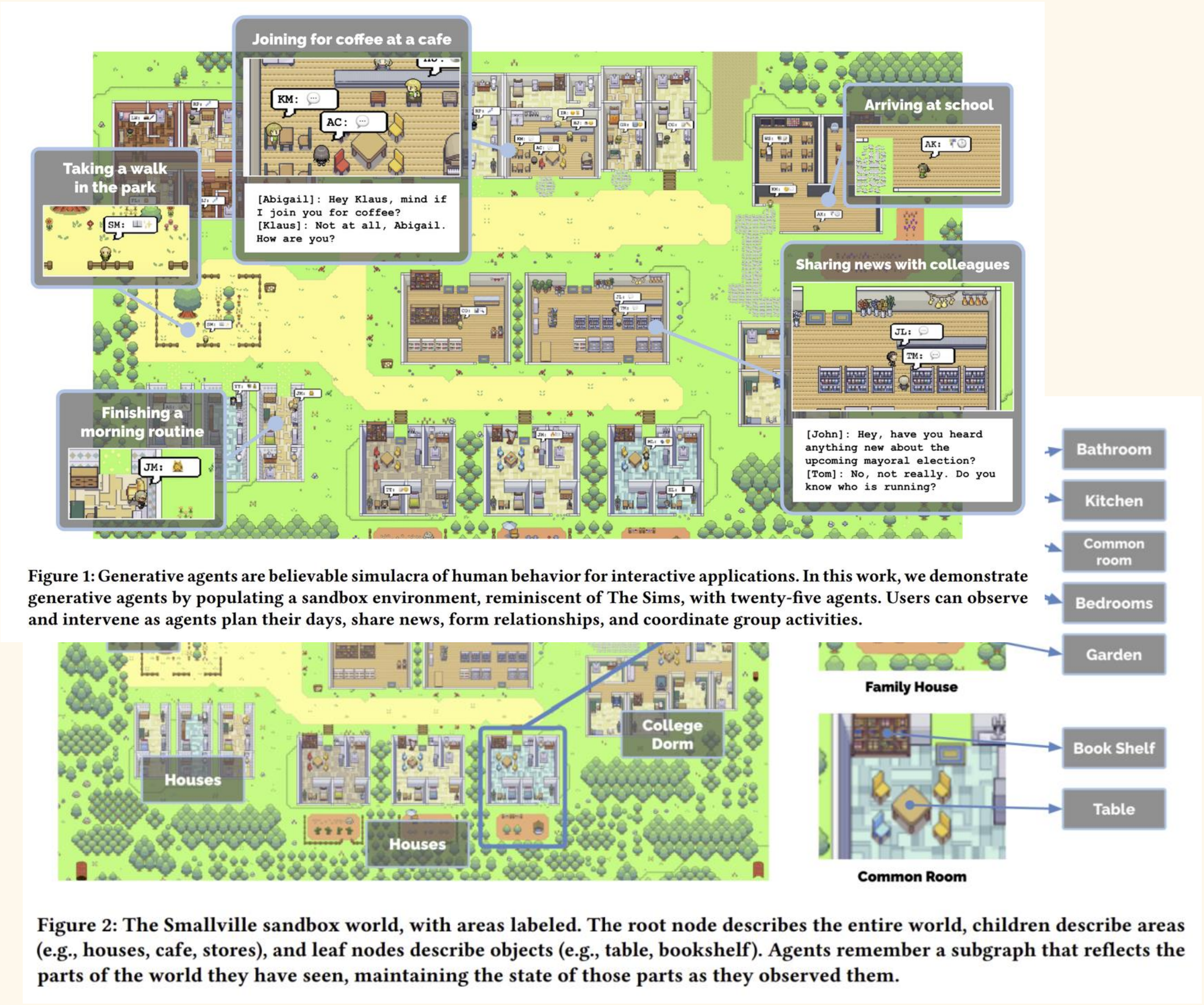
For many, the "big opportunity" in Generative AI is not production savings or efficiency — at least not directly. Instead, it's altogether new genres/experiences

In April 2023, researchers at Google and Stanford published a paper summarizing a two-day simulation designed to test the believability of virtual agents powered by (circa February 2023) large language models

Specifically, the researchers assembled a town equipped with houses and dormitories, colleges and offices, grocery stores and bars, and populated with 25 autonomous agents powered by large language models modified "to store a complete record of the agent's experiences using natural language, synthesize those memories over time into higher-level reflections, and retrieve them dynamically to plan behavior."

During the simulation, characters organically formed routines, while also establishing friendships, sharing information learned, and developing professional interests.

After researchers prompted one NPC to host a Valentine's Day party, the NPC opted to invite her friends to the party, roping in customers at the café where she worked, too, and asked her closest friend to help them with decorating. The friend then did so and revealed that she had a crush on another NPC, whom the NPC then also invited to the party. At the party's scheduled 5 p.m. start, all five NPCs arrived on time, having rearranged their days to accommodate the event—including the crush, "Klaus."



[Abigail]: Hey Klaus, mind if I join you for coffee?
[Klaus]: Not at all, Abigail. How are you?

[John]: Hey, have you heard anything new about the upcoming mayoral election?
[Tom]: No, not really. Do you know who is running?

Figure 1: Generative agents are believable simulacra of human behavior for interactive applications. In this work, we demonstrate generative agents by populating a sandbox environment, reminiscent of The Sims, with twenty-five agents. Users can observe and intervene as agents plan their days, share news, form relationships, and coordinate group activities.

Figure 2: The Smallville sandbox world, with areas labeled. The root node describes the entire world, children describe areas (e.g., houses, cafe, stores), and leaf nodes describe objects (e.g., table, bookshelf). Agents remember a subgraph that reflects the parts of the world they have seen, maintaining the state of those parts as they observed them.

v.1/18/2025

Sources: Cornell arxiv (Generative Agents: Interactive Simulacra of Human Behavior), Epyllion analysis

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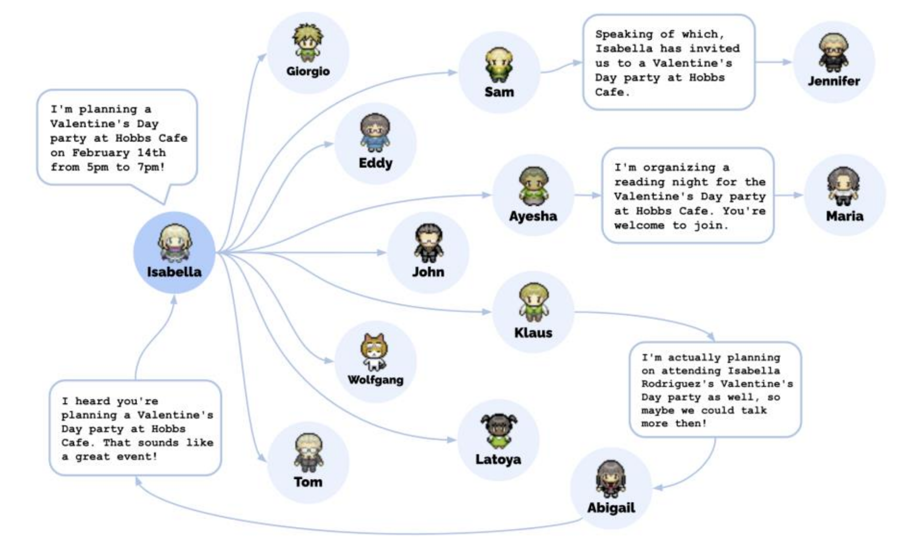


I'm planning a Valentine's Day party at Hobbs Cafe on February 14th from 5pm to 7pm!

Speaking of which, Isabella has invited us to a Valentine's Day party at Hobbs Cafe.

I'm organizing a reading night for the Valentine's Day party at Hobbs Cafe. You're welcome to join.

I'm actually planning on attending Isabella Rodriguez's Valentine's Day party as well, so maybe we could talk more then!

I heard you're planning a Valentine's Day party at Hobbs Cafe. That sounds like a great event!

Figure 9: The diffusion path for Isabella Rodriguez's Valentine's Day party invitation involved a total of 12 agents, aside from Isabella, who heard about the party at Hobbs Cafe by the end of the simulation.

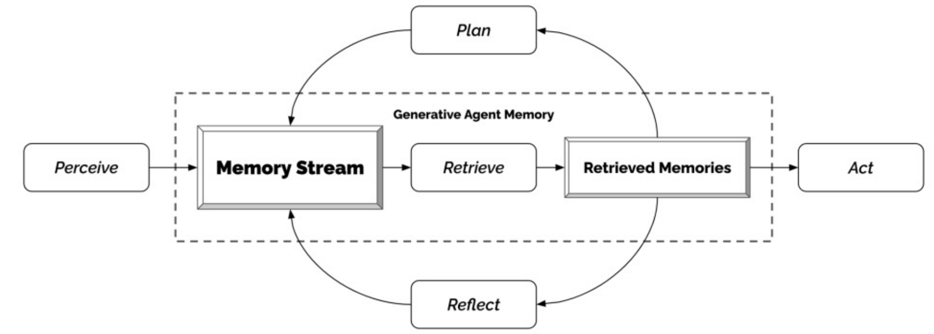


Figure 5: Our generative agent architecture. Agents perceive their environment, and all perceptions are saved in a comprehensive record of the agent's experiences called the memory stream. Based on their perceptions, the architecture retrieves relevant memories and uses those retrieved actions to determine an action. These retrieved memories are also used to form longer-term plans and create higher-level reflections, both of which are entered into the memory stream for future use.

Sources: Cornell arxiv (Generative Agents: Interactive Simulacra of Human Behavior), Epyllion analysis

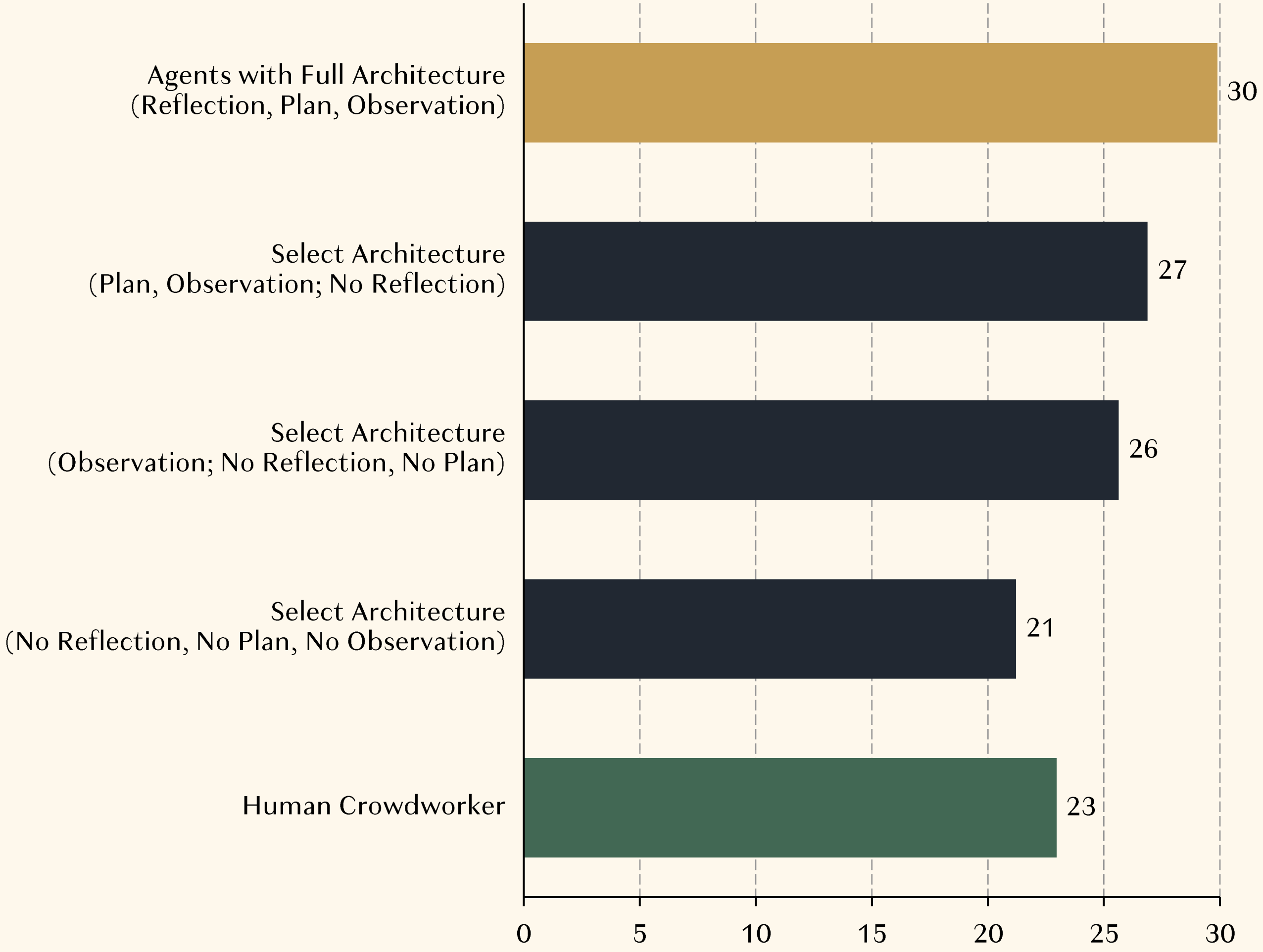
Some of these experiences are *technically* viable without Generative AI, but their operation would far outstrip *economic* viability. And may be less "believable," too

After the simulation concluded, each behavior of each agent was reviewed and evaluated for believability using common behavioral models (e.g., TrueSkill, Microsoft Xbox Live's skill-based matchmaking system) and variance tests (Kruskal-Wallis).

Each agent was also "interviewed" for "self-knowledge" (details on their life), "memory" (such as whom they met and what happened during the simulation), "plans" (what they will do and when), "reactions" (what they would do in case of a fire or upon seeing a friend on the street), and "reflections" (what inspires them or what they would buy for another agent's birthday).

Independent human "crowdworkers" were also hired and asked to watch each agent's two-day experience and then role-play as these agents while answering the same questions. The Stanford/Google researchers found that the LLM agents consistently outperformed their human role-players and exceeded the believability benchmark

TrueSkill Ranking in the Google/Stanford Experience
(Worldwide)



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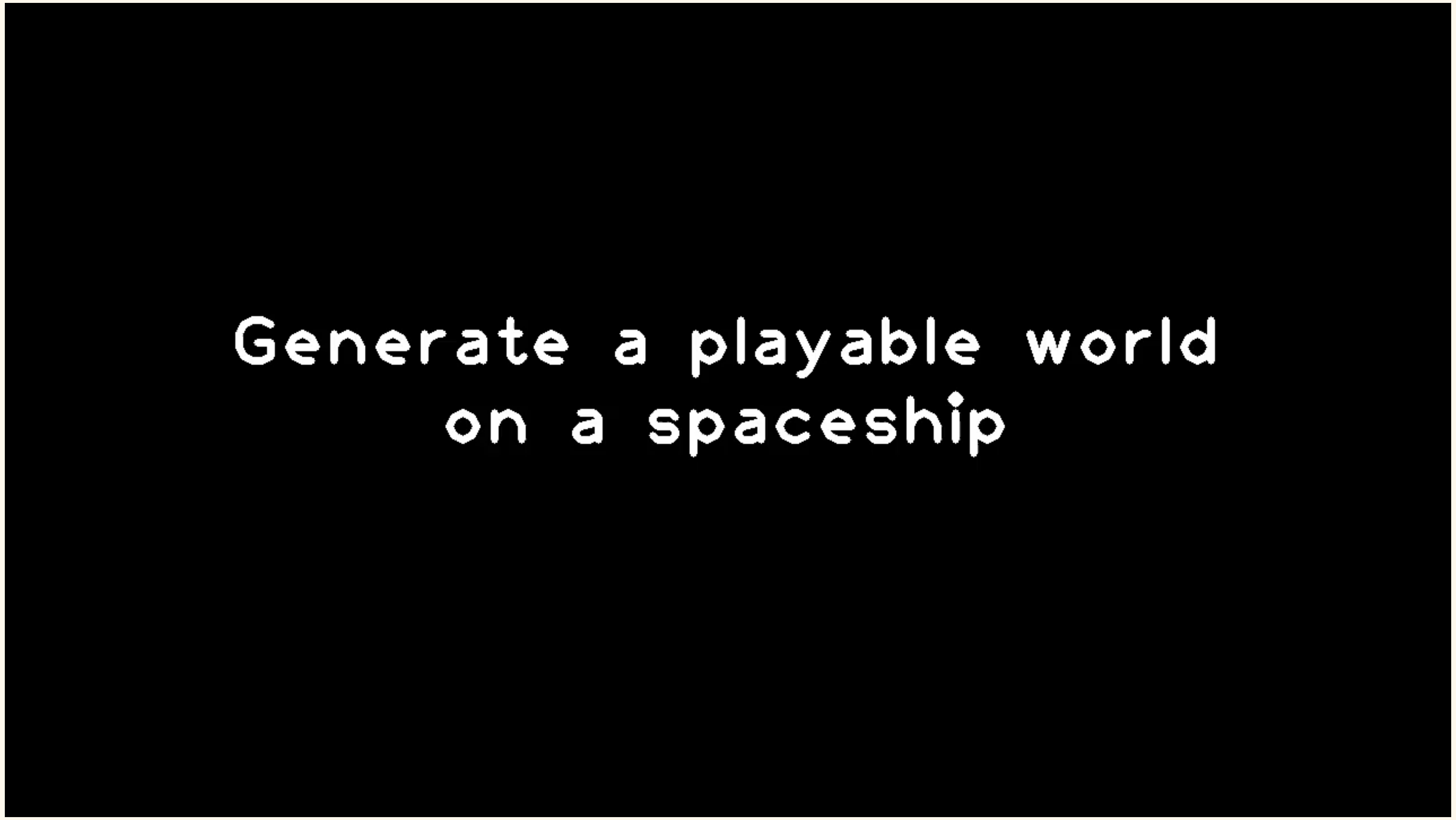
Sources: Cornell arxiv (Generative Agents: Interactive Simulacra of Human Behavior), Epyllion analysis

Far more controversially, some believe Generative AI world models might come to replace much of a game engine — and in doing so, create unbound virtual worlds

Google's Genie 2 Large-Scale Foundational World Model



WATCH: https://deepmind.google/discover/blog/genie-2-a-large-scale-foundation-world-model/ or https://tinyurl.com/StateofVideoGaming2025-Genie2

Sources: Google

Reviewing Potential New "Growth Engines"[1]

"Non-Core" Markets

UGC Platforms & Tools

Social Game Services

Switch 2

Other New Handhelds & Devices

AA/AAA Mobile Gaming

App Store Regulation

New Game Genres

AI

Advertising

GTA VI Pricing

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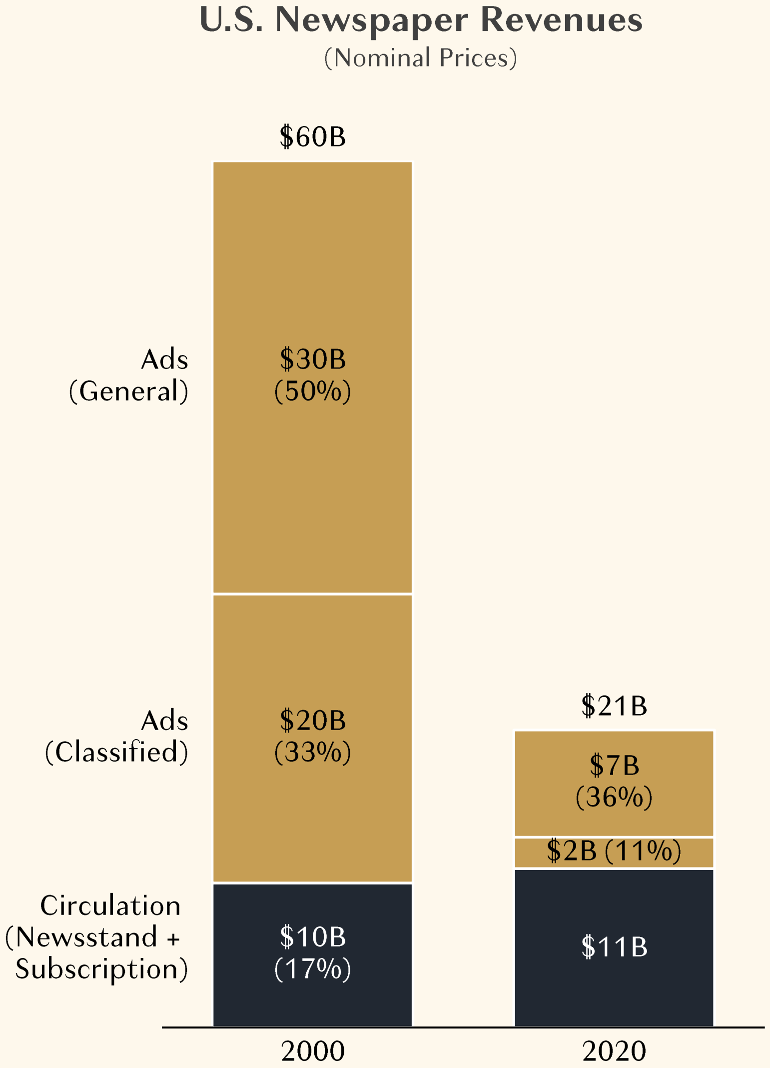
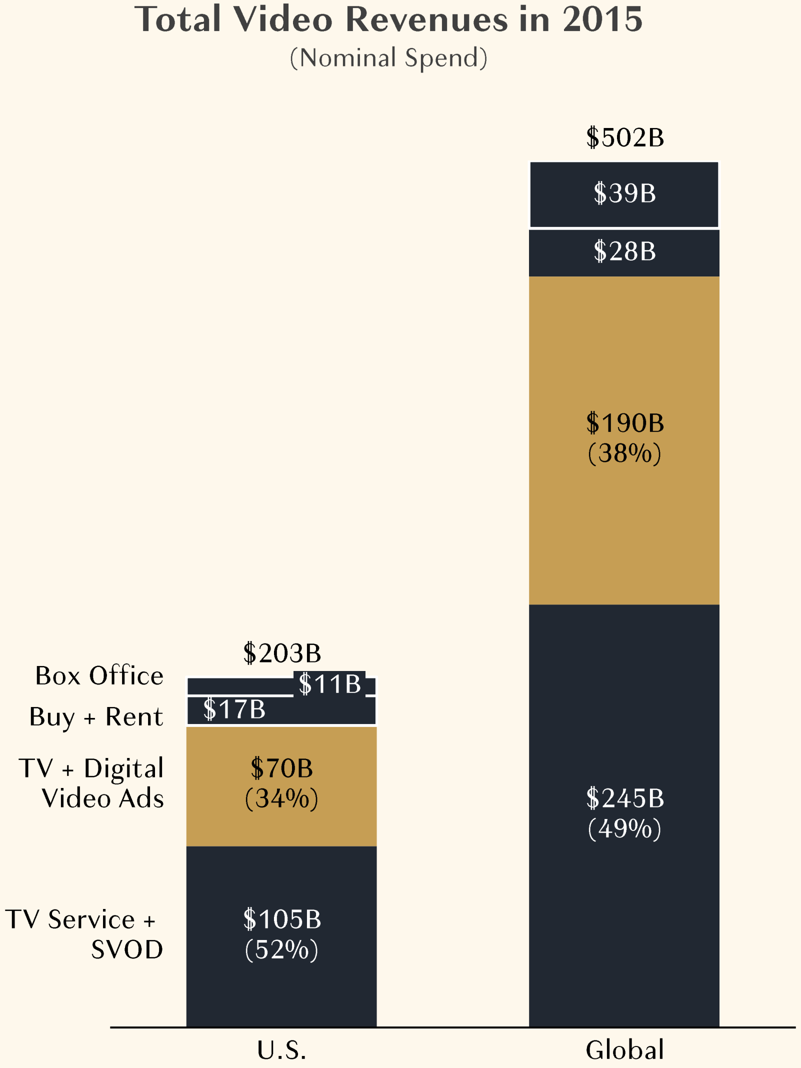
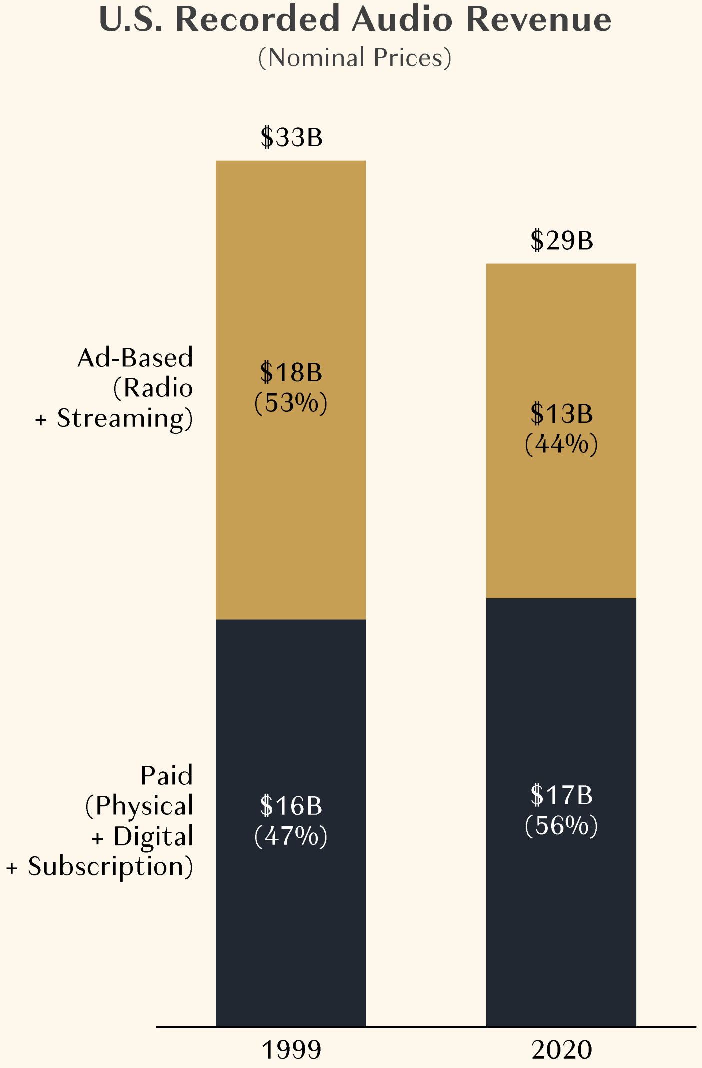
Notes: [1] *Ordered logically, rather than in order of monetary value, significance, timing, etc.;* [2] *This isn't to say I believe in each one, let alone to the degree sometimes argued, but I do think each is worth arguing*

For most media categories, advertising will constitute 40–50% of total revenues — contributing just under a dollar for every dollar a consumer spends







Sources: Pew, ZDNET, Hussman School of Journalism, RIAA, McCann-Erickson, RAB, Emarketer, Audio Publishers Association, St. Louis Federal Reserve, Christopher H. Sherling & John Michael Kittross, Strategy Analytics, Gower Street, Epyllion analysis

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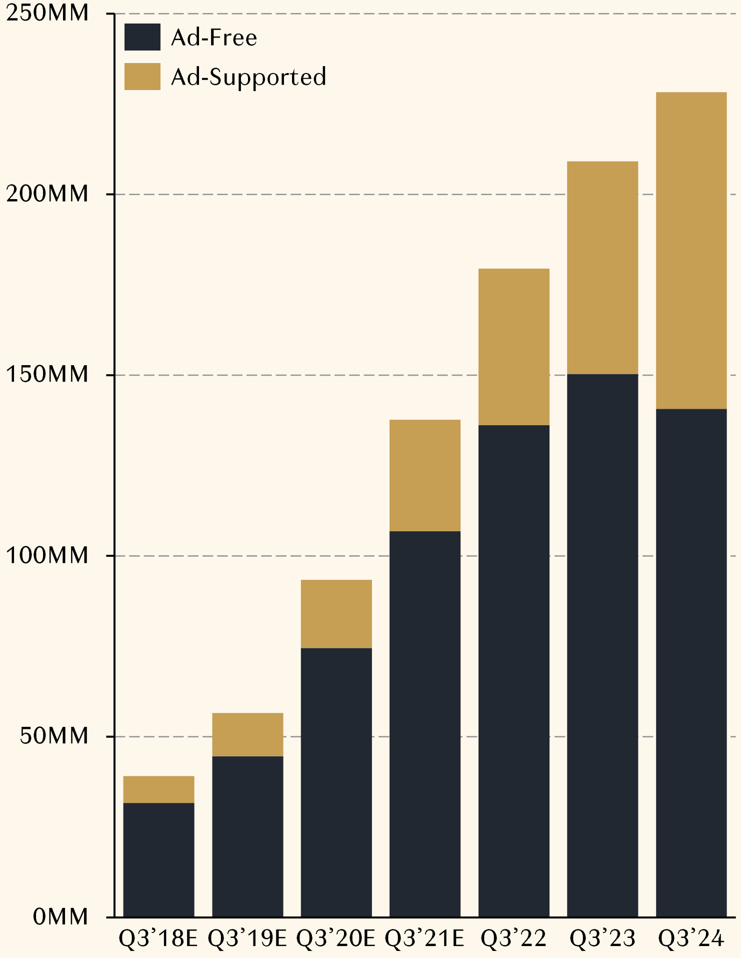
And the digital video market matured, growth shifted to ad-supported models that had lower monthly bills yet generated *higher* net ARPU for services

EPYLLION
By Matthew Ball

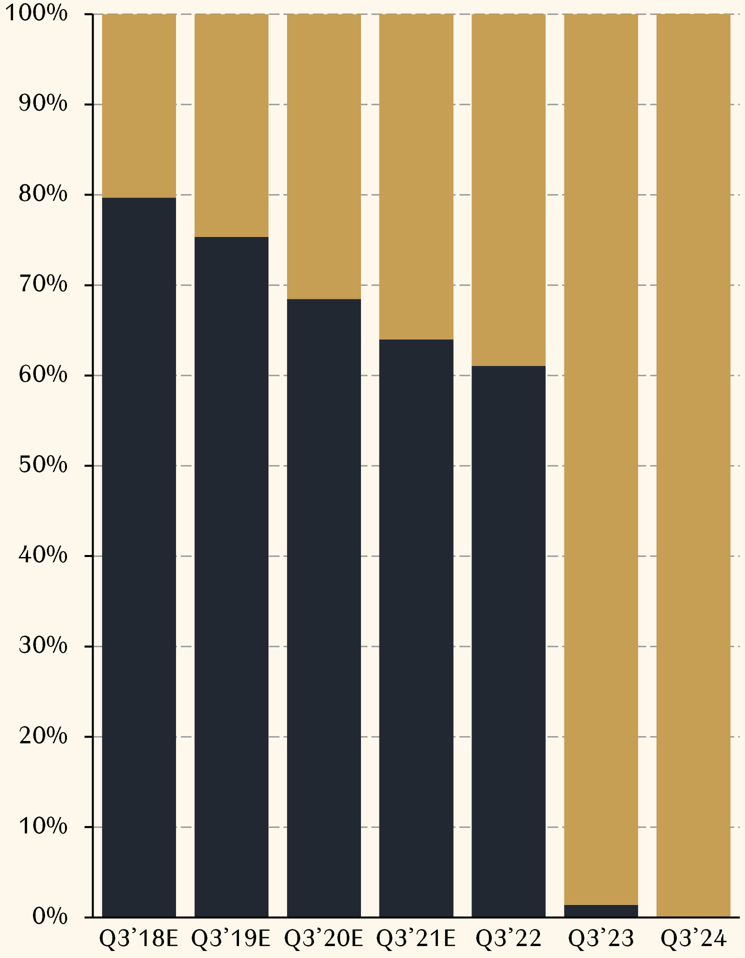
U.S. Premium SVOD Subscribers

(Starz, Showtime, Peacock, Paramount+, Discovery, Netflix, Max, Hulu, Disney+, Apple TV+)



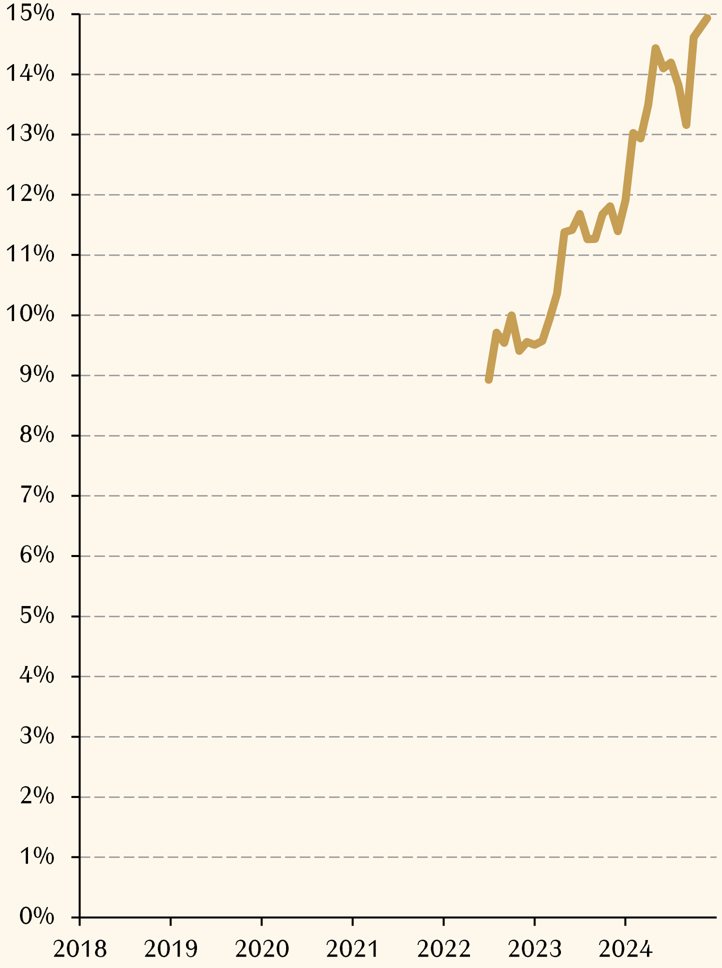
U.S. Premium SVOD – Share of Net Ads

(Starz, Showtime, Peacock, Paramount+, Discovery, Netflix, Max, Hulu, Disney+, Apple TV+)



Big 3 FAST Share of U.S. Stream Time

(Roku Channel + Tubi + Pluto TV)



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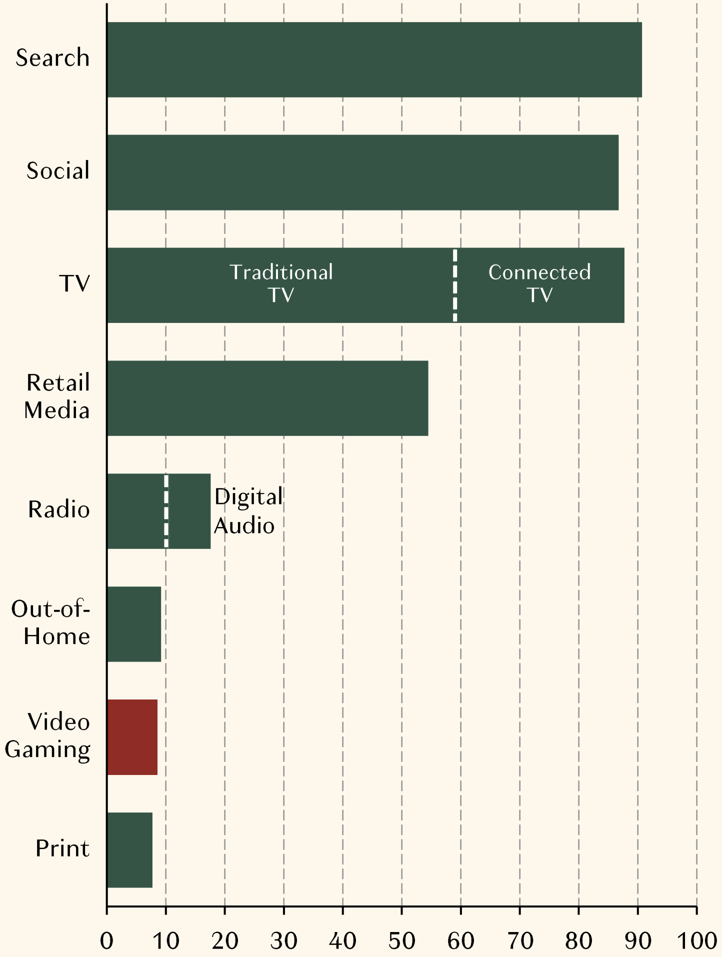
Sources: Antenna, Nielsen, Epyllion analysis

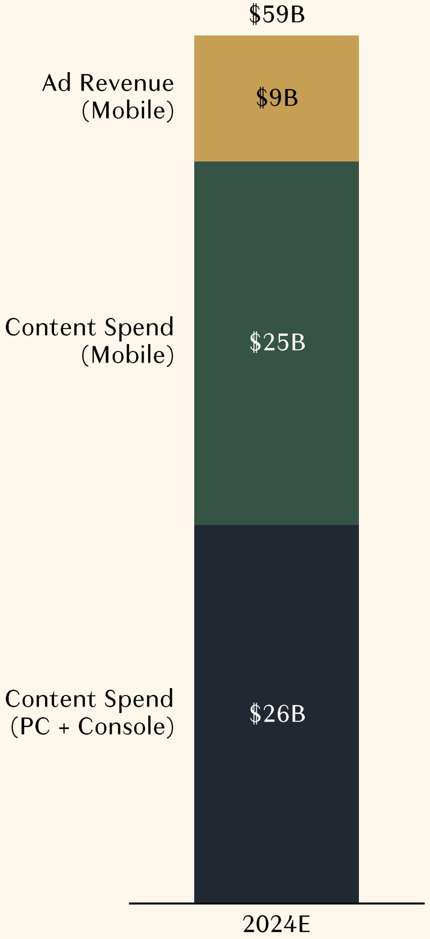
In the U.S., video games get less ad spend than outdoor and radio (and barely beat print!), hold 12.6% of digital media time but only 2.8% of digital media ad spend

EPYLLION
By Matthew Ball

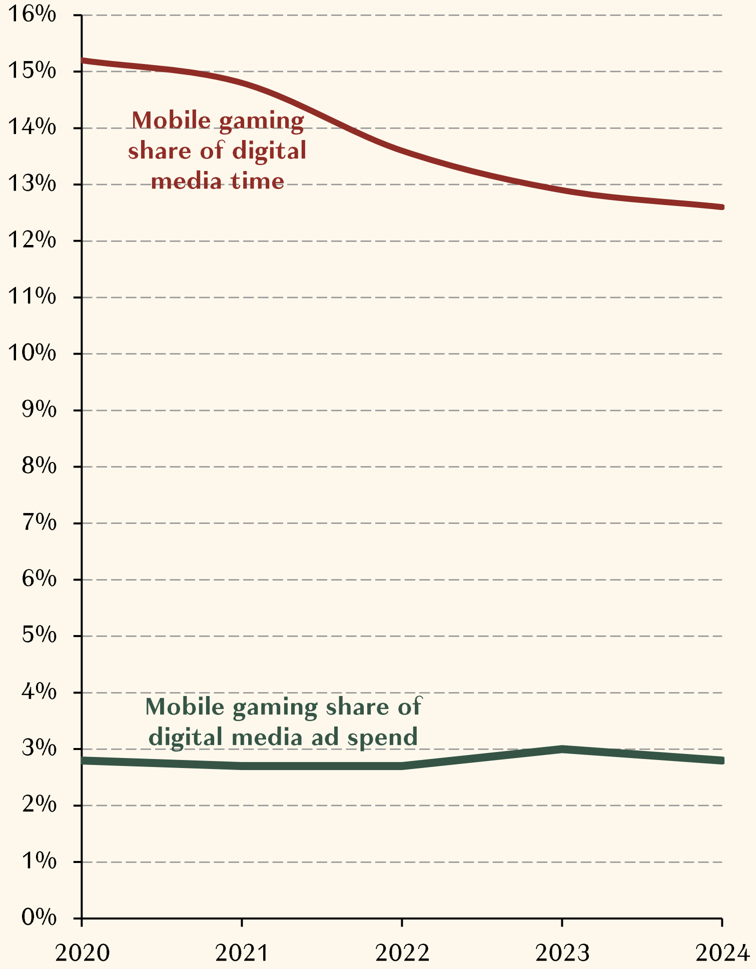
U.S. Ad Spend by Format
(2024, Select Categories Only)



U.S. Content-Related Video Game Revenue
(Excludes hardware and accessories)



Mobile Gaming's Share of Time & Ads
(Roku Channel + Tubi + Pluto TV)



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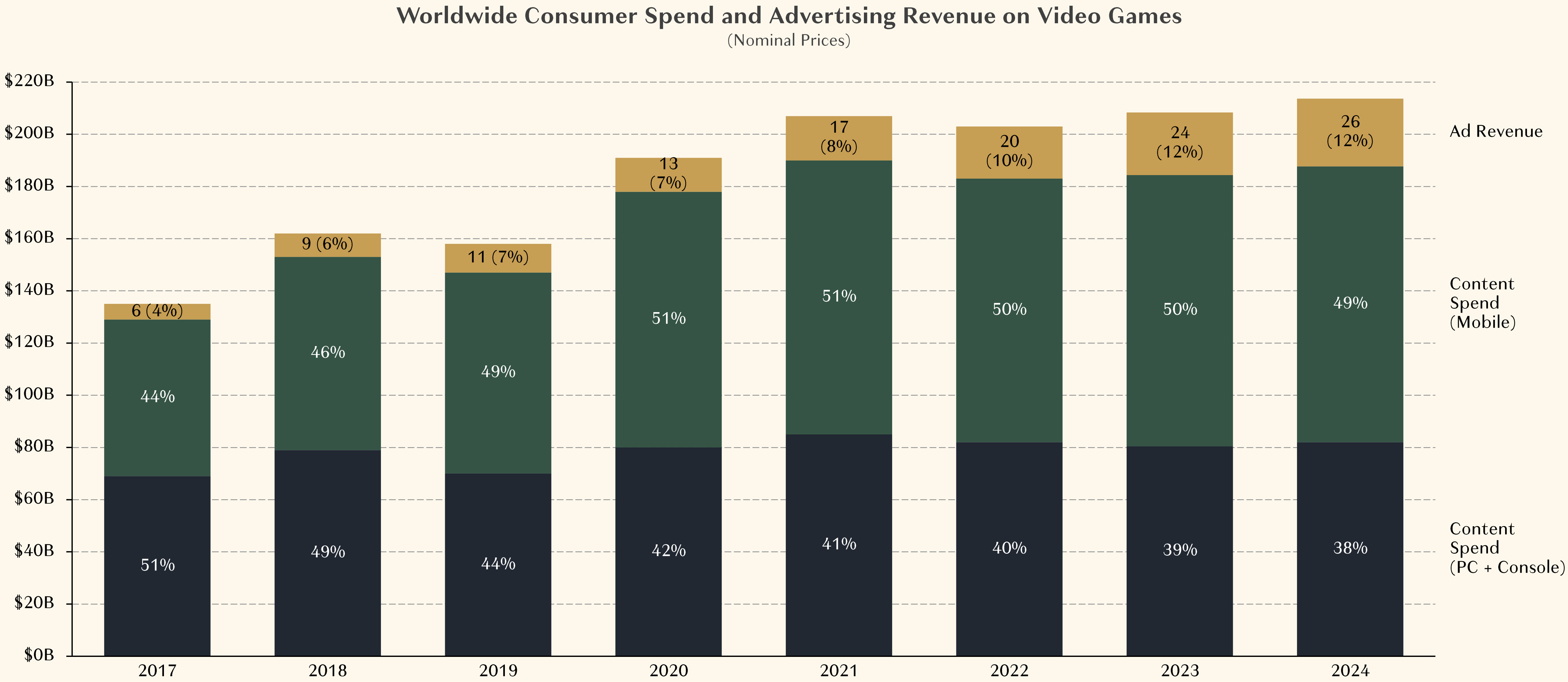
Sources: Emarketer, Circana, Epyllion analysis

And as consumer spend fell $2.3B v. 2021, related ad revenue grew $9B, from 8% to 12% of total revenues (but nearly all is *on* mobile games to *promote* mobile games)

EPYLLION
By Matthew Ball



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Sources: Pelham Smithers / Bloomberg, Newzoo, data.ai / Sensor Tower, IDG, BCG, Ampere, Epyllion analysis

Video games face many problems to scaling advertising — enough for its potential revenues to have been overlooked during the last 15 years of hyper growth

Ad Unit Problem

The size, dimension, resolution, placement, etc., of actual and potential inventory is highly variable, as are publisher needs/wants

Standard View Problem

Ads are seen at irregular cadences, from variable positions and contexts, leading to inconsistent quality of exposures, recall, etc.

Call-To-Action + Measurement Problem

Live and interactive, let alone multiplayer content, is not conducive to viewers clicking through to a website or completing a transaction/action

Limited History of Ads Problem

Most mediums have always had ads. Gaming has not. Audience expectations and tolerance are thus fundamentally unique, as is buyer readiness

Programmatic Network Requirement

To generate substantial revenues, the industry must offer programmatic solutions, rather than just custom implementations

High Minimum Viable Scale

To attract substantial advertiser interest, the industry needs to offer a substantial scale of audience, impressions, and formats

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Sources: Epyllion analysis

But as real game prices and engagement fall, while costs and failure rates surge, advertising has become a key area of focus for the biggest platforms/publishers

- Ad Unit Problem
- Standard View Problem
- Call-To-Action + Measurement Problem
- Limited History of Ads Problem
- Programmatic Network Requirement
- High Minimum Viable Scale

FTC filings show **MICROSOFT** expects its gaming ad revenue to grow from $100MM in 2022 to $1.4B by 2030, powered in part by its $1 Xandr acquisition and Game Pass service, PC-based Game Store/Launcher and Game Bar overlay

With a centralized stack supporting 400MM MAUs, 7B hours, and 15MM disparate experiences, and also negative profit margins, **ROBLOX** has the scale, control, and incentives to build an ad network

EA CEO (2024): "Advertising has an opportunity to be a meaningful driver of growth for us… [we] have teams internally in the company right now looking at how do we do very thoughtful implementations inside of our [games]"

v.1/18/2025

Sources: Ad Exchanger, Business Insider

Reviewing Potential New “Growth Engines”[1]

- "Non-Core" Markets
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- Social Game Services
- Switch 2
- Other New Handhelds & Devices
- AA/AAA Mobile Gaming
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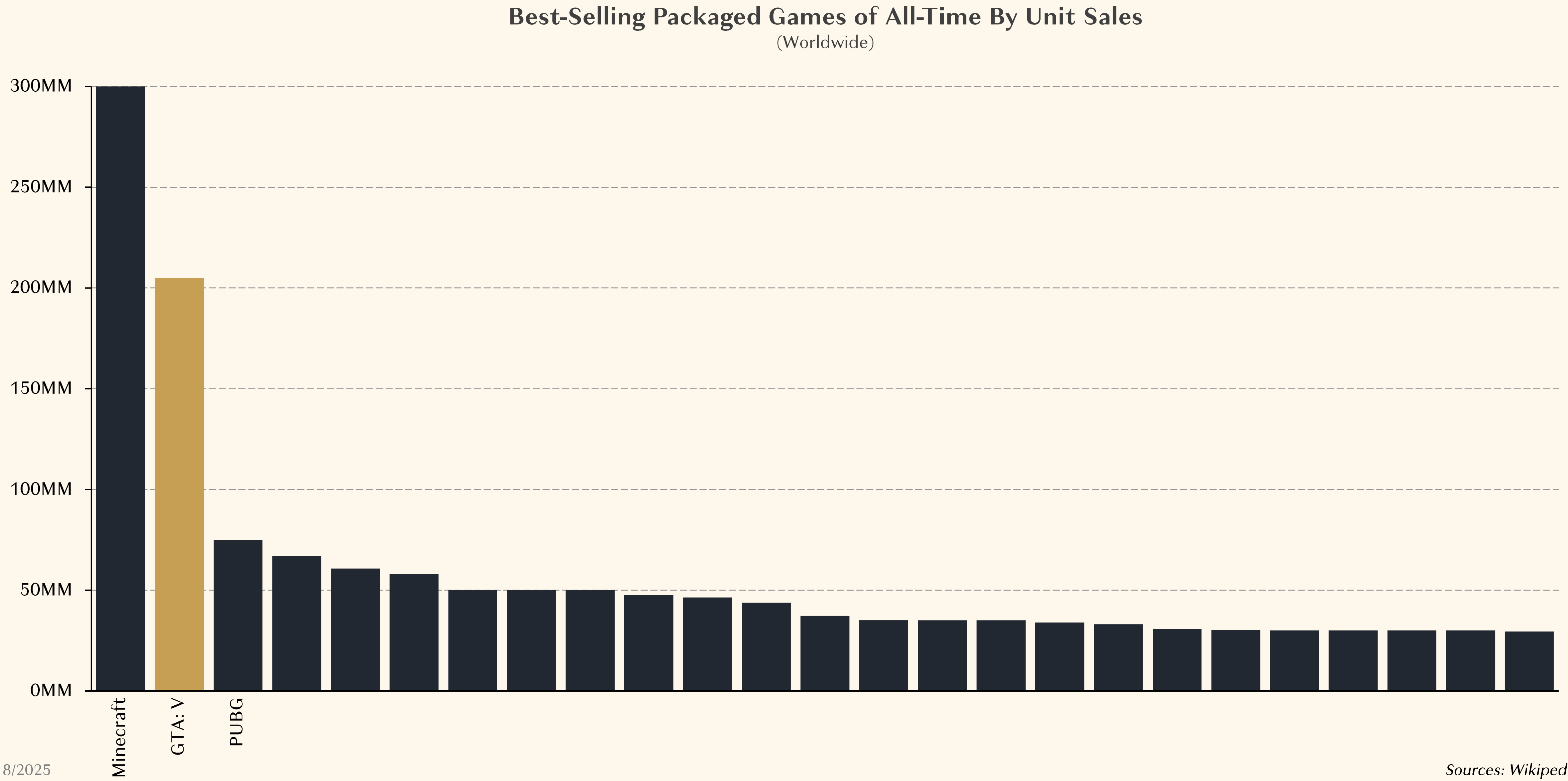
- New Game Genres
- AI
- Advertising
- GTA VI Pricing

v.1/18/2025

Notes: [1] *Ordered logically, rather than in order of monetary value, significance, timing, etc.;* [2] *This isn’t to say I believe in each one, let alone to the degree sometimes argued, but I do think each is worth arguing*

In 2025, GTA VI's impact on industry playtime and spend will be mixed as it launches console-only and (severely) cannibalizes hours/spend on other titles

EPYLLION
By Matthew Ball



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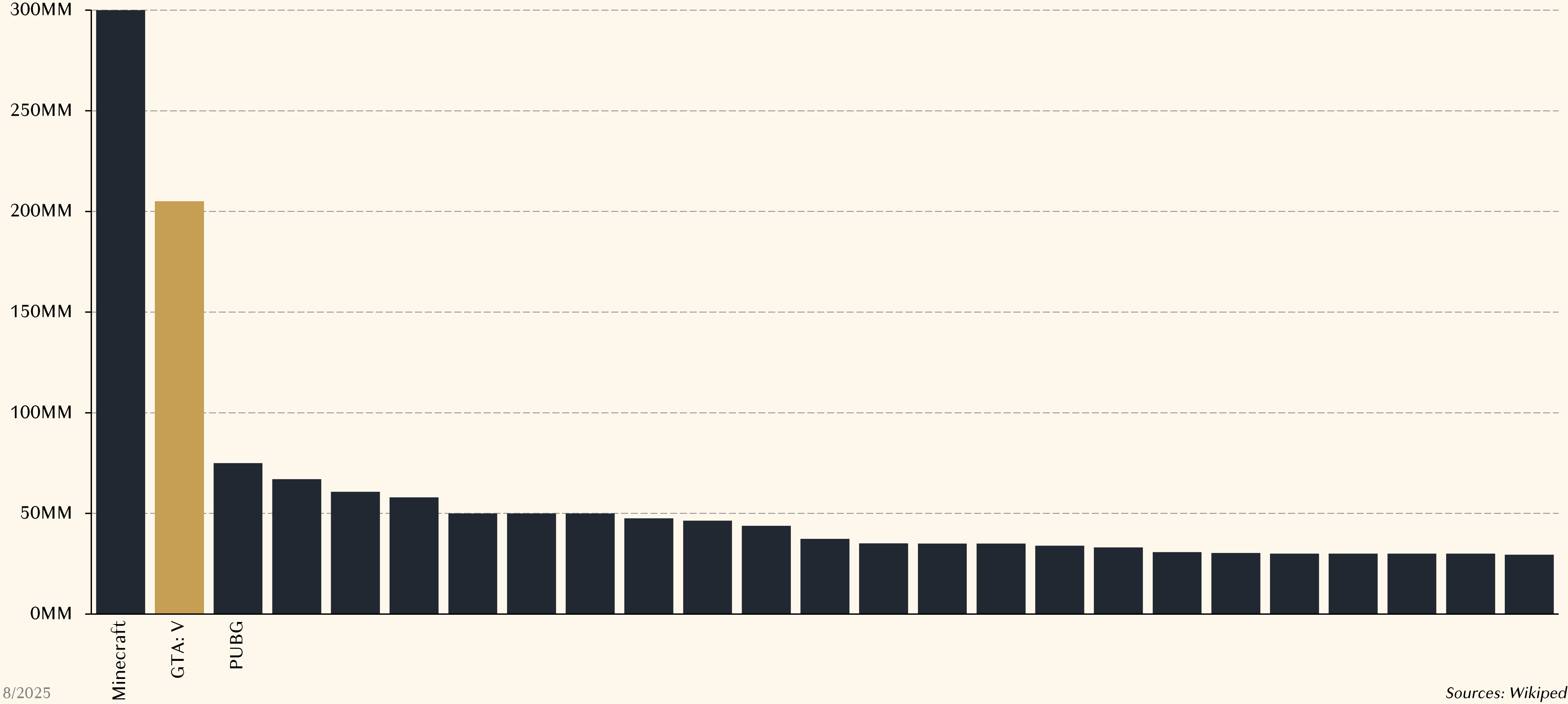
Sources: Wikipedia, VGChartz

...But some gamemakers hope that Take-Two will price GTA VI at $80–100, thereby breaking a key price barrier and enabling the rest of the market to move up, too

EPYLLION
BY MATTHEW BALL

Best-Selling Packaged Games of All-Time By Unit Sales
(Worldwide)



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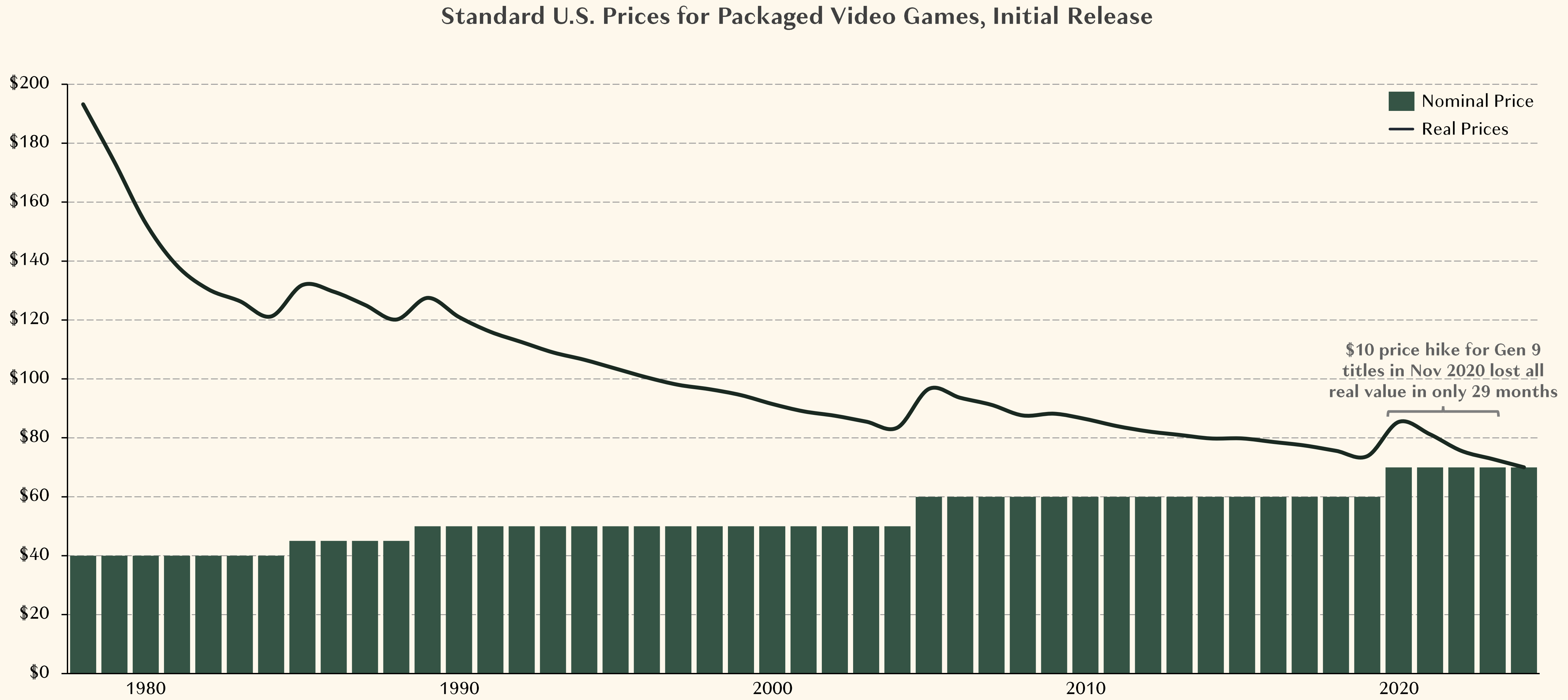
Sources: Wikipedia, VGChartz

No player hopes for such a hike, but recall that packaged prices have *never* been lower in real terms than they are today — even though budgets are at all-time highs

EPYLLION
By Matthew Ball



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Sources: Wikipedia, Bureau of Labor Statistics

Reviewing Potential New "Growth Engines"[1]

Maturation of local developers/content should accelerate local spending growth

"Non-Core" Markets

Still surging and onboarding millions to video gaming, while also diversifying into new experiences/formats

UGC Platforms & Tools

Continue to grow in scale, engagement, and functionality, while driving ever-greater game discovery

Social Game Services

Switch 2

Have the potential to massively expand the addressable playtime time for AA/AAA titles, especially those by 3rd-party developers

Other New Handhelds & Devices

Advances in local processors and cloud gaming may (finally) bring hundreds of millions of new players to "PC/Console" games

AA/AAA Mobile Gaming

App Store Regulation

Though overdue, app stores are beginning to open up – which might drive billions back to developers, and enable new game technologies, business models, and discovery platforms

New Game Genres

As gaming (and non-gaming) technology improves, the "next" battle royale may soon emerge

AI

May help solve decades of cost growth, while also improving operating economics, and creating new genres

Advertising

Can bring tens of billions in (much needed) new revenue without driving up consumer pricing, spending, or hours

GTA VI Pricing

Could re-establish packaged video game prices after decades of deflation (despite rampant cost growth)

v.1/18/2025

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EPYLLION
BY MATTHEW BALL

The State of Video Gaming in 2025

(Version: January 18, 2025)

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