



LIQUID&GRIT

PUZZLE REPORT

Competitive Research and Actionable Product Recommendations

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MAY

2020

REVENUE DRIVER



PUZZLE > EVENTS > COLLECTION

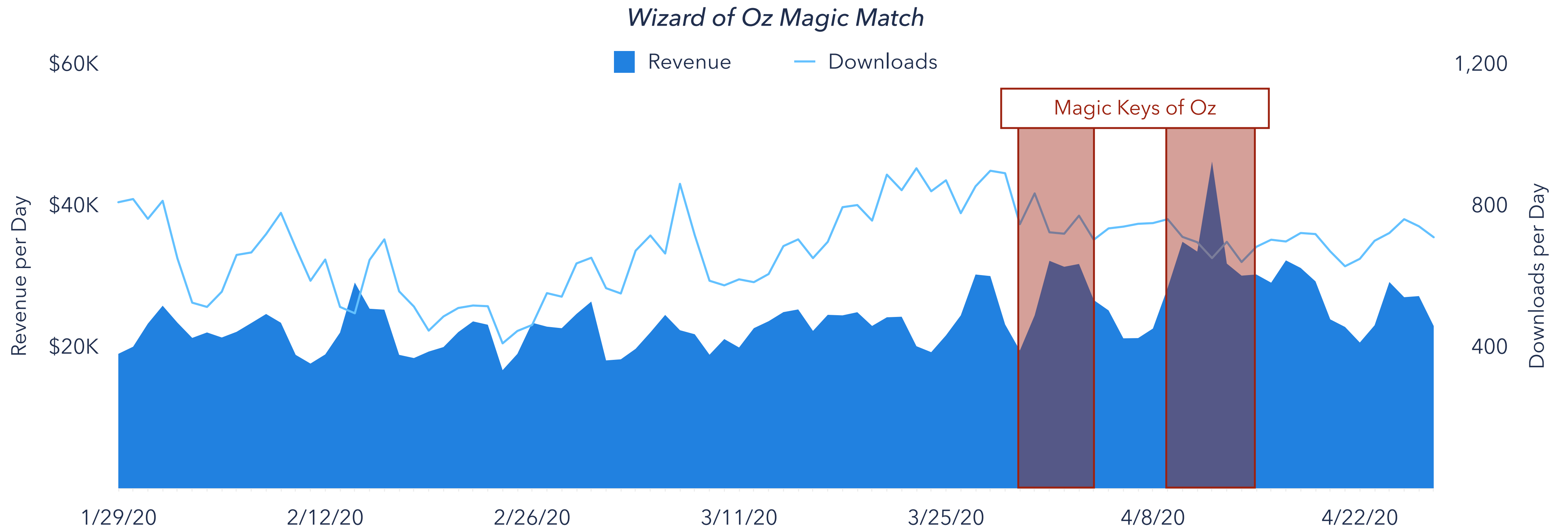
FIRST-TRY WIN COLLECTION EVENT

Magic Keys of Oz in *Wizard of Oz Magic Match*

REVENUE ANALYSIS

During the initial release of Magic Keys of Oz, revenue was +13% and downloads were -13% WoW. The second release saw revenue +31% and downloads -6% WoW. An Easter sale likely contributed to revenue during this second release.

Releases
4/6-4/11: There's No Place Like Home! bonus feature
4/6-4/15: Emerald City Bazaar collection event
4/9-4/15: Magic Keys of Oz collection event
• 3/30-4/4: Initial release
4/10-4/11: 2x Emerald City Points accelerator event
4/10-4/12: Which Witch? competition event
4/12: Easter Sale! purchase event
4/12: Happy Easter! accelerator event
No IAP changes during date range.



Graph data is iOS U.S. only. WoW = Week over week.

FEATURE TEARDOWN

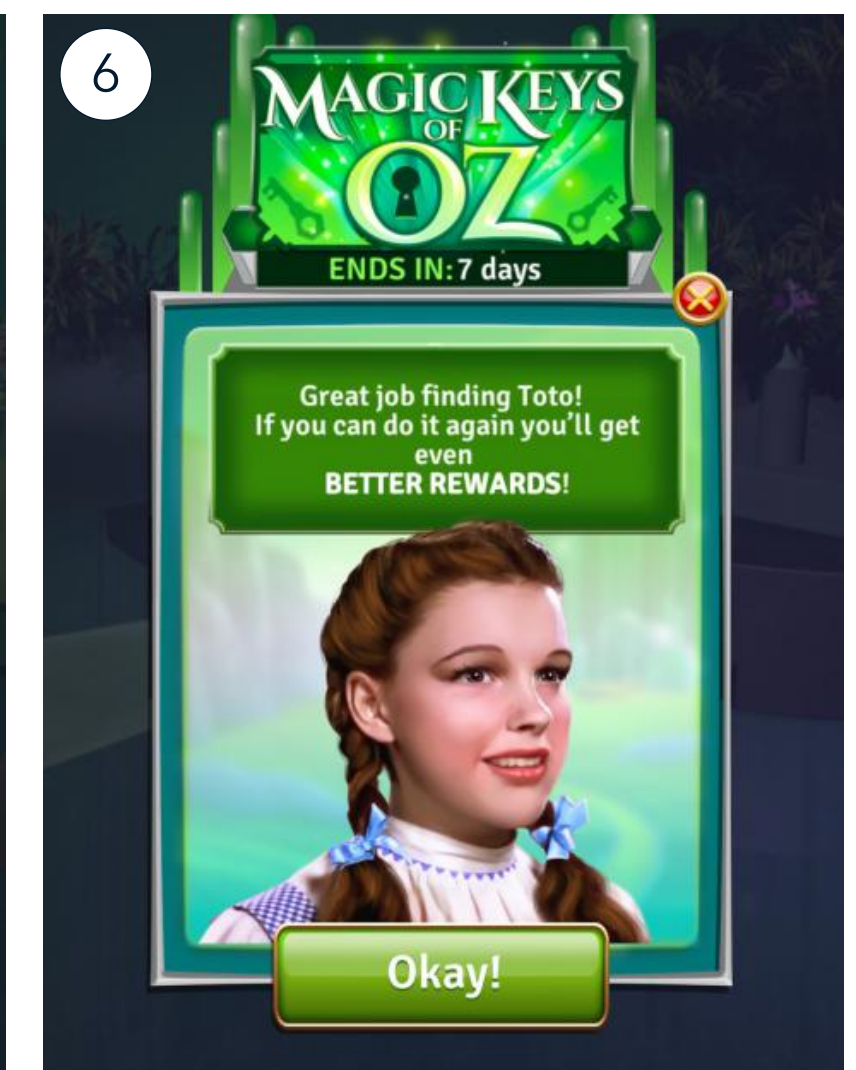
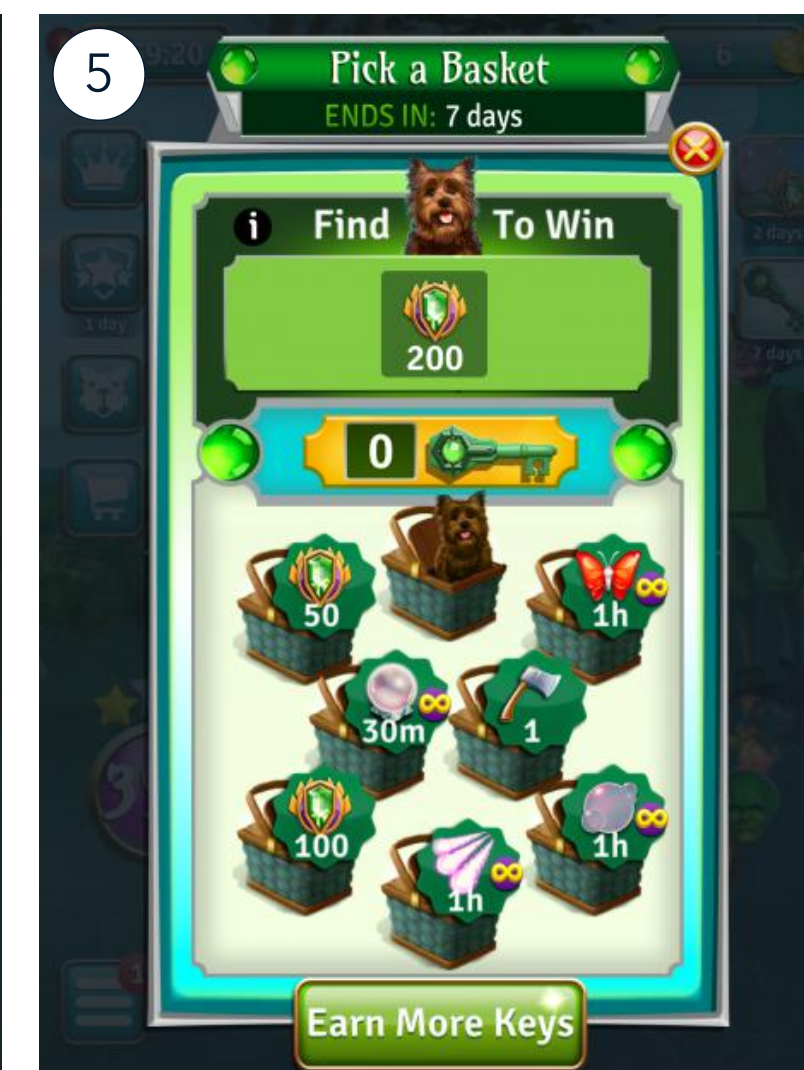
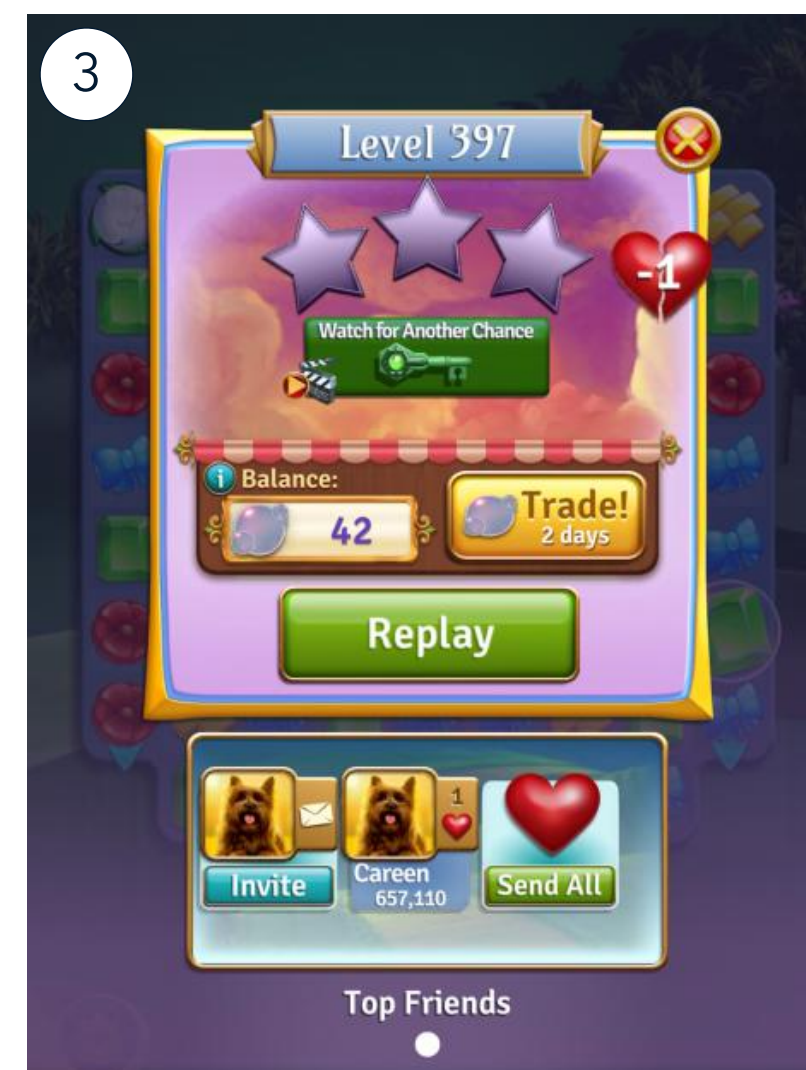
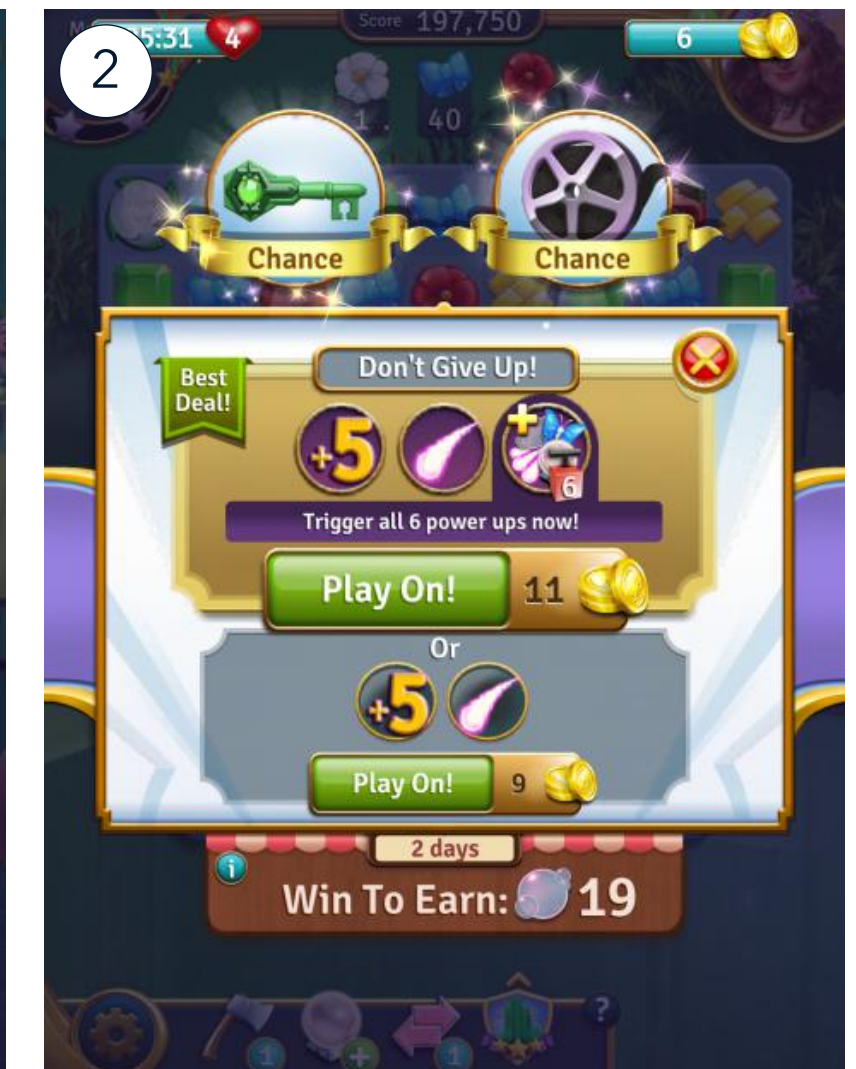
Players earn keys by beating levels on the first try. Keys are used to unlock baskets in a pick'em mini-game with escalating rounds.

Details

- Beating levels on the first try awards keys (1).
- Running out of moves triggers a purchase offer for additional moves and boosts (2).
- Players who don't win on the first try can watch an ad for a second chance to earn a key (3).
- Keys allow players to pick baskets containing gems, boosts, and Toto the dog (4, 5, and [video](#)).
- Finding Toto awards gems and advances players to the next round for better rewards (6).

Additional Information

- See the [Magic Keys of Oz](#) Library for more images and videos.



PRODUCT INSIGHTS

When designing attempt-based challenges, reward multiple levels of performance to increase players' sense of mastery. Then, use rewarded ads to offer players a second chance and drive revenue.

Details

- **Reward multiple levels of performance to increase players' sense of mastery and intrinsic motivation.** First-try and attempt-based challenges like [Magic Keys of Oz](#) appeal most to Trainer Tracy and Challenger Chris player types: thorough, hard-working players who are driven to better themselves and achieve perfection.¹ These types of performance-based rewards are most motivating when players perceive their skills to be progressing.²

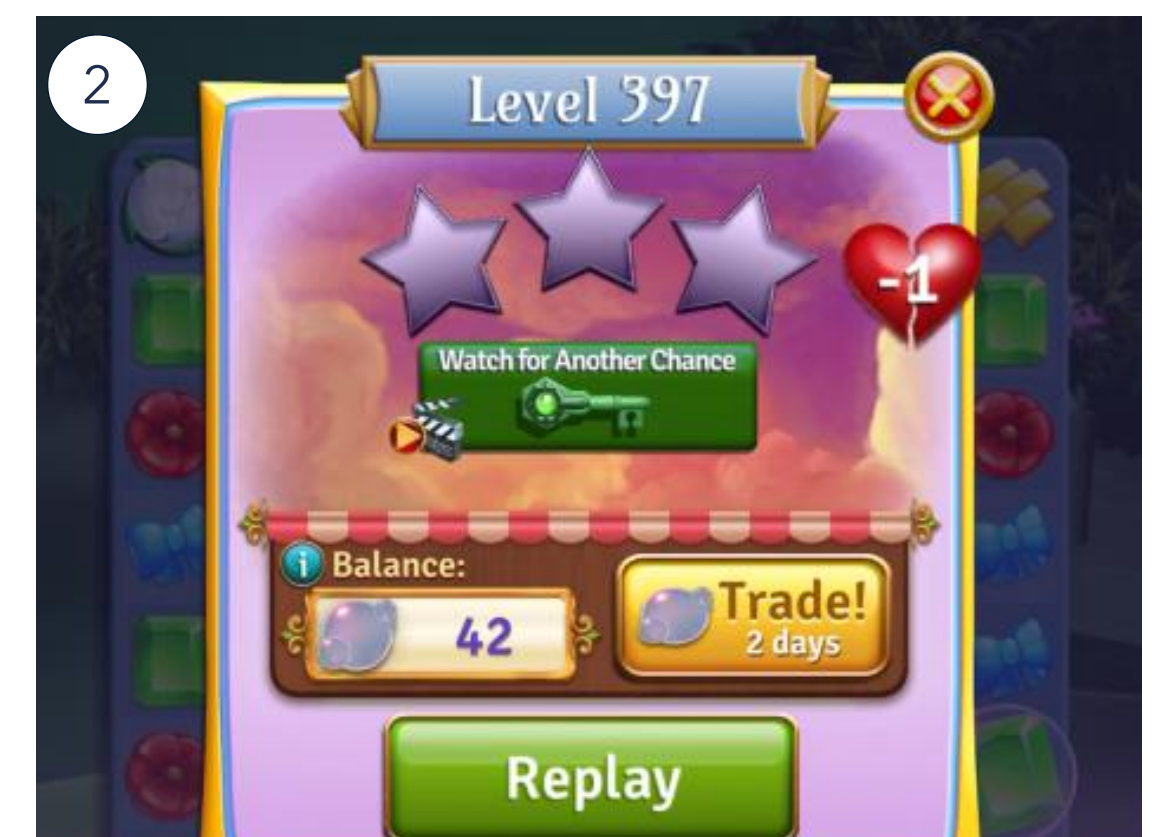
Provide positive feedback for players' skill progression by adding more reward levels, like rewards for winning on the second or third attempt or building streaks of first-try wins. *Homescapes'* [Medal Race](#) has used this approach to drive revenue for nearly two years. Its two most recent releases increased revenue by an average of 17% 4Do4D (1).

- **Design challenges with opt-in difficulty to enhance autonomy.** Due to their demanding nature, performance-based rewards can easily be perceived as overly controlling. As a result, autonomy is especially important for these types of challenges.³

By letting players choose how difficult to make any given level (i.e., by going for a first-try win, a lesser prize, or a simple completion), designers can ensure that players never feel *forced* to perform. For more insights on opt-in difficulty, check out our analysis of *Panda Pop!'s* [Panda Rescue events](#) from the [February 2020 Puzzle Report](#).

- **Use premium currency or rewarded ads to give players another try.** If players run out of moves, *Magic Keys of Oz* allows them to buy more moves with premium currency. If they still fail to win, they can watch an ad to earn a second "first try" (2).

One survey found that 71% of users preferred rewarded ads to in-app purchases.⁴ Rewarded ads are most effective when offering players something they want *when* they want it.⁵ Giving players a second chance when they fail is a welcome incursion that makes players more likely to engage with ads.



¹ [Liquid & Grit Puzzle Personas Report](#), p. 7-8

² [The Gamer's Brain, Part 3: The UX of Engagement and Immersion \(or Retention\)](#), 24:55

³ Ibid.

⁴ [Trend: Users Prefer Rewarded Video Ads Over App Purchases](#)

⁵ [Mobile ads: the key to monetizing gaming apps](#), Best practices for implementing rewarded ads

ATTEMPT-BASED FEATURES AND EVENTS

Homescapes' Medal Race is the longest-running attempt-based event we surveyed and has had the largest revenue impact: +22% for the duration of its initial release in June 2018 and +33% and +1% during its two most recent releases in April 2020. Medal Race is also the only attempt-based event to incorporate a leaderboard.

App	<i>Candy Crush Saga</i>	<i>Cookie Jam</i>	<i>Cookie Jam</i>	<i>Homescapes</i>	<i>Lily's Garden</i>
Feature/Event	Gold Trophy and Mastery Trophy	Treasure Jam	Blooming Prize Shop	Medal Race	Beginner's Luck
Type	Challenge	Challenge	Collection	Competition	Leveling
Duration	Permanent	3-4 days	~30 days	4 days	~2 days
Rewards	Master titles, points, lives, and extra moves	Unlimited lives	Boosts, chests, and pet costumes	Unlimited lives, pre-level boosts, and in-level boosts	Coins, boosts, and unlimited lives
Earned by	First-try wins or repeating levels to earn stars	First- or second-try wins	First-try wins	Sliding scale of rewards for 1st-4th+ try wins	First-try wins
Revenue Impact: Initial and Past Two Releases	7/4/18: -6.9% MoM -1.6% 2Mo2M	2/26/18-2/28/18: +6.8% 3Do3D 4/11/19-4/14/19: +4.7% 4Do4D 4/18/19-4/21/19: +3.1% 4Do4D	4/16/19: +0.7% MoM +2.1 % 2Mo2M	6/14/18-6/17/18: +22.0% 4Do4D 4/9/20-4/12/20: +32.9% 4Do4D 4/23/20-4/26/20: +1.3% 4Do4D	1/18/20-1/19/20: -3.4% 2Do2D 4/18/20-4/19/20: +2.1% 2Do2D 4/25/20-4/26/20: -8.1% 2Do2D

LEVEL DESIGN



NEW LEVEL DESIGNS I

Chocolate Rascal – Best Fiends

- This alternate version of Rascal is unlocked by completing the Epic Easter Egg Hunt event.
- Chocolate Rascal adds a permanent +50 attack boost.
- Rascal and Chocolate Rascal can be purchased together for 275 gold bars (1).

Hatter Bam – Best Fiends

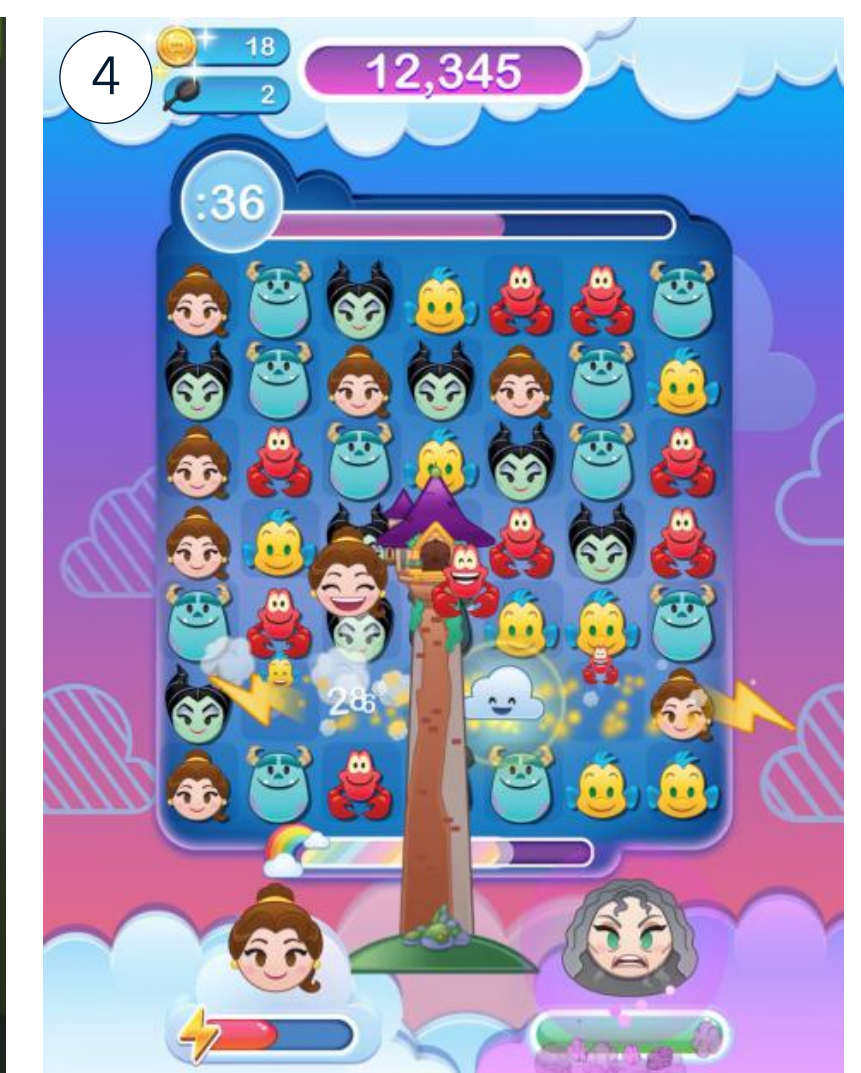
- This alternate version of Bam adds a permanent +100 attack boost (2).
- Hatter Bam can be purchased for gold bars.

Trucker Dougie – Best Fiends

- This alternate version of Dougie is unlocked by completing the Road Warrior event.
- Trucker Dougie adds a permanent +50 attack boost.
- Dougie and Trucker Dougie can be purchased together for 275 gold bars (3).

Mother Gothel's Tower – Disney Emoji Blitz

- Towers block columns of emojis (4).
- Players clear towers by hitting them with boosts.
- Cleared towers leave behind sunshine boosts (video).



NEW LEVEL DESIGNS II

Trays with Lemonade – Gardenscapes

- Trays contain 1-4 empty glasses.
- Adjacent matches and boosts fill glasses with lemonade in three steps.
- Filling a lemonade moves it from the tray to the game board (1 and [video](#)).
- Moving all glasses from the tray to the board clears the tray.
- Players must make matches to move lemonades to the bottom of the level.

Refrigerators – Homescapes

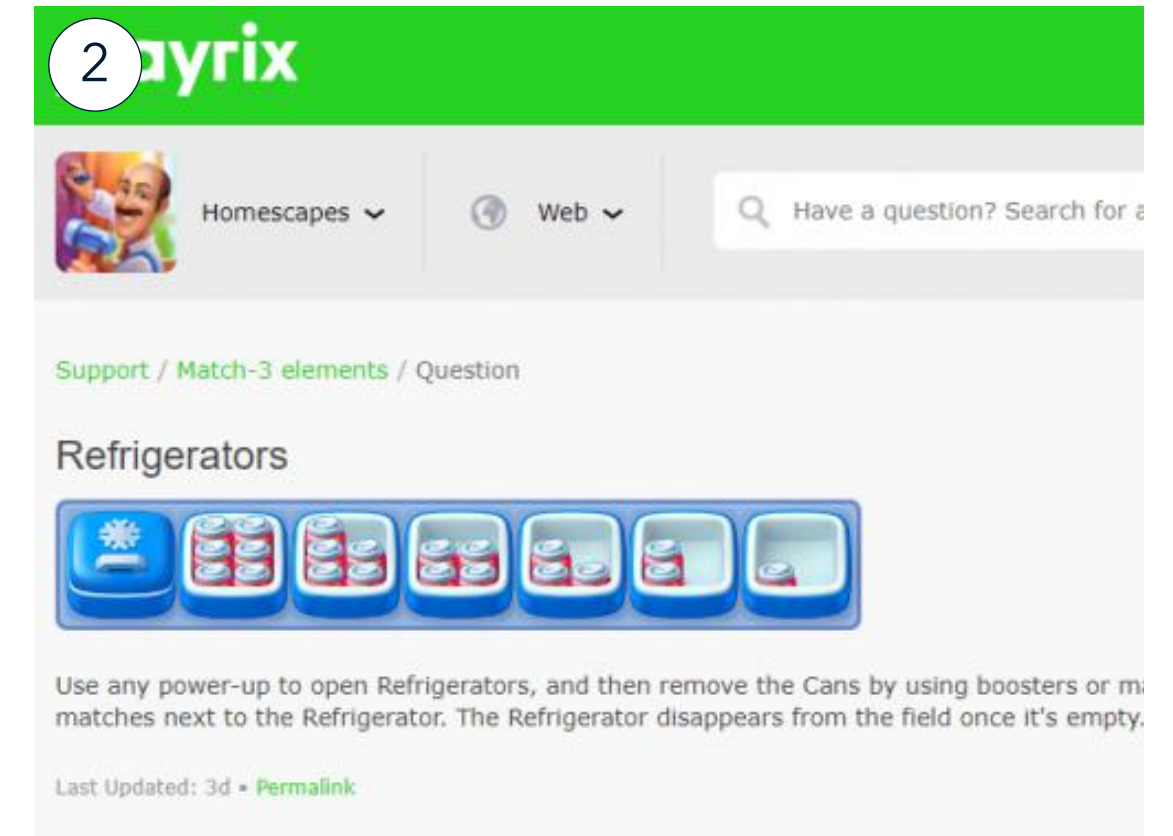
- Refrigerators are opened by triggering boosts.
- Refrigerators contain up to six cans.
- Adjacent matches and boosts clear cans (2).
- Removing all cans clears the refrigerator.

+5 Moves Ticket – Matchington Mansion

- Players can spend tickets to gain five additional moves after failing a level (3 and [video](#)).
- More tickets can be earned from the Team Chest event.

Easter Eggs – Wizard of Oz Magic Match

- Easter eggs explode when matched with any piece (4 and [video](#)).
- Matching an egg with a boost amplifies that boost's effect.

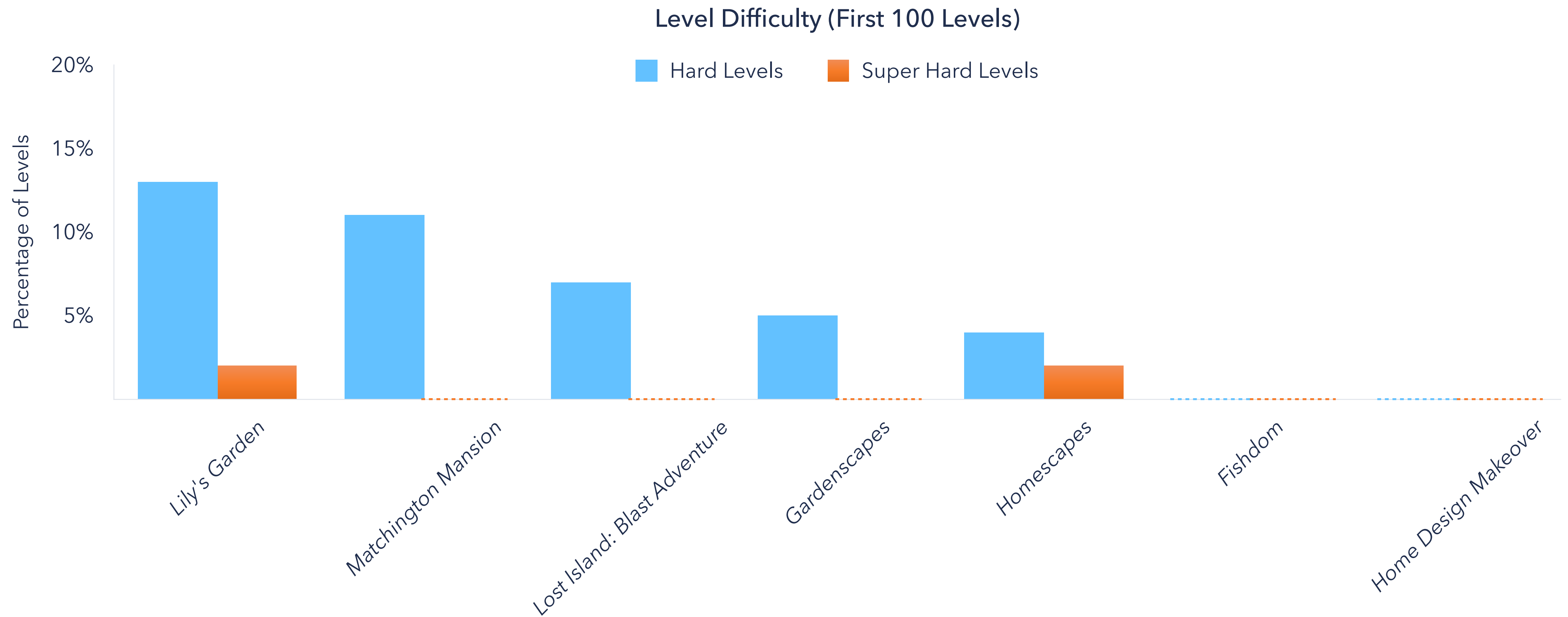


LEVELS ECONOMY



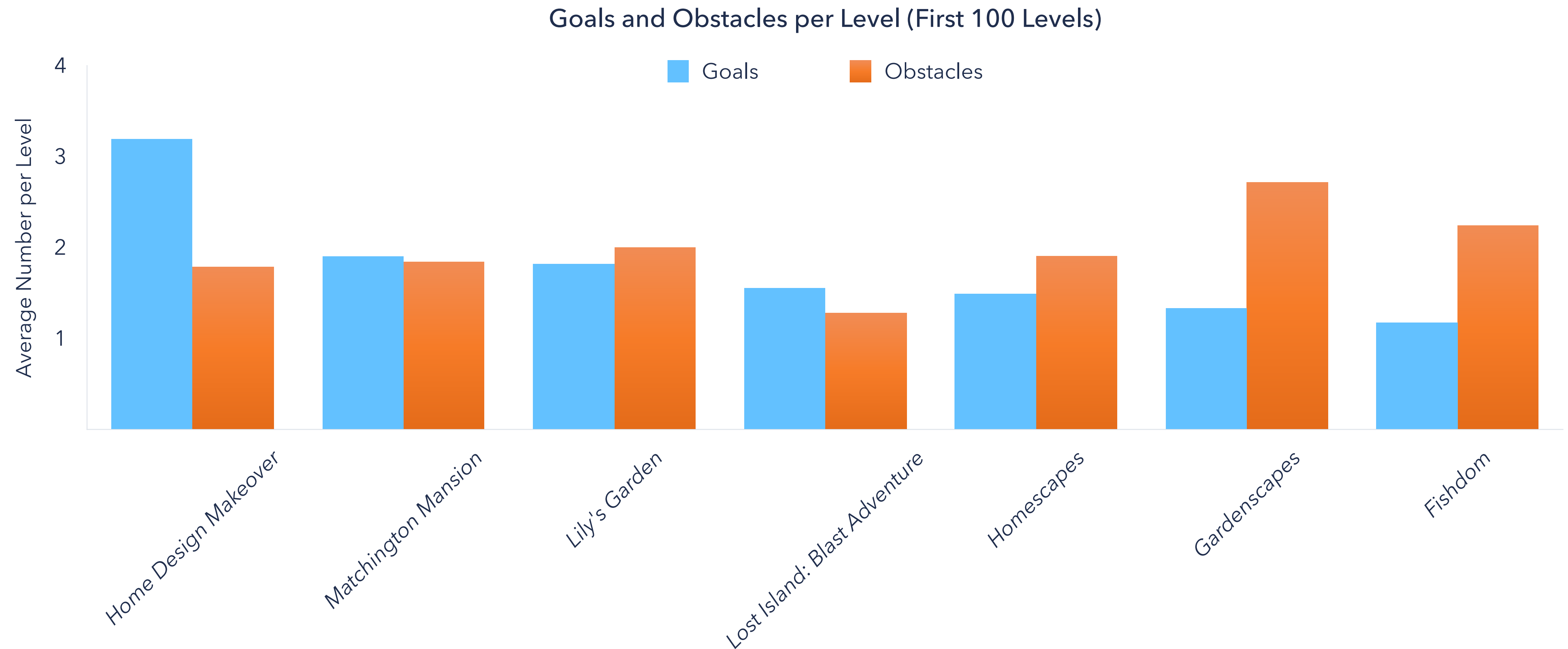
LEVEL DIFFICULTY

Among tracked apps, *Lily's Garden* and *Matchington Mansion* have the greatest number of levels labeled "hard" or "super hard" in their first 100 levels. *Fishdom* and *Home Design Makeover* do not classify any levels as hard.



GOALS AND OBSTACLES

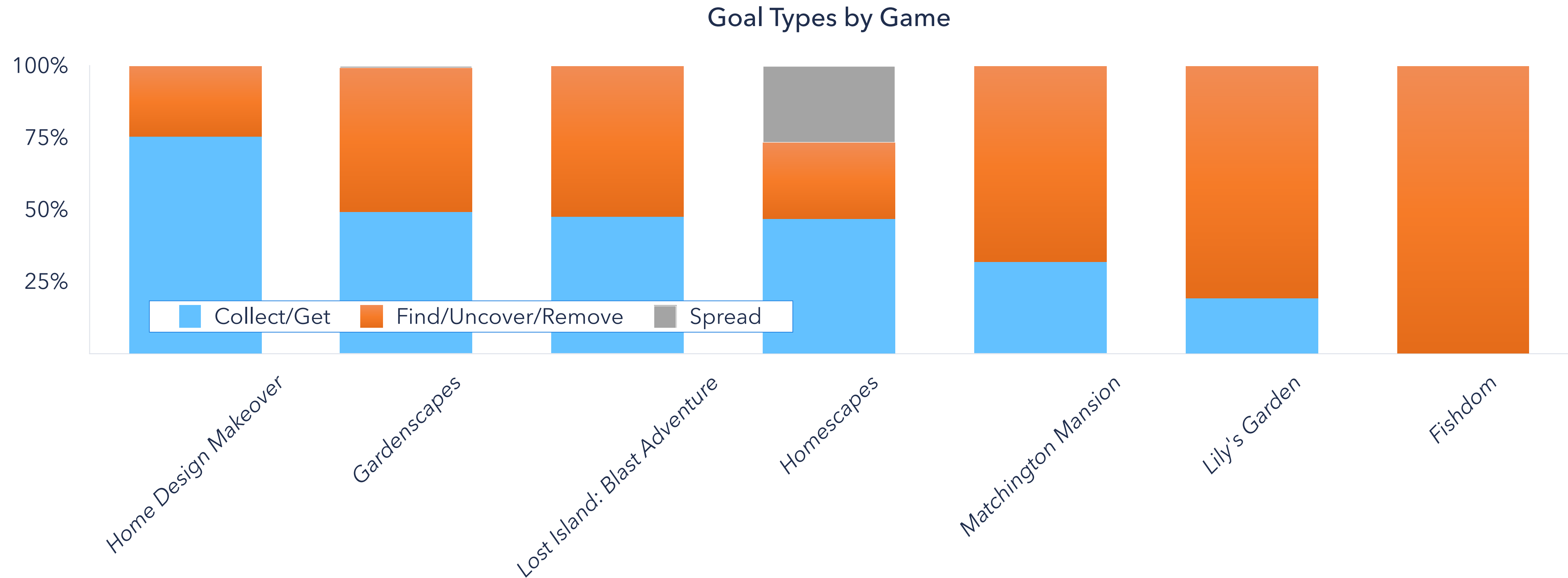
Gardenscapes and *Fishdom* average the most obstacles per level, while *Home Design Makeover* averages the most goals. Other apps maintain relatively equal numbers of goals and obstacles per level.



GOALS AND OBSTACLES (CONT'D.)

Homescapes offers the most varied goal types and is the only app to make significant use of “spread” goals. *Fishdom*, *Lily’s Garden*, and *Matchington Mansion* strongly prefer “find/uncover/remove” goals, while only *Home Design Makeover* favors “collect/get” goals.

Visit the [Puzzle Levels Economy Wiki](#) to download the complete spreadsheet.

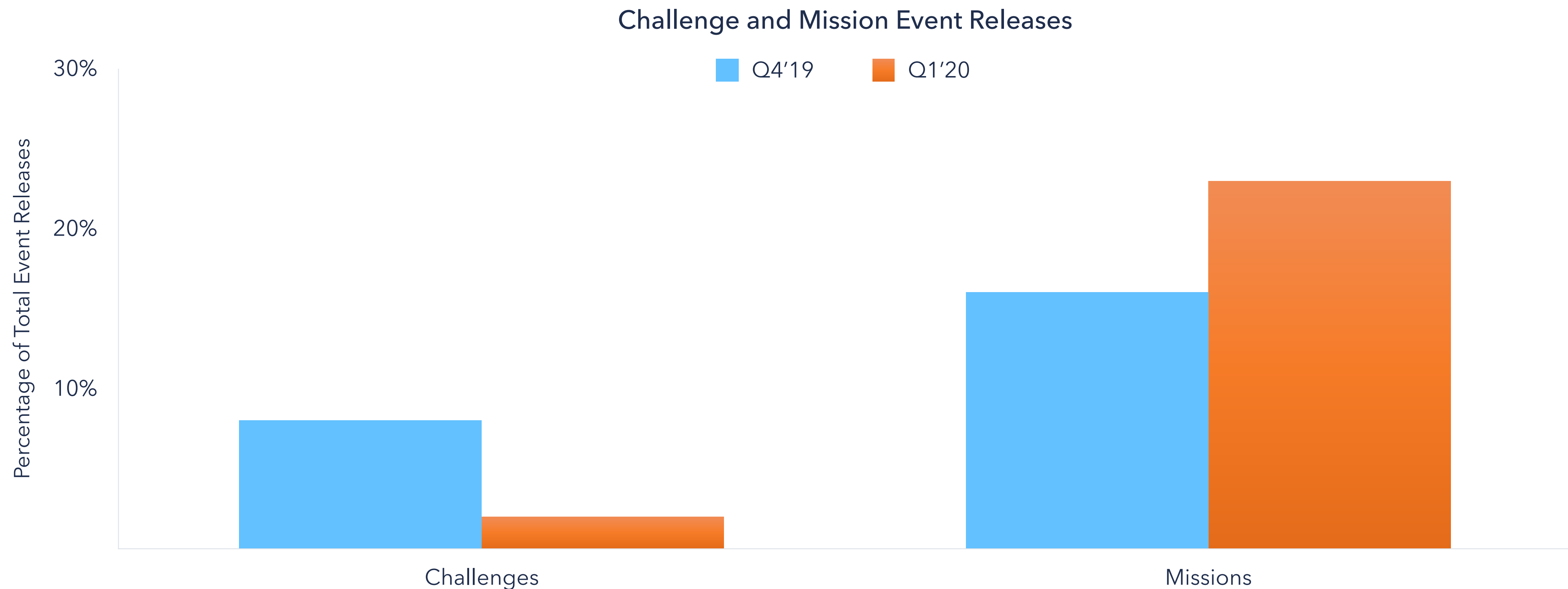


TRENDS



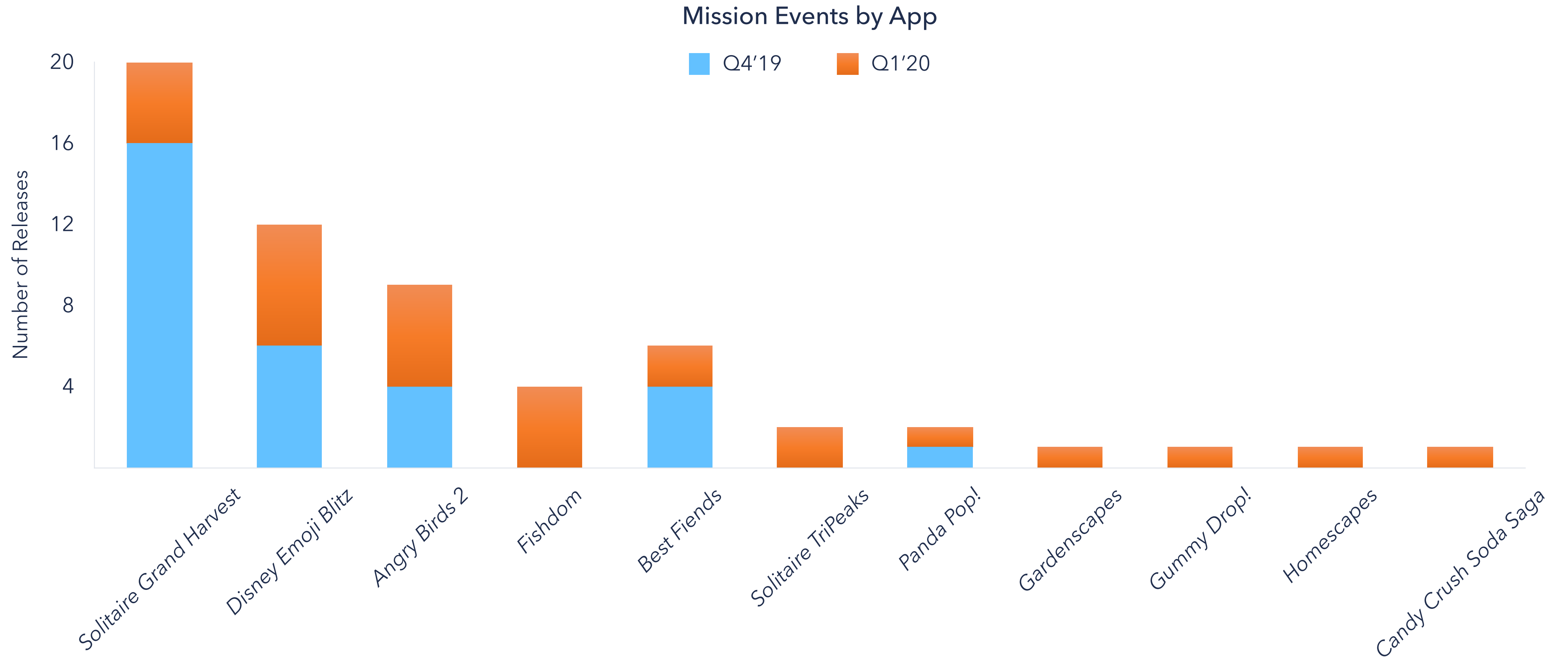
CHALLENGE AND MISSION EVENTS

Challenge events dropped from 8% of total releases in Q4'19 to just 2% in Q1'20. This drop has been met by a nearly equivalent increase in mission events, which grew from 16% to 23% of total releases during the same period.



MISSION EVENTS

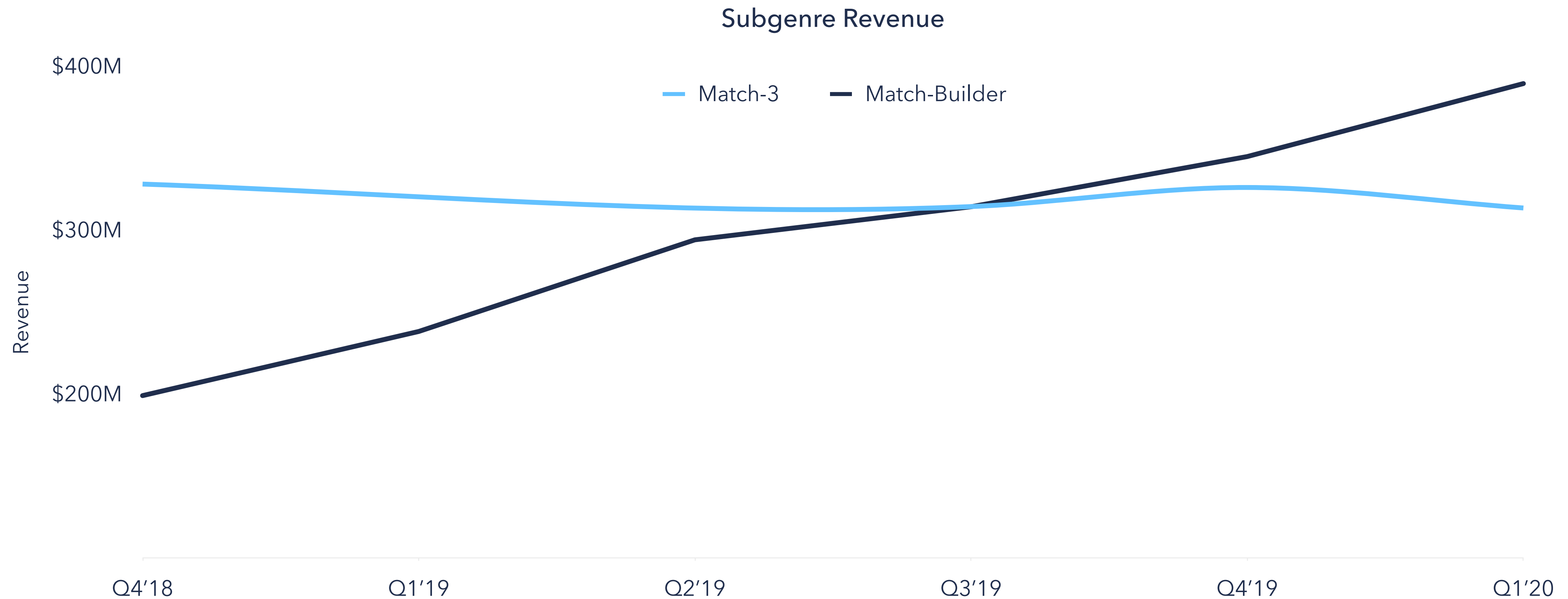
Solitaire Grand Harvest released 44% of all mission events from tracked apps in Q4'19 and Q1'20.



Tracked apps: *Angry Birds 2, Best Fiends, Bubble Witch 3 Saga, Candy Crush Jelly Saga, Candy Crush Saga, Candy Crush Soda Saga, Cookie Jam, Disney Emoji Blitz, Farm Heroes Saga, Fishdom, Gardenscapes, Gummy Drop!, Home Design Makeover, Homescapes, June's Journey, Lily's Garden, Lost Island: Blast Adventure, Matchington Mansion, Panda Pop!, Pet Rescue Saga, Solitaire Grand Harvest, Solitaire TriPeaks, Toon Blast, Toy Blast, and Wizard of Oz Magic Match*

REVENUE ANALYSIS

Quarterly revenue from tracked match-builder apps has almost doubled since Q4'18, averaging a +14.5% quarterly increase and quickly approaching \$400 million. During the same period, tracked match-3 apps averaged just under a 0% change QoQ.



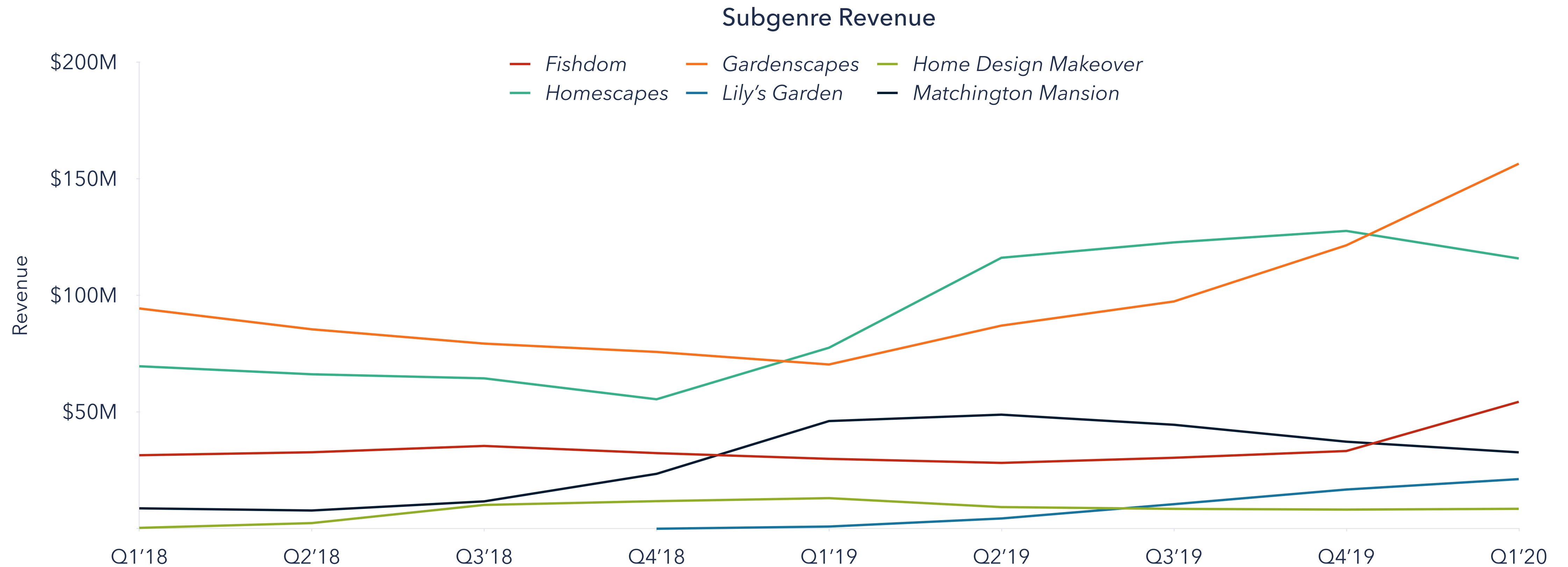
Tracked match-builder apps: *Fishdom*, *Gardenscapes*, *Home Design Makeover*, *Lily's Garden*, and *Matchington Mansion*

Tracked match-3 apps: *Best Fiends*, *Candy Crush Jelly Saga*, *Candy Crush Saga*, *Candy Crush Soda Saga*, *Cookie Jam*, *Disney Emoji Blitz*, *Farm Heroes Saga*, *Gummy Drop!*, and *The Wizard of Oz Magic Match*.

Graph data is iOS U.S. only.

MATCH-BUILDER SUBGENRE

Since Q3'19, *Fishdom*, *Gardenscapes*, and *Lily's Garden* have seen average quarterly revenue increases of +27%, +22%, and +75%, respectively. As of Q4'19, *Gardenscapes* and *Homescapes* make up over 70% of match-builder revenue from tracked apps.

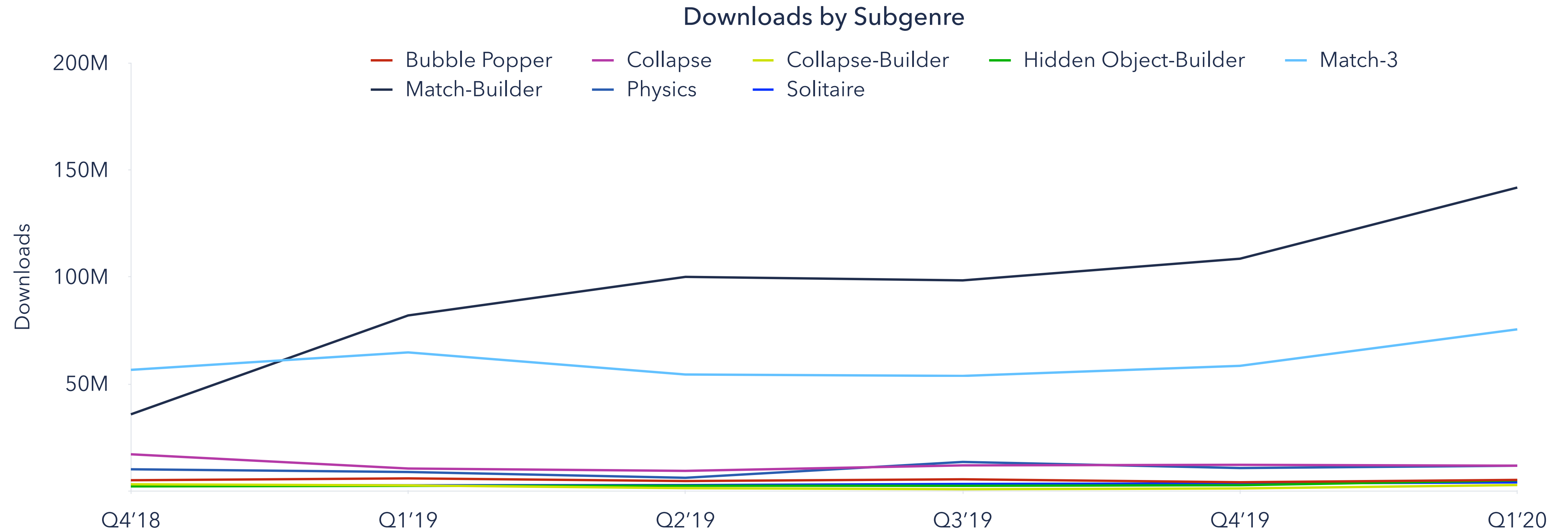


Tracked apps: *Angry Birds 2*, *Best Fiends*, *Bubble Witch 3 Saga*, *Candy Crush Jelly Saga*, *Candy Crush Saga*, *Candy Crush Soda Saga*, *Cookie Jam*, *Disney Emoji Blitz*, *Farm Heroes Saga*, *Fishdom*, *Gardenscapes*, *Gummy Drop!*, *Home Design Makeover*, *Homescapes*, *June's Journey*, *Lily's Garden*, *Lost Island: Blast Adventure*, *Matchington Mansion*, *Panda Pop!*, *Pet Rescue Saga*, *Solitaire Grand Harvest*, *Solitaire TriPeaks*, *Toon Blast*, *Toy Blast*, and *Wizard of Oz Magic Match*

Graph data is iOS U.S. only.

DOWNLOADS ANALYSIS

Quarterly downloads for tracked apps grew in all puzzle subgenres except collapse during Q1'20. Collapse-builder, hidden object-builder, match-3, bubble popper, and physics all grew significantly more in Q1'20 than in Q1'19. Match-builder continues to lead in total downloads, averaging over 106 million per quarter since Q1'19.



Tracked apps: Angry Birds 2, Best Fiends, Bubble Witch 3 Saga, Candy Crush Jelly Saga, Candy Crush Saga, Candy Crush Soda Saga, Cookie Jam, Disney Emoji Blitz, Farm Heroes Saga, Fishdom, Gardenscapes, Gummy Drop!, Home Design Makeover, Homescapes, June's Journey, Lily's Garden, Lost Island: Blast Adventure, Matchington Mansion, Panda Pop!, Pet Rescue Saga, Solitaire Grand Harvest, Solitaire TriPeaks, Toon Blast, Toy Blast, and Wizard of Oz Magic Match

Graph data is iOS U.S. only.

MARKET WATCH



SOFT-LAUNCH & BREAKOUT APPS I

Pirate Evolution! by Gram Games

App Details

- Players combine resources to upgrade a base and pirate ship via merge-3 gameplay (1).
- Players sail to over 140 islands to collect crew members, resources, and weapons.
- Different types of crew members perform or enhance different tasks.
- Players battle enemy ships to win additional resources (2).

Launch Information

- Soft-launched 3/25 on Android in the Netherlands, South Africa, Austria, and Singapore.
- Average daily revenue for the last 90 days: \$77
- Average daily downloads for the last 90 days: 354
- View *Pirate Evolution!* in the [Google Play Store](#).



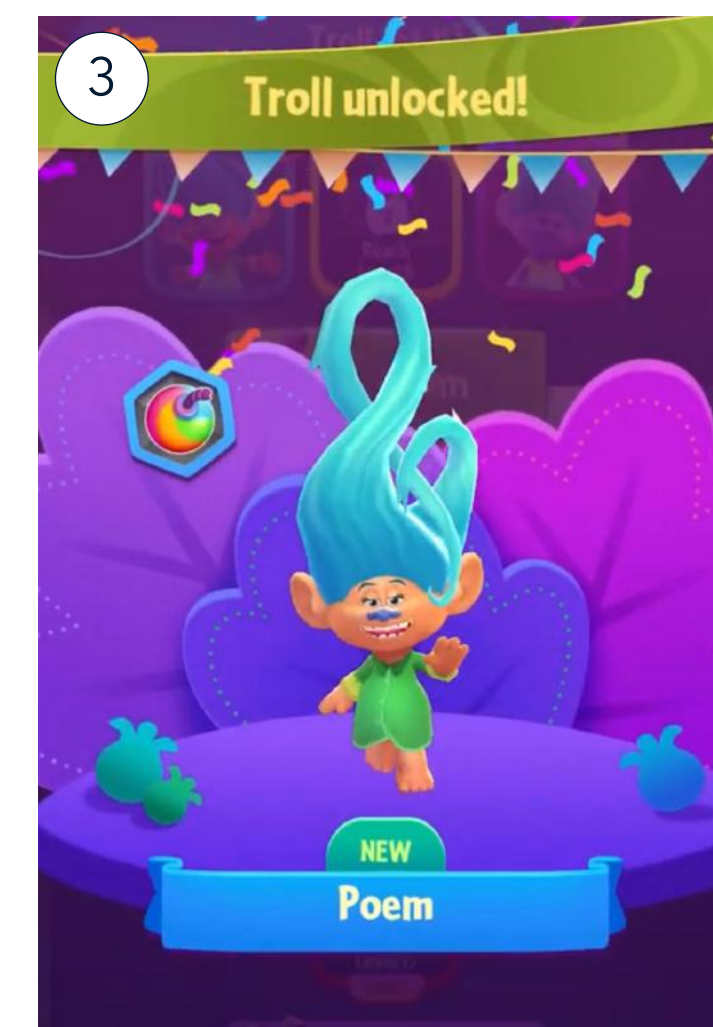
DreamWorks Trolls Pop by Huuuge Global

App Details

- In this bubble shooter, players complete levels to collect stickers and unlock trolls (3).
- Levels are grouped into “adventures” that award stickers for specific trolls.
- Each troll has a unique ability that is charged by popping bubbles of a certain color.
- Players can unlock customizable outfits for their trolls.

Launch Information

- Soft-launched 3/31 in the Philippines and 4/20 in Great Britain.
- Average daily revenue since launch: \$2
- Average daily downloads since launch: 375
- View *DreamWorks Trolls Pop* in the [App Store](#).



SOFT-LAUNCH & BREAKOUT APPS II

Matchland: Build A Theme Park by Huuuge Global

App Details

- In this match-builder, players complete levels to purchase custom design items for a theme park.
- Tasks are broken up into stages called “days.”
- Players can choose to watch rewarded ads for additional coins at the end of levels, once per stage, and once every 24 hours (1 and 2).

Launch Information

- Launched 3/19/20 worldwide.
- Average daily revenue since launch: \$50
- Average daily downloads since launch: 75
- View *Matchland: Build A Theme Park* in the [App Store](#).

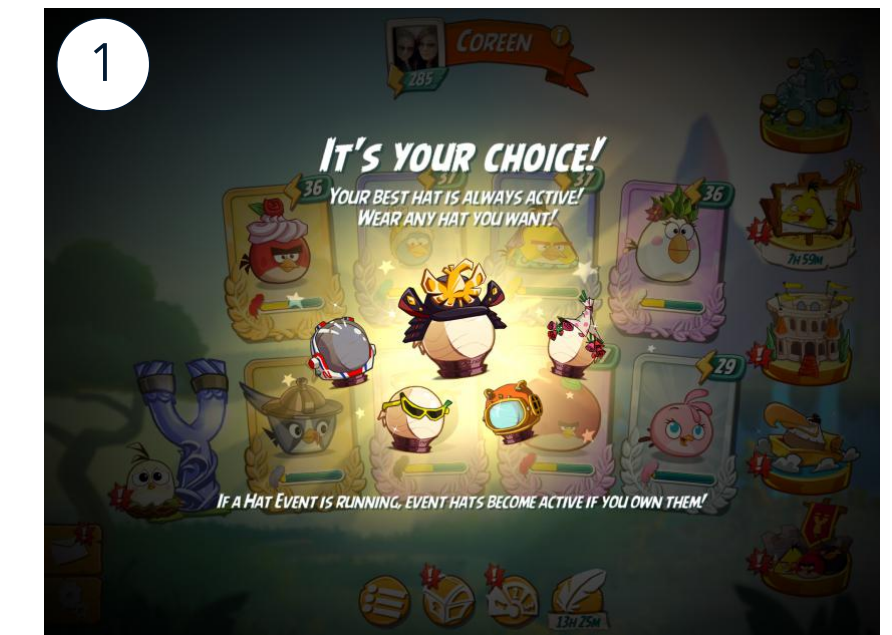
Rewarded ads don't detract from in-app purchase revenue—in fact, they can increase it! Chinese developer Avid.ly found that the addition of rewarded ads increased IAP revenue by 18%, session length by 20%, and average revenue per user by a whopping 40%.⁶



⁶ [Mobile ads: the key to monetizing gaming apps](#), Avid.ly: a success story

NOTABLE RELEASES I

App	Library	Description
Angry Birds 2	Wear What You Want Hat Update other feature	<ul style="list-style-type: none"> Beginning with this update, birds always receive the boost from their most powerful hat, regardless of which hat they wear (1 and video). Previously, birds had to wear a hat in order to receive its boost. During hat events, owned event hats are automatically active.
Best Fiends	Activate Win Streak bonus feature	<ul style="list-style-type: none"> After failing a level, players can watch a rewarded ad to activate a win streak (2). Win streaks award additional moves.
Candy Crush Saga	Sugar Stars challenge event	<ul style="list-style-type: none"> Players earn 1-3 sugar stars for high scores (3 and video). Sugar stars award boosts.
Gardenscapes	Easter Adventure custom design event	<ul style="list-style-type: none"> Pieces with egg icons award Easter eggs when matched (video). Easter eggs fill a meter for boosts and event currency. Completing goals also awards event currency (video). Event currency is used to purchase event-exclusive decorations for a garden (4 and video). Purchased decorations fill a meter with rewards at milestones.



NOTABLE RELEASES II

App	Library	Description
Homescapes	The First Season of Wonders mission event	<ul style="list-style-type: none"> • Players beat levels to fill a meter. • Filling the meter triggers a reward and advances players to the next stage. • A \$4.99 season pass unlocks a second tier of rewards, including a new pet and golden avatar frame (1).
Matchington Mansion	Team Boat Race club event	<ul style="list-style-type: none"> • Levels award medals. • Two teams of four players compete to get the most medals. • Medals advance teams in a boat race (2). • The winning team earns rewards. • Medals fill a team meter for additional rewards at milestones (video).
Panda Pop!	Panda Profile profile feature	<ul style="list-style-type: none"> • Player profiles show gameplay statistics and allow players to view and select costumes (3).
Solitaire Grand Harvest	Cards in Deck mission event	<ul style="list-style-type: none"> • Players collect cards by beating levels without using all their cards. • Challenges require players to collect increasing numbers of unused cards (4).
	Growing Treats: Roll & Win mini-game event	<ul style="list-style-type: none"> • Players remove cards to uncover fruit during levels (video). • Fruit awards dice rolls. • Dice rolls advance players on a game board with rewards. • Each lap around the board awards coins and grows a tree for bigger rewards (video).

Quickly review all features and events

Filter the [Library Tool](#) by month and year to see all new releases.



APPENDIX



L&G PUZZLE PERSONAS

Using the motivational buckets developed by Liquid & Grit, five distinct puzzle personas emerge: **Gamer Gary, Escapist Emily, Trainer Tracy, Challenger Chris, and Casual Carol.**

Table: Player personas by demographics, monetization, engagement, and motivational buckets.

Input	Gamer Gary	Escapist Emily	Trainer Tracy	Challenger Chris	Casual Carol
Demographics					
Size (N)	24%	15%	22%	18%	21%
Female (%)	53%	68%	73%	59%	66%
Age (mean)	35	36	42	40	34
Monetization					
Propensity to spend across all platforms	15.0	7.0	4.8	7.0	4.3
Propensity to spend on F2P games	1.8	1.1	0.7	0.6	0.7
Engagement					
Weekly play hours	6.6	7.4	7.6	7.8	6.7
Puzzle motivation	3.1	2.9	2.6	2.7	2.4
Motivational Buckets					
Engrossment	0.7	-0.3	-0.2	-0.2	-0.2
Escape	0.0	0.6	-0.3	-0.1	-0.1
Utility	-0.2	-0.3	0.7	0.0	-0.3
Challenge	-0.2	-0.1	0.1	0.7	-0.3
Boredom	-0.3	0.0	-0.2	-0.3	0.9

PUZZLE PRODUCT COUNCIL

To boost our insights, Liquid & Grit gathers recommendations and intelligence from industry-leading product experts.

Helen Grabarchuk

Co-Founder and COO of PuzzleMove Inc.

[LinkedIn Profile](#)

Helen is a level design expert. At PuzzleMove Inc., Helen develops new puzzle products for different platforms, focusing on mobile devices.

Helen spent over two years at Zynga as a puzzle content creator.

After Zynga, Helen created concepts, puzzles, testing, and puzzle content for dozens of iOS and Kindle apps.

Helen's comments can be found predominantly in the Level Mechanics section.

Florian Steinhoff

Mobile F2P Consultant

[LinkedIn Profile](#)

Florian has built and led teams that created top-grossing mobile casual games.

For the last 10 years, he has overseen game projects during all phases—research, concept, prototyping, pitching, pre-production, production, and live-ops.

His most successful title is *Jelly Splash*, which reached a monthly player base of +30M.

To find out more, check out his GDC talk on casual puzzle games, difficulty curves, and the importance of randomness [here](#).

Florian Ziegler

Consultant in Mobile Gaming

[LinkedIn Profile](#)

After over a decade of making games, Florian now advises game studios and companies on improving their game products through his own consultancy, Lava Lake Games Consulting.

Before launching his own consultancy, Florian worked at Electronic Arts on flagship titles, such as *Need for Speed: No Limits*. He also spent time at King as a principal designer.

At Mind Candy, he was the lead game designer on titles that include the mobile hit *World of Warriors*. This gained Apple's Editor's Choice Award and scaled the charts to the No. 1 game position in most major markets.

PREMIUM PARTNERSHIPS

Liquid & Grit partners with these premier market research and analytics companies to infuse our reports with the most relevant and detailed gaming user personas, data, and statistics available.

Quadrant Strategies

Market Research

[Quadrant Strategies](#)

Quadrant Strategies is a market research consultancy that uses research to help the world's most prominent technology, gaming, and entertainment companies develop strategies for building their user base, increasing user engagement and spend, and strengthening their marketing and brand plans.

We do that using a range of quantitative and qualitative methodologies, including gamer segmentation and persona development, feature testing, message creation, and loyalty and engagement modeling. The work of our senior leadership goes back many years, and includes long-term engagements for console and gaming-PC hardware-makers, individual games in a range of genres, and across consoles, PCs, and mobile, and for some of the top game franchises.



Kinrate Analytics

Player Personas

[Kinrate Analytics](#)

Kinrate Analytics offers game developers, consultants, publishers, and cloud gaming operators the best cross-platform game recommendation engine for targeted marketing, as well as a novel profiling-as-a-service solution for intelligent market segmentation and social networking.

Other services include advanced market prediction analyses for identifying emergent gaming trends and access to unique AI-enhanced data of 140 thousand game titles and 48 million game players.

The products of Kinrate Analytics have been developed in university-led research projects in collaboration with economists, psychologists, game scholars, and data scientists.



Sensor Tower

Mobile App Store Intelligence

[Sensor Tower](#)

Sensor Tower is relied upon by financial analysts, VCs, and publishers who need to leverage data to identify the fastest-growing apps, emerging markets, and more.

Clients harness Sensor Tower's suite of app intelligence tools to:

- ▶ Evaluate app economies and app vitality.
- ▶ Drive organic growth with the leading App Store Optimization platform.
- ▶ Get the best global download and revenue estimates for the App Store and Google Play.
- ▶ Discover top creatives and better shape user acquisition strategy.



PUZZLE MECHANICS TAXONOMY

Family	Definition
Accelerators	Increases in the power, impact, or efficiency of play
Banks	Features that save a % of spend to be unlocked later
Bonuses	Free bonuses given to players (e.g., retention or W2E)
Challenges	Goal-oriented tasks for players to complete
Clubs	Groups that accomplish goals or compete with other groups
Collections	Sets of items that players collect (often for a completion prize)
Competitions	Features where players compete against other players
Cosmetics	Improvements or updates to the app or features
Currencies	Changes to currencies, economies, stores, and items
Custom Design	Options for cosmetic customization
Expansions	Additional rooms, worlds, play modes, VIP lounges, etc.
Flows	Specific flows, like the NUX, ratings, and surveys

Family	Definition
Hazards	Level elements/blockers that increase difficulty
Interactions	Social features with direct or indirect interaction
Leaderboards	Stand-alone leaderboards
Levels	Anything to do with leveling
Mini-Games	Smaller, shorter games within games (e.g., scratcher cards)
Missions	Linear sets of tasks that players must accomplish
Notices	Feature or product announcements
Other	Miscellaneous features and outliers
Profiles	Features related to a player's settings, profile, and controls
Purchases	Anything to do with purchases
Quests	Tasks that advance players along a map-like feature
Rewards	Rewards players receive for engagement or spend

“Every artist has thousands of bad drawings in them and the only way to get rid of them is to draw them out.”

– Chuck Jones

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