LIQUID&GRIT

Slots Design Report

Competitive Research and Data Insights for Slots Designers

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SEPTEMBER

2018

STRATEGY INSIGHTS

PAYBACK INFORMATION

DoubleDown Casino is taking advantage of regulatory pressure by marketing its fair machine payout and high RTP range of 93.5% to 96.5%

Wheel of Fortune Double Diamond in DoubleDown Casino (1) includes a 'Payback Information' dialogue within the paytable highlighting a long-term RTP range and a max win of 1,000,000,000,000,000 (2)
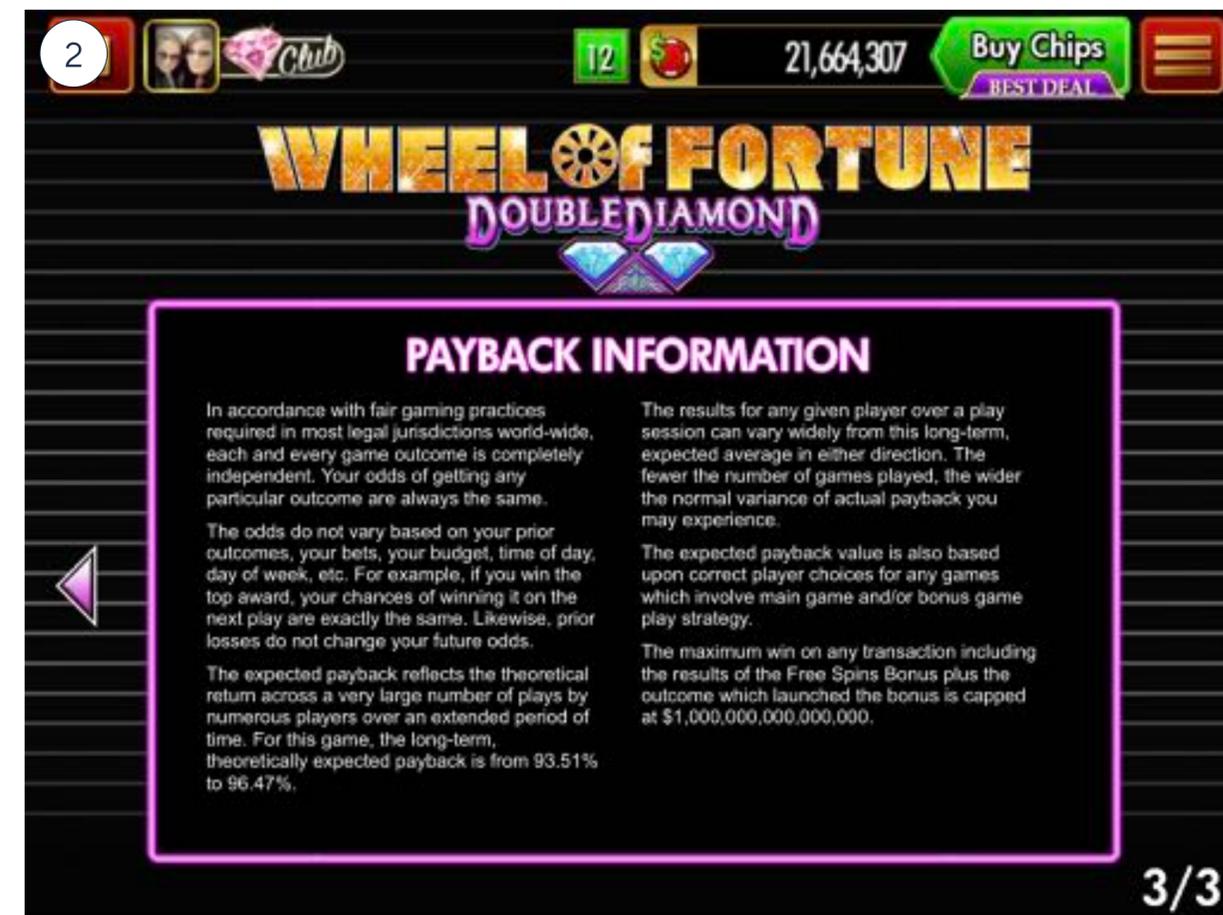
IP UPDATE

Playstudios released an IP-themed machine in POP! Slots that incorporates content from Universal Studios' movie *Kong the 8th Wonder of the World* (1 – 4). IP machines were also recently released in myVegas Slots

IP Machines Released

- Kong the 8th Wonder of the World – POP! Slots
- Shaq Slam – myVegas Slots
- Brides Maids – myVegas Slots
- The Munsters – myVegas Slots
- El Señor De Los Cielos – myVegas Slots
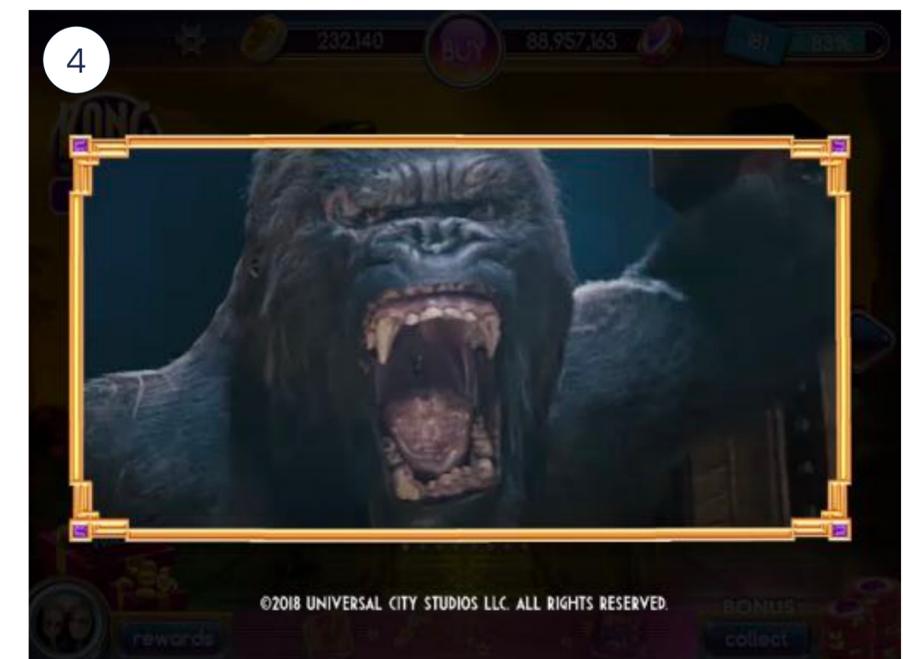
NEW INNOVATION

ASYMMETRICAL PROGRESSION

MECHANIC ANALYSIS

Caesars Slots added a Bingo mini-game to the *BingoRilla* machine with several layers of progression systems

Details

- Players collect Bingo balls during play. Completing a Bingo awards coins (1)
- During the base game play, the *Monkey King* grants Bingo enhancements, like filling a square on the Bingo card (2)
- Collecting 5 *Monkeys,* which are randomly placed on Bingo cards, triggers the *Monkey King Bonus* (3)
- The *Monkey King Bonus* is a pick 'em that uncovers coin prizes and *Banana Peels.* Each successful pick increases a coin prize multiplier (4)
- Collecting 5 *Banana Peels* during the pick 'em awards a *Golden Ticket* mini-game (5)
- In the *Golden Ticket* mini-game, players collect *Diamonds* to fill a meter and win a jackpot. Hitting a Bingo awards a large prize, such as 100x the Ticket prize. The Ticket prize is based on the player's average bet amount (6)

Information

- Release: 8/2/18
- Target Player: Night-Out Nancy

Related

- Princess Wild – Caesars Slots
- The Game of LIFE Payday – Jackpot Party
- Heroes of Oz – House of Fun

Click here for more images and videos

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INSIGHTS & ADVICE

Use non-linear progression systems to add anticipation to spins, give the *right players* more mentally-engaging moments, and increase retention

Takeaways

- Place the collection mechanic (in this case the Bingo ball) on the right-most reel to: 1) Add anticipation into every spin and, 2) Make the add-on mechanic visually easy-to-expect

- Converting the collection mechanic into a Bingo game gives players more game-generated excitement than a linear progression ... players can have 4-in-a row for a long time before hitting a Bingo. Also, the Bingo mechanic builds tension as players progress: E.g., "I need a 23 or 47," then, "I need a 7, 23, or 47"

- Release this mechanic only to the *right player types* that want more mental involvement and chance ... many slots players yearn for simplicity and mental-relaxation. Know your audiences' desires

- Use both linear and asymmetrical progression mechanics to build a stronger retention system ... provide a 'fair' linear progression system at the beginning to engage players. Then, use a chance-based, unpredictable system to extend the progression

> The Takeaways are a summary of analysis and insights from our Slots Experts Board and the market research and analysis from Liquid and Grit. The Slots Experts Board is made up of industry-leading slots consultants who reviewed the machines

MACHINE CRITIQUES

GOLDEN TOUCH OF MIDAS

MECHANIC ANALYSIS

The *Golden Touch of Midas* machine from DoubleU Casino has an upgrade feature during *free spins* that turns symbols into scatter pays

Details

- The *Golden Touch* bonus triggers when 3 or more bonus symbols land, awarding up to 20 free spins and 4 *Golden Touches* (1)
- Before the free spins, symbols are turned *Gold* by random selection (2)
- During free spins, all *Gold Symbols* pay as scatters (3)
- When 2 or more bonus symbols land, players earn additional free spins and *Golden Touches* (4)

Information

- Release: 8/24/18
- Target Players: Entertain-Me Eddie, Night-Out Nancy

Related

- King of Gold – Slotomania
- Mystical Sands – Heart of Vegas
- Riches of Midas – Caesars Slots

Click here for more images and videos

INSIGHTS & ADVICE

Only pair visuals from well-known features, like *88 Fortunes,* with similar features and volatility to the original feature ... to leverage familiarity and avoid confusion

Takeaways

- To improve on this experience, *Gold Symbols* should be harder to hit with higher payouts. In *Golden Touch of Midas,* the *Gold Symbol* payouts are typically 1x to 5x for most observed spins and the highest win is 5-of-a-kind with a *Gold Girl*. Since only one of these can be hit, the max payout is 25x

- Do not make visual associations with established features, like the *Gold Symbols* in *88 Fortunes*, and then dramatically change the functionality. Changing too much will lead players to think the machine is 'doing it wrong'

- Give players the *Gold Touches* selection choice to provide the feeling of control. This decreases the impact of low paying free spins, and increases the impact of high-paying ones. In *Golden Touch of Midas,* the *Gold Symbols* are selected for the player

- Allowing players make choices without dramatically affecting the RTP requires a lot of mathematical work ... so understand the cost to develop this type of mechanic before proceeding with a similar feature

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ROCKET BASH

MECHANIC ANALYSIS

In Quick Hits Slots *Rocket Bash,* the bonus is triggered when two different symbols hit on the same column in two different reel sets

Details

- *Sparklers* only appear on the bottom reel, and *Firework Launchers* only on the top (1)
- *Sparklers* trigger a Wind-Up animation (2)
- A bonus feature occurs when both the *Sparkler* and *Firework Launcher* land on the same column on different reel sets (3)
- The bonus feature (*Fireworks* trigger) can award a pick 'em or one of the listed items: *Raining Wilds, Full Reel Wilds, Spin Multipliers,* or *Free Spins* (4)

Definition

- Wind-Ups occur when part of a win lands and a special *sound* and *graphical highlight* show the slots where symbols can land to trigger the bonus (slightly different from Anticipation Modes that highlight complete columns)

Information

- Release: 8/26/18
- Target Player: Entertain-Me Eddie

Related

- Cool Jewels – Jackpot Party
- Magic Forest – Caesars Slots
- Michael Jackson Black or White – Quick Hit Slots

Click here for more images and videos

INSIGHTS & ADVICE

Wind-Ups are an under-utilized mechanic in social mobile casino. Increase the number of Wind-Up triggers per spin by having the bonus hit *anytime* the special symbols hit, regardless of column

Takeaways

- The trigger mechanism in this example could be improved if there were *no column restrictions* for both the *Launcher* symbol on the top set of reels, and *Firework Launcher* on the bottom set of reels. Restricting the bonus-trigger to the same column gives up tons of potential Wind-Up opportunities

- The Wind-Ups are too short and basically *over* before players can get excited

- The pick 'em after the firework show goes against the flow of the firework theme by inserting a *pause* in the middle of the event. The choice should be made randomly inside the machine, skipping the interruption

- The hierarchy for the symbols is flat; the special symbols and the normal symbols are hard to distinguish. The *Firework Launcher* is visually close to the lowest symbol ... making it hard to determine what to look for in the Wind-Up animation

- By *not* showing the player the five possible bonus games upon a trigger, players might leave before understanding the full potential of the machine

- Consider a *wheel* to show the player all the possible bonus features before showing the final result. This can be done by changing the *Launcher* to a *5 Firework Launcher,* then having it spin with the names of each feature roll by in front of the *Launcher*

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UPCOMING TRENDS

REEL CONFIGURATIONS

Featured Apps have seen a spike in n x n reel configurations in the past two months

n x n Reel Configurations

Number of Machines

	Mar	Apr	May	Jun	Jul	Aug
Machines	0	0	1	1	4	3
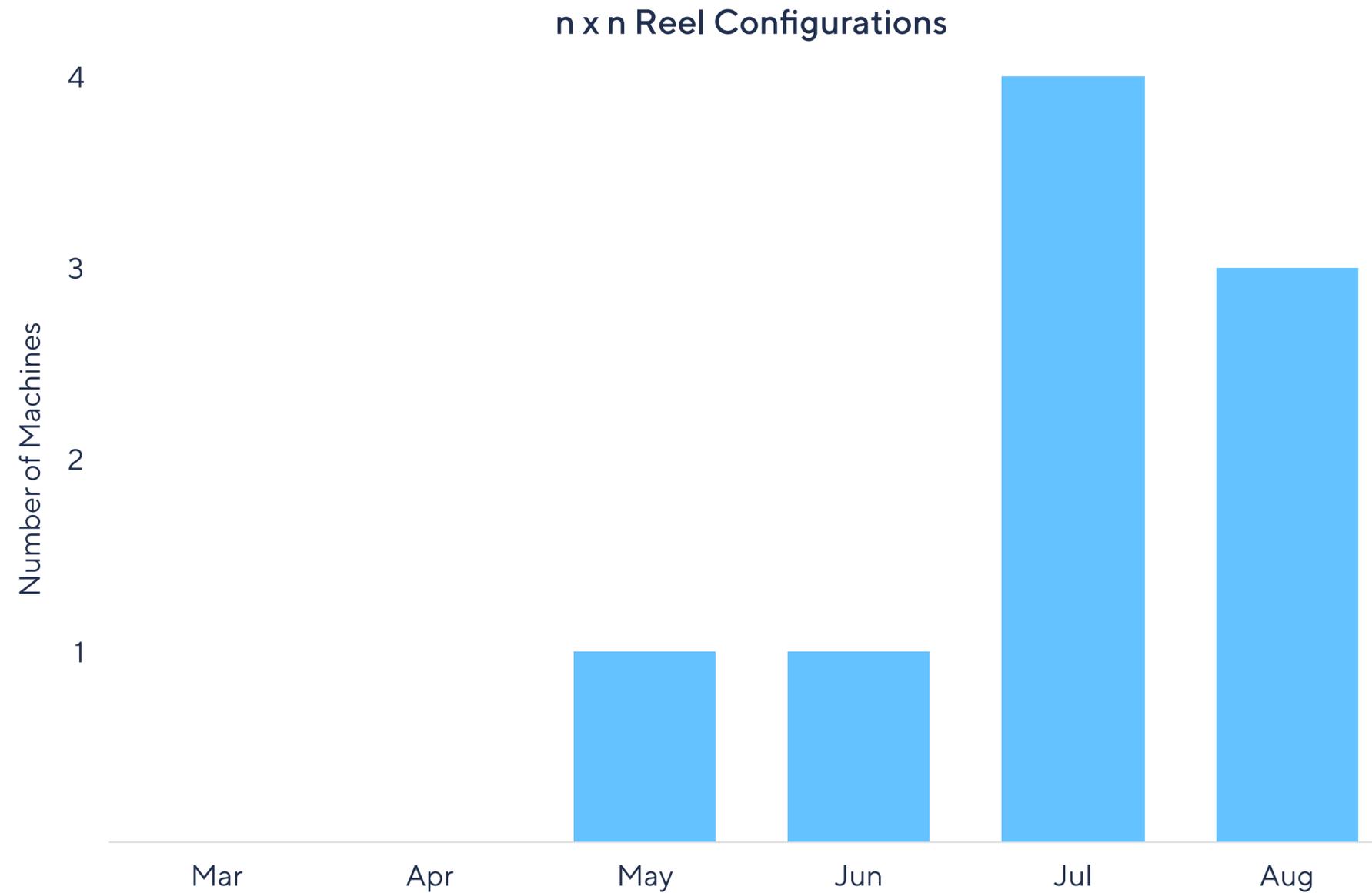
Super Jungle Wild in Jackpot Party

Zhu Ni Haoyun in Hit it Rich

PROGRESSION MECHANICS

Progression mechanics have shifted to *reel* or *symbol-based progression* ... and away from *fill meters*

Progression Mechanics

- Past 6 months
- 7 – 13 months ago

Percentage of Machines

Reel or Symbol | Fill Meter/Collection | Bonus | Collection Only | Fill Meter | Map | Map/Fill Meter | Other
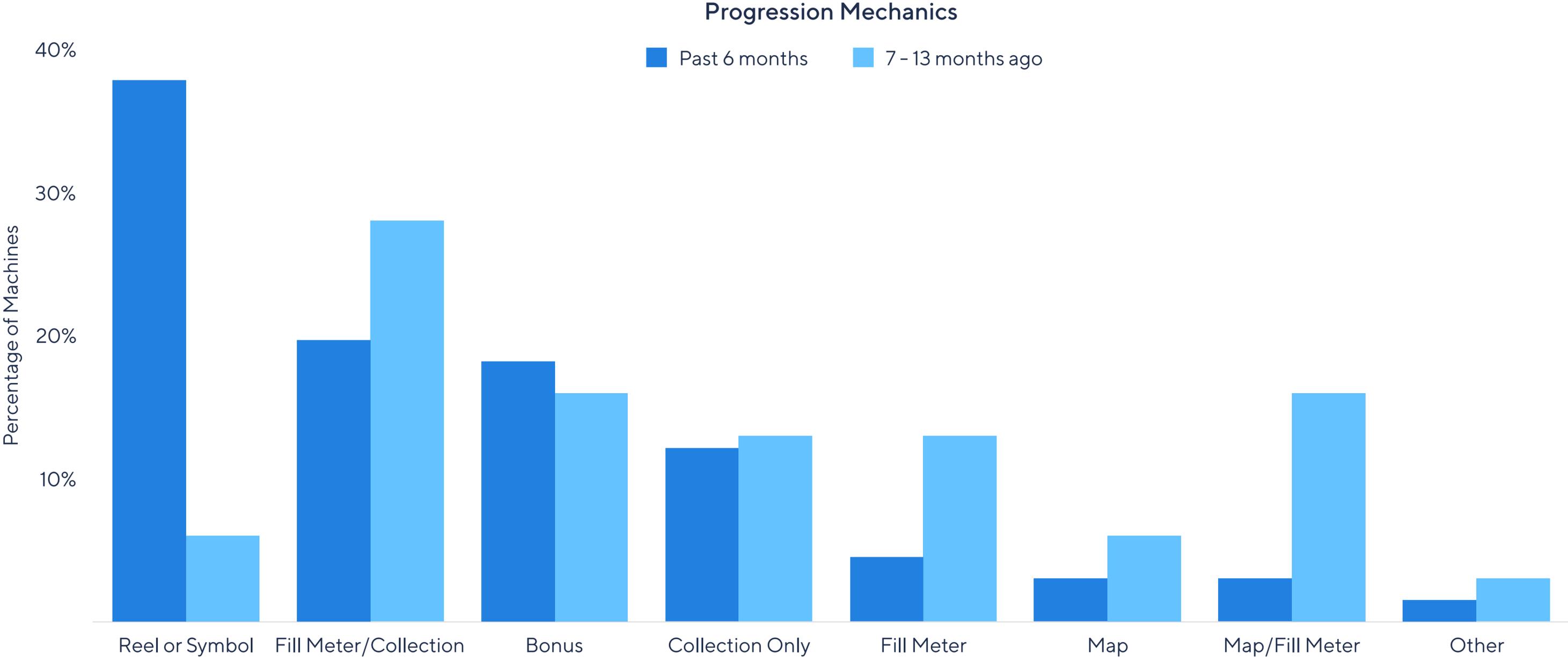
MARKET WATCH

8/1/18 – 8/31/18

NOTABLE RELEASES

Publisher	Machine	Features
Slotomania	King's Valor	In the *Round Table Jackpot Bonus*, 3 wheels with jackpot *Shield* wedges spin until 3 or more jackpot symbols are collected (1)
Big Fish Casino	Wild Waters 2 Feeding Frenzy	Non-winning spins fill the *Shark-O-Meter*. *Sharks* appear randomly leaving wilds across the reels. This is a reskin of *Wild Waters Shark Attack* with fewer paylines and paytable increases (2)
DoubleDown Casino	Wheel of Fortune Triple Stars	During free games, a multiplier of 2x to 7x is awarded. Free spins end when no free games remain or after 700 free games (3)
POP! Slots	Kong the 8th Wonder of the World	In the base game, 3 or more *King Kong* symbols trigger *Colossal Link* respins and may convert into prize wheels. A social Pachinko bonus is triggered when 3 bonus symbols land for any player
Cashman Casino	Buffalo Gold	During free games, players collect special symbols to convert regular symbols to *Buffalos* for the remaining free games
Jackpot Party	Lightning Jackpots	Each reel has a unique *Lightning Tower Bonus* symbol that triggers a free spin from a corresponding mini-stepper
DoubleU Casino	Gobbling Goblin	Wilds landing drop to the bottom of the reels, awarding 4 respins with the wild roaming up 1 position each spin
Caesars Slots	All Mine Gold & All Mine Diamond	Linked Machines: *Dynamite* symbols landing fills a 3-level *Fuse* meter to trigger a jackpot wheel for a chance to win jackpots on both machines. Respin feature: colossal symbols convert into prize wheels
Gold Fish Casino	Call of the Moon	*Moonlight* appearing on 3 or more adjacent reels of a row triggers a spin of a corresponding prize wheel. The same mechanics are seen in WMS RMG machine Zeus God of Thunder

Click here for a full list of machines released

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APPENDIX

SLOTS EXPERTS BOARD

These industry-leading slots consultants make up our Slots Experts Board to strengthen the Insights & Advice included in each Report

Arthur Lee	Joe Kisenwether

Game Design and Math Innovator Consultant

LinkedIn Profile

Arthur Lee is a leading slots consultant in social casino.

Prior to going independent, Arthur was a Game Designer at Playtika for two and a half years. At Playtika, he headed the innovation of Lightning Link-type games with *Fairy Bliss, Lady Havana,* and one of the best performing games at House of Fun, *City of Queens.* Arthur designed record breaking titles such as *Frankenbride, Lady Hotness, Giant's Treasure,* and *Beast.*

Before making an impact in the social mobile market, Arthur was a Senior Mathematician in RMG at American Gaming Systems (AGS) and Konami Gaming.

He combines his experience of land-based slots with the lack of regulation in social games to provide the most competitive games in social and real money gaming.

Mathematician and Game Design Consultant

LinkedIn Profile

Joe Kisenwether is an award winning game designer and mathematician.

Joe is a 20 year veteran of the casino and online gaming industry. He spent 8 years at Bally's as a Senior Mathematician and also worked for GameTech and Gaming Laboratories International before going independent and founding Craftsman Gaming in 2012.

SLOTS PLAYER PERSONAS

	Plain Jane	Night-Out Nancy	Entertain-Me Eddie	Mr. and Mrs. Ricardo
Desire	Utility	Excitement	Multi-Purpose	Relaxation
Motivation	Looking for something to do: kill time and reduce boredom	Wants a buzz: thrill of winning a jackpot, relaxing, and having a good time	Considers machines "lucky" or fun to play	Socialization, have fun, and relieve day-to-day stress
Features for choosing one game over another	Denomination that I want to play	Bet within budget, fun game to play	Fun game to play, good chance of winning	Fun game to play, denomination I want to play
% of machines played with progressives	29%	40%	37%	25%
Player Income	Medium-high	High	Low	Medium-low
% female	54%	59%	45%	49%
Size of group	19%	28%	27%	26%

– Data adapted from Sandy C. Chen, "Segmenting slot machine players: a factor–cluster analysis," College of Business, Oregon State University, Bend, Oregon, USA. 2013

DATA COLLECTION PROCESS

Recommendations, information, and data come from market research, app intelligence tools, industry consultants, and a deep analysis of the games

Data

- The RTP range is found using a sample of 10,000 spins, which is approximately 20 hours of play
- To find the RTP range with 90% confidence, the median payout of the 10K spin +/- (standard error) x (z-score for 90% confidence) is calculated
- The standard error is (standard deviation) / square root of sample size and the zscore for 90% confidence is 1.65
- For example, the median payout for *Zombie Prom* after 10K spins was 103% with a standard deviation of 3.3
- The standard error is 3.3/(square root of 10,000), which equals 3.3%
- The RTP range for *Zombie Prom* is then 103% +/- (1.65 x 3.3%)
- Based on this sample, the result is a 90% confidence that the real RTP of *Zombie Prom* falls between 97% and 109%
- The volatility is the standard deviation, expressed in Excel as =STDEV(A1:A10001), of the 10K payouts. Payouts are in the form of multiples of bet

Research

- Each game is reviewed daily for updates, regardless of whether the game has been updated through the App Store
- Transaction information comes from the iOS App Store's In-App Purchases tab. These transactions are ranked based on the number of transactions
- Las Vegas player insights come from online sources, such as the Las Vegas Convention and Visitors Authority, and the UNLV Center for Gaming Research
- Progressive jackpot information comes from online research
- Trending revenue, downloads, and package-rank data come from Priori Data, a Liquid and Grit partner

"The chief enemy of creativity is 'good' sense."

– Pablo Picasso

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