



Whoopie for data!

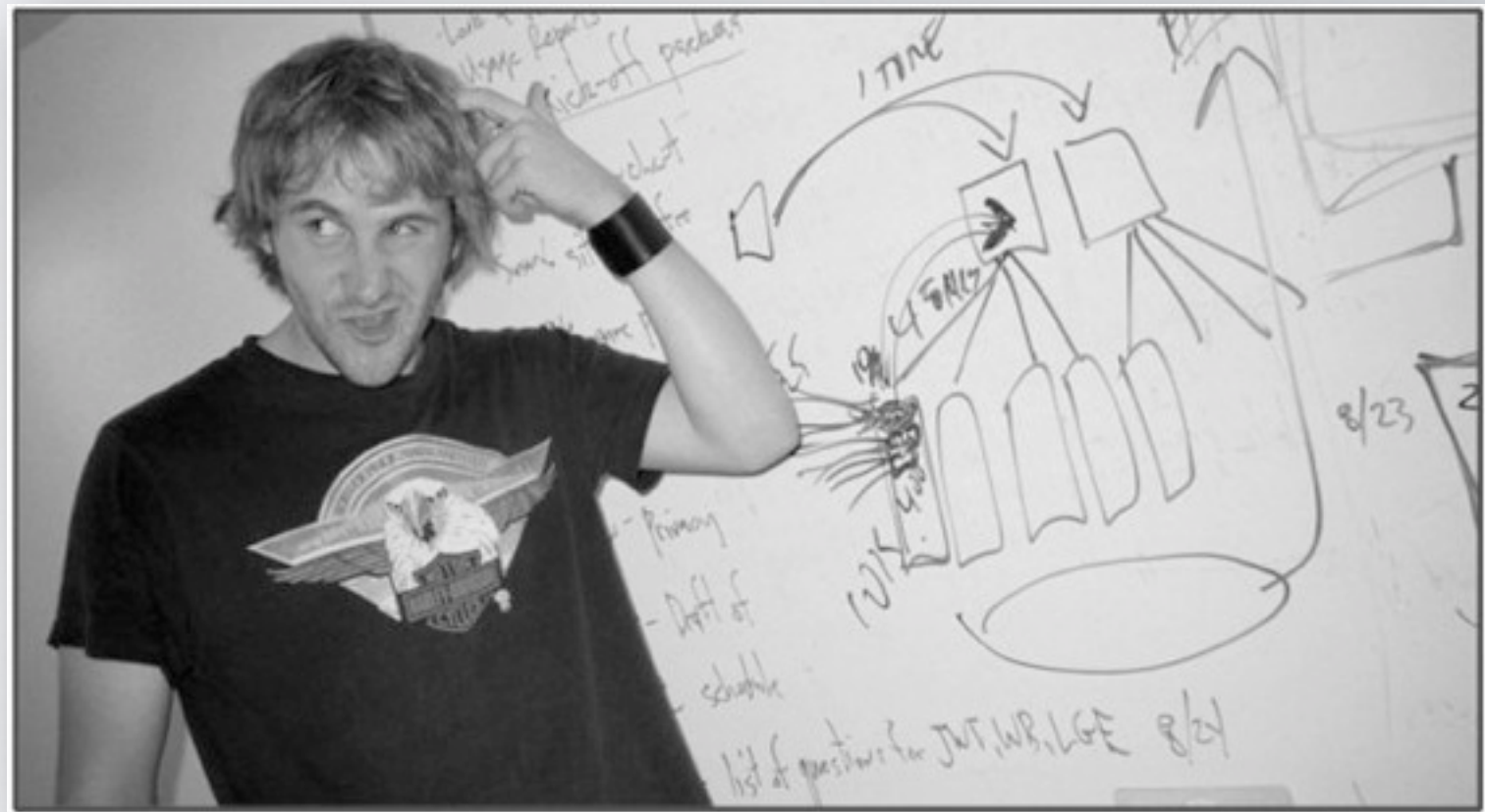
FREE TO PLAY GAME METRICS FOR BEGINNERS

GDC2012

MY BACKGROUND

Currently with **Rick Thompson / Signia Ventures.**

- ▶ Started in the game industry in 1996.
- ▶ Creative Director on **You Don't Know Jack** series.
- ▶ Game Designer at **WMS Gaming.**
- ▶ Game Development Director, **Electronic Arts / Pogo.**
- ▶ General Manager at **Playfish.**



Portrait of the speaker as a thin, obviously brilliant young designer.

AGENDA

- ▶ Acquisition
- ▶ Retention
- ▶ Monetization
- ▶ Lifetime Value
- ▶ Segmentation
- ▶ Data Visualization
- ▶ Traps and Tips

CUSTOMER ACQUISITION



Customer Acquisition:
Let's tie down paid, viral, and organic.

CUSTOMER ACQUISITION

It's important to understand the total cost of a player.

Don't forget to include "non-trackable" marketing spend like PR, print, broadcast.

This amount, your "blended" or "effective" **cost per install**, is a fundamental performance metric.

This is also frequently referred to as **CAC**, or **cost of acquisition**.

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All acquisition marketing money
spent in a period of time, including:

Public relations

Online campaigns

Print and TV

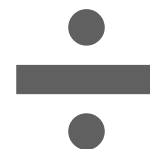
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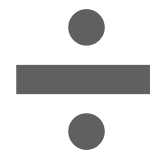
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All new players acquired during that same
time, regardless of whether they're:

Trackable to a source
Viral
Organic

PAID ACQUISITION

The advertiser allocates a budget to a source like a website.

The source tries to earn as much of the allocated budget as possible.

The source does this by delivering **impressions, clicks, actions, or installs**.

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COST PER 1000 IMPRESSIONS

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CPA COST PER ACTION

CPI COST PER INSTALL

PAID ACQUISITION

CPM

COST PER 1000 IMPRESSIONS

Advantages

- ▶ Minimal or no integration required
- ▶ Widely available

Disadvantages

- ▶ Not paying for performance

Baselines

- ▶ Open web: \$4 to \$10
- ▶ Mobile: N/A
- ▶ Facebook: N/A

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CPC

COST PER CLICK

Advantages

- ▶ Minimal or no integration required
- ▶ Widely available
- ▶ Allows optimization of creative

Disadvantages

- ▶ Pays on ad performance, but may not reflect target audience quality

Baselines

- ▶ Open web: \$.10 to \$.50
- ▶ Mobile: \$.05 to \$.30
- ▶ Facebook: \$.30 to \$.50

PAID ACQUISITION

CPA

Advantages

- ▶ Performance-based
- ▶ “Action” can be anything

COST PER ACTION

Disadvantages

- ▶ Not widely available
- ▶ Difficult to baseline performance
- ▶ Custom tracking required

Baselines

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CPI

Advantages

- ▶ Performance-based
- ▶ Widely used
- ▶ Convenient, visible data

COST PER INSTALL

Disadvantages

- ▶ Indirectly incentivize low quality installs

Baselines

- ▶ Open web: N/A
- ▶ Mobile: \$1 to \$1.80
- ▶ Facebook: \$.80 to \$1.50

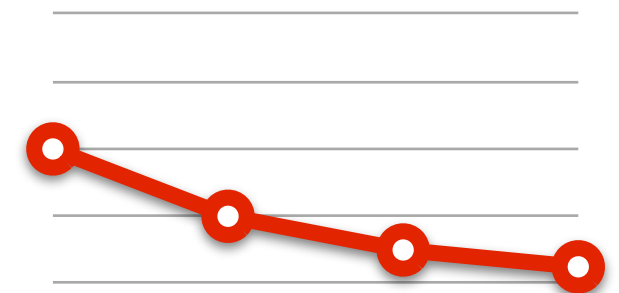
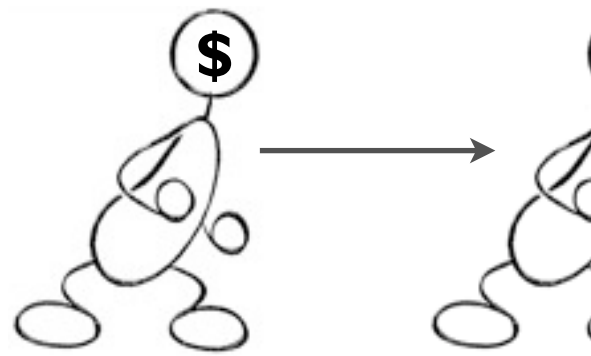
VIRAL ACQUISITION

Viral acquisition refers to customers who are acquired through social interactions built into a game.

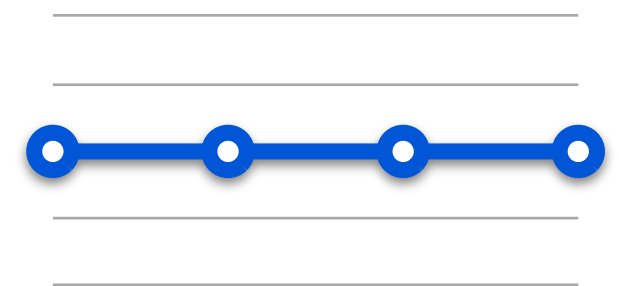
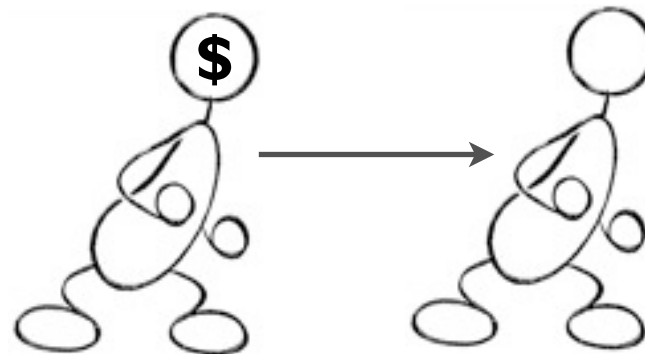
These actions allow you to trace new customers to a source customer.

A game's viral coefficient, or **k-factor**, is an important influence on CAC on a viral platform.

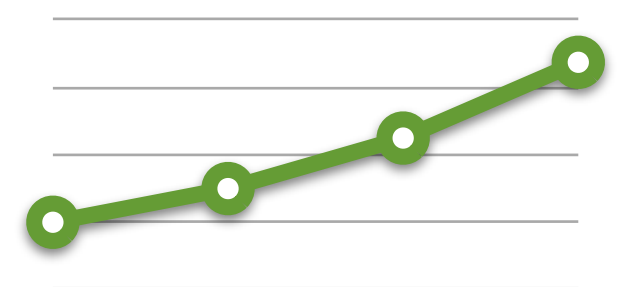
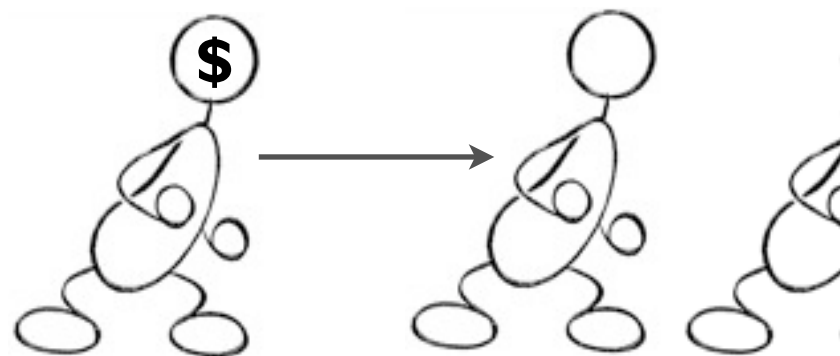
$$K=0.5$$



$$K=1$$



$$K=1.5$$



ACQUISITION FUNNEL

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OPEN WEB **AD IMPRESSIONS**
FACEBOOK **AD IMPRESSIONS**
MOBILE **AD IMPRESSIONS**

100%

ACQUISITION FUNNEL

OPEN WEB **AD IMPRESSIONS**
FACEBOOK **AD IMPRESSIONS**
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100%

OPEN WEB **VISITORS**
FACEBOOK **PERMISSIONS**
MOBILE **APP DOWNLOAD PAGE**

10%



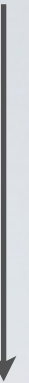
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HOW EFFECTIVE ARE YOUR ADS?

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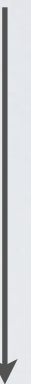
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OPEN WEB **REGISTRATION**
FACEBOOK **INSTALLS**
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100%



10%



5%

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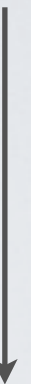
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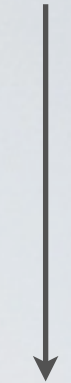
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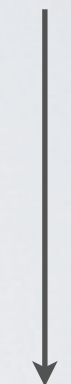
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PLAYERS

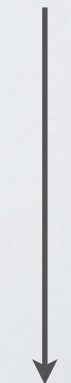
100%



10%



5%



1%

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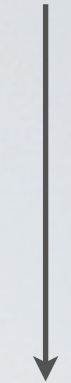
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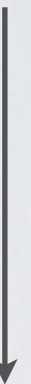
OPEN WEB IS YOUR REGISTRATION FLOW OPTIMAL?
FACEBOOK & MOBILE IS YOUR APP TOO BIG?

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5%



1%

RETENTION



Retention:
Locking them down.

RETENTION

Retention is a measure of how long a customer is active in the game.

DAU, or **daily active user**, refers to a player who plays at least once within a given day.

Retention measurement is **cohort**-based.

A cohort refers to a group of players who share a characteristic during a period of time.

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NEW PLAYERS

March 7



DAY 0 (3/7): 100%

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RETAINED PLAYERS



DAY 1 (3/8): 40%

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DAY 3 (3/10): 30%

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DAY 5 (3/12): 25%

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DAY 5 (3/12): 25%



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DAY 7 (3/14): 20%

RETAINED PLAYERS



DAY 3 (3/10): 30%



DAY 14 (3/21): 17%



DAY 5 (3/12): 25%

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DAY 5 (3/12): 25%



DAY 30 (4/6): 15%

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Segmenting retention helps focus on payer retention.

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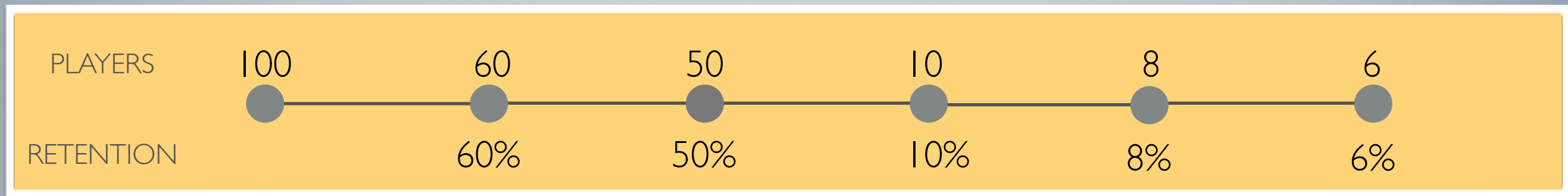
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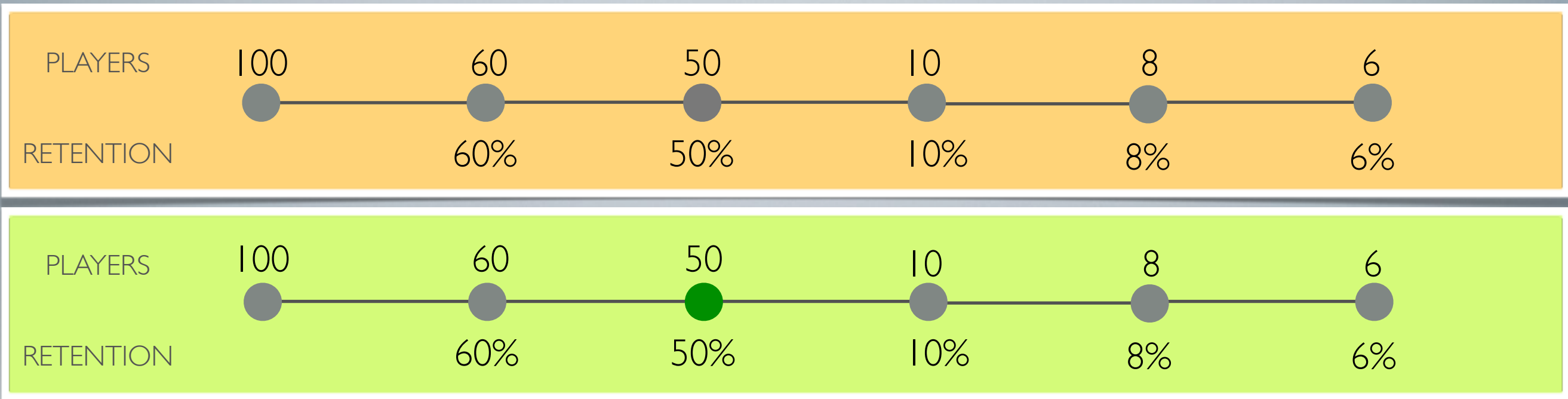


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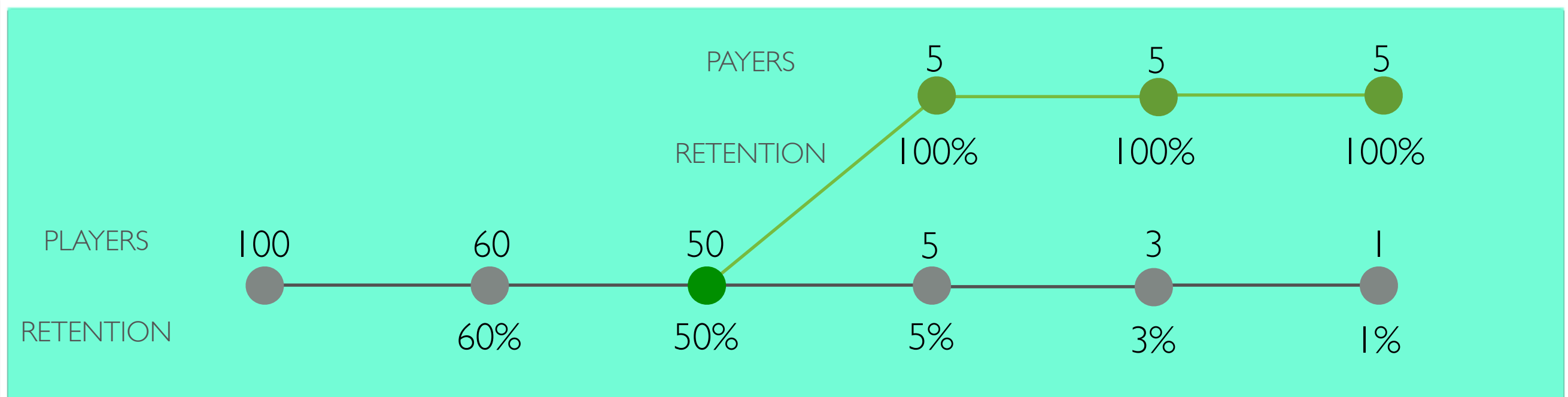
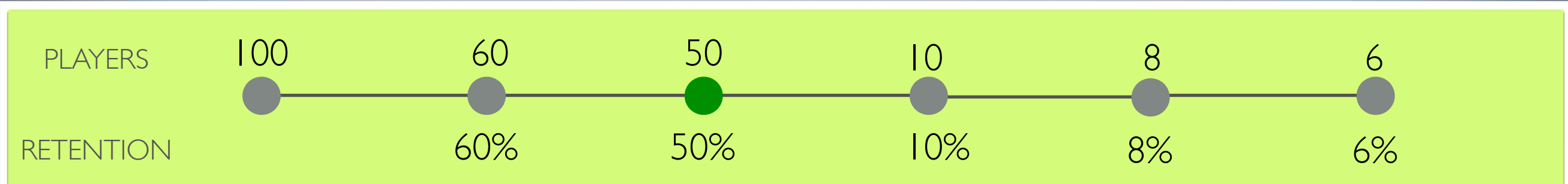
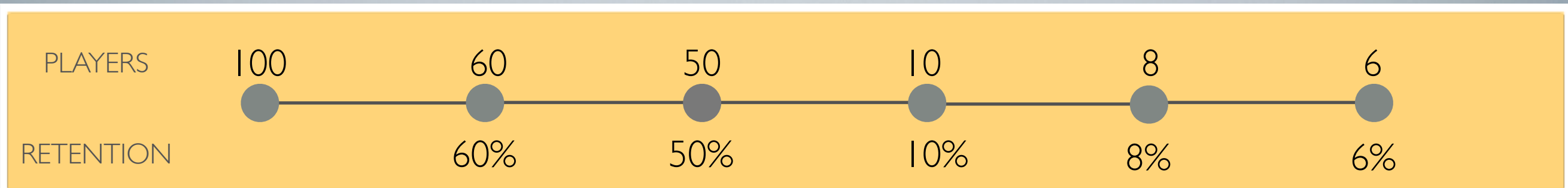


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MONETIZATION



Monetization:
Hand it over.

MONETIZATION

There are two approaches to measuring monetization, by cohort and in aggregate over a time period.

LTV, or **lifetime value**, is a cohort based monetization metric.

ARPU, or **average revenue per user**, is a commonly used performance metric.

Sometimes ARPU is the average per user over a month.

Increasingly, ARPU is revenue per user over a day. This is also called **ARPPDAU** or **DARPU**.

The average revenue of a paying user is called **ARPPU**.

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All revenue received on a given day.

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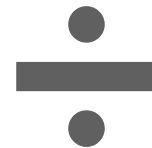
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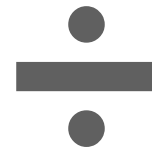
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The number of unique users on that day.

MONETIZATION

Suppose you have a farm game on Facebook.

Players spend Facebook credits to purchase FarmBucks. We'll call that **funding**.

Players then spend FarmBucks to buy items and services within the game. That's **spending**.

Later, you get some money from Facebook. Those are **receipts**.

RECEIPTS

Advantage

- ▶ Cashflow planning.

Disadvantage

- ▶ Substantial lag means it's not useful on the development side.

FUNDING

Advantage

- ▶ The actual behavior that results in revenue.

Disadvantage

- ▶ Less direct insight in to why players spend.

SPENDING

Advantage

- ▶ The least abstracted from the actual in game behaviors and events that drive revenue.

Disadvantage

- ▶ May include spend of promotional or seeded FarmBucks.

UNIT ECONOMICS



Lifetime Value:
The key to a valuable life.

UNIT ECONOMICS

To understand if your game is profitable, you must first understand your customer's **Lifetime Value**, or **LTV**.

LTV is the amount of money a player will spend before they cease being a player.

Your game has positive unit economics if **$LTV > CAC$** .

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CAC



The cost of each player.

LTV MODELS

Historical data will lead to the most accurate LTV.

In order to evaluate players quickly, a predictive model of LTV is helpful.

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SUPPOSE THE BELOW HISTORICAL **RETENTION**.

RETENTION

100%

60%

50%

10%

8%

6%



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SUPPOSE A NEW **100 PLAYER COHORT** WITH A DAY ONE **ARPU** OF **\$1.00**.
ASSUME HISTORICAL RETENTION APPLIES AND ARPU HOLDS.
MULTIPLY ARPU BY EXPECTED **NUMBER OF RETAINED PLAYERS**.

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PLAYERS

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REVENUE

\$100

\$60

\$50

\$10

\$8

\$6

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PLAYERS

100

60

50

10

8

6

REVENUE

\$100

\$60

\$50

\$10

\$8

\$6

SUM THE EXPECTED DAILY REVENUE.
DIVIDE THE TOTAL COHORT REVENUE BY THE SIZE OF THE COHORT.

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A predictive model tells you how valuable a customer is before the customer spends his entire LTV.

SUPPOSE THE BELOW HISTORICAL **RETENTION**.

RETENTION

100%

60%

50%

10%

8%

6%

SUPPOSE A NEW **100 PLAYER COHORT** WITH A DAY ONE **ARPU** OF **\$1.00**.
ASSUME HISTORICAL RETENTION APPLIES AND ARPU HOLDS.
MULTIPLY ARPU BY EXPECTED **NUMBER OF RETAINED PLAYERS**.

PLAYERS

100

60

50

10

8

6

REVENUE

\$100

\$60

\$50

\$10

\$8

\$6

SUM THE EXPECTED DAILY REVENUE.
DIVIDE THE TOTAL COHORT REVENUE BY THE SIZE OF THE COHORT.

TOTAL COHORT
REVENUE

\$234

COHORT
SIZE

100

EXPECTED
LTV

\$2.34

REVENUE MODELS

To build a simple revenue model, a cohort approach or daily approach can be used.

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To build a simple revenue model, a cohort approach or daily approach can be used.

DAILY REVENUE

DAU	1 000
------------	-------

ARPU	\$1.00
-------------	--------

REVENUE	\$1 000
----------------	---------

REVENUE MODELS

To build a simple revenue model, a cohort approach or daily approach can be used.

DAILY REVENUE

DAU	1 000
ARPU	\$1.00
REVENUE	\$1 000

DAILY REVENUE

DAU	1 000
PAYER PERCENTAGE	10%
PAYERS	100
ARPPU	\$10.00
REVENUE	\$1 000

REVENUE MODELS

To build a simple revenue model, a cohort approach or daily approach can be used.

DAILY REVENUE

DAU	1 000
ARPU	\$1.00
REVENUE	\$1 000

DAILY REVENUE

DAU	1 000
PAYER PERCENTAGE	10%
PAYERS	100
ARPPU	\$10.00
REVENUE	\$1 000

DAILY REVENUE

CAC	\$0.50
CONVERSION	10%
COST PER PAYER	\$5.00
LTV PAYERS	\$10.00
UNIT	\$5.00
MARKETING	\$500
ACQUIRED PLAYERS	1 000
REVENUE	\$1 000
MARGIN	\$500

SEGMENTATION



Segmentation:

With a tasty focus on where and when.

SOURCE SEGMENTATION

Segmentation of data can be helpful in better understanding how a game performs.

Common types of segmentation are by **cohort**, **source**, and **behavior**.

Segmentation by source is critical to optimizing a game's monetization.

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ALL SOURCES	CAC	\$0.50	MARKETING	\$500
	LTV	\$1.00	ACQUIRED PLAYERS	1000
	UNIT	\$.50	REVENUE	\$1000
			MARGIN	\$500

SOURCE SEGMENTATION

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Common types of segmentation are by **cohort**, **source**, and **behavior**.

Segmentation by source is critical to optimizing a game's monetization.

ALL SOURCES

CAC \$0.50
LTV \$1.00
UNIT \$.50

MARKETING \$500
ACQUIRED PLAYERS 1000
REVENUE \$1000
MARGIN \$500

SOURCE ONE

CAC \$0.31
LTV \$1.25
UNIT \$0.94

MARKETING \$250
ACQUIRED PLAYERS 800
REVENUE \$1000
MARGIN \$750

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LTV \$1.00
UNIT \$.50

MARKETING \$500
ACQUIRED PLAYERS 1000
REVENUE \$1000
MARGIN \$500

SOURCE ONE

CAC \$0.31
LTV \$1.25
UNIT \$0.94

MARKETING \$250
ACQUIRED PLAYERS 800
REVENUE \$1000
MARGIN \$750

SOURCE TWO

CAC \$1.25
LTV \$0.00
UNIT (\$1.25)

MARKETING \$250
ACQUIRED PLAYERS 200
REVENUE \$0
MARGIN (\$250)

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Common types of segmentation are by **cohort**, **source**, and **behavior**.

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LTV \$1.00
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REVENUE \$1000
MARGIN \$500

SOURCE ONE

CAC \$0.31
LTV \$1.25
UNIT \$0.94

MARKETING \$250
ACQUIRED PLAYERS 800
REVENUE \$1000
MARGIN \$750

SOURCE TWO

CAC \$1.25
LTV \$0.00
UNIT (\$1.25)

MARKETING \$250
ACQUIRED PLAYERS 200
REVENUE \$0
MARGIN (\$250)

OPTIMIZED SOURCES

CAC \$0.31
LTV \$1.25
UNIT \$0.94

MARKETING \$500
ACQUIRED PLAYERS 1613
REVENUE \$2016
MARGIN \$1516

COHORT SEGMENTATION

Cohort segmentation can be useful in identify how changes to the game have impacted it.

COHORT SEGMENTATION

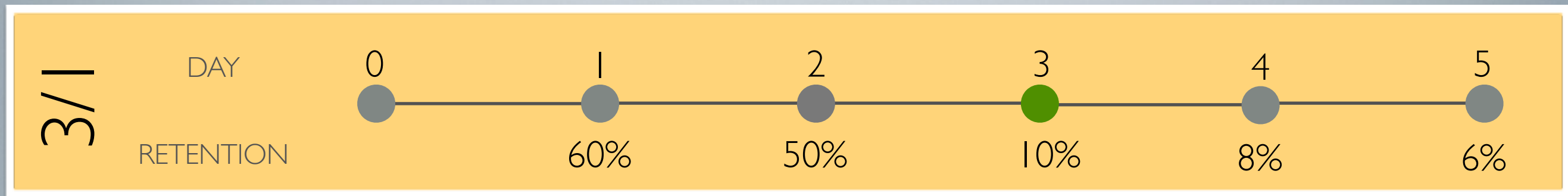
Cohort segmentation can be useful in identify how changes to the game have impacted it.

SUPPOSE A CHANGE TO THE GAME TUTORIAL WAS RELEASED ON 3/4.

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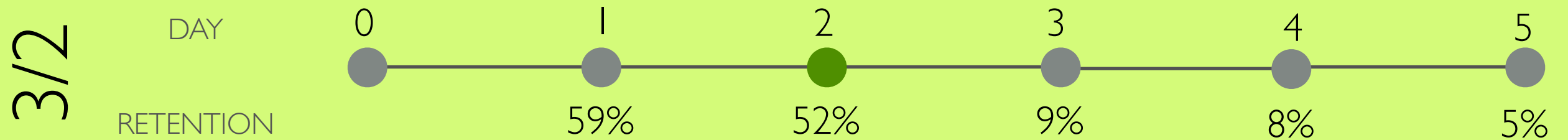
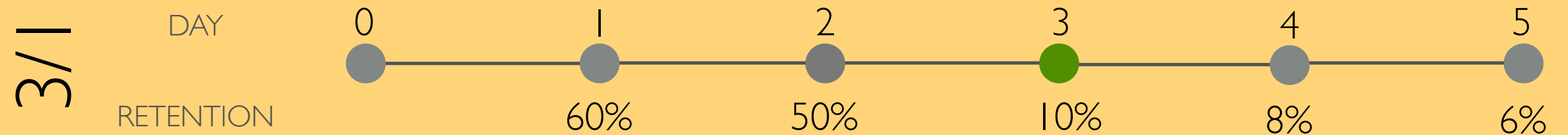
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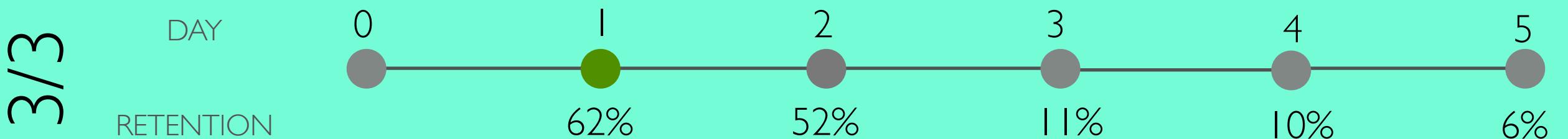
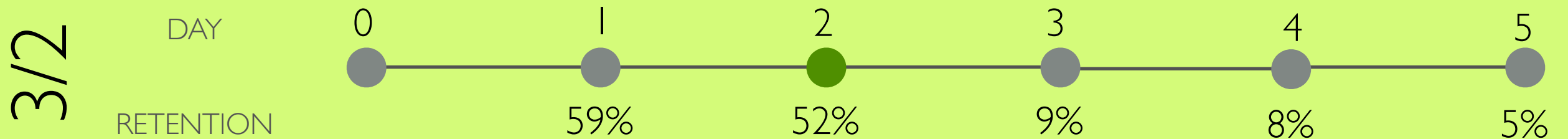
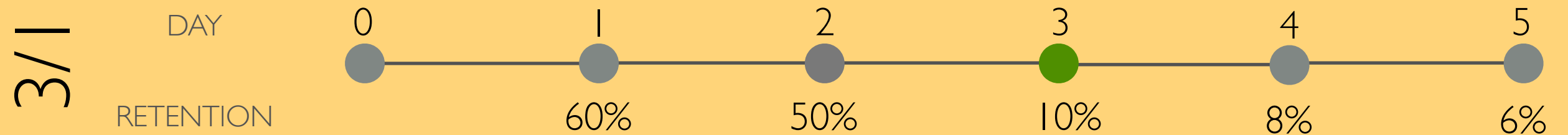
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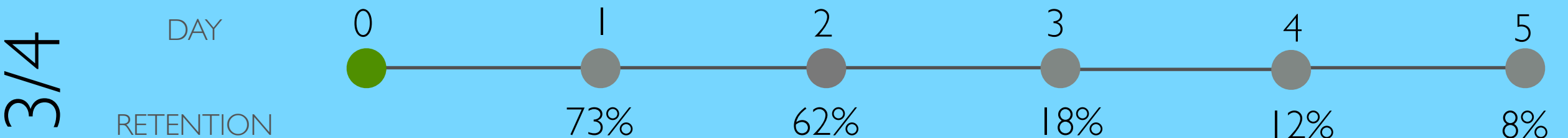
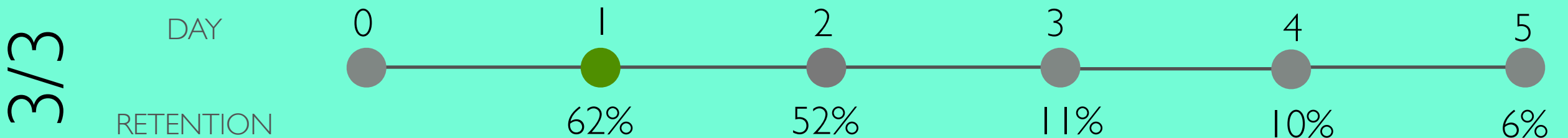
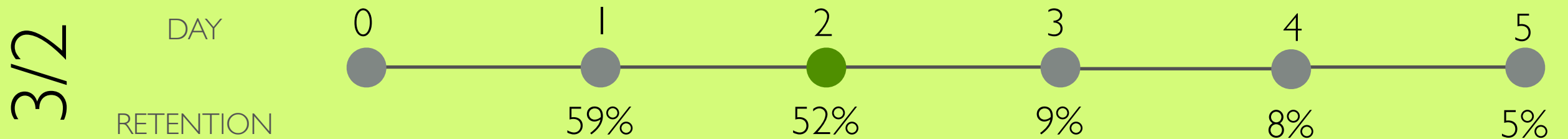
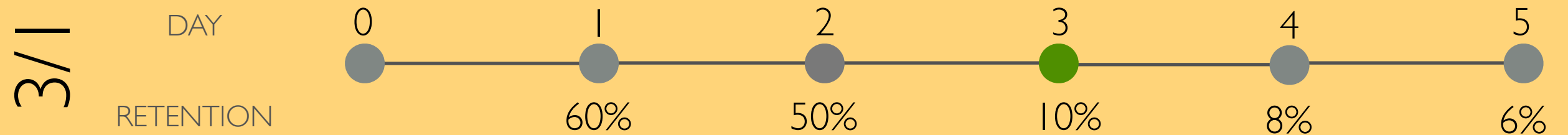
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DATA VISUALIZATION



Data Visualization:
Like a vision board, but effective.

DATA VISUALIZATION

How data is visualized impacts how it is interpreted.

It's common to access data through a **live dashboard**, in a **daily report**, or **ad hoc**.

LIVE DASHBOARD

Good for:

- ▶ Metrics that change in real time.
- ▶ Things that will impact everyday decision making.
- ▶ Inspiration.

Bad for:

- ▶ Cohort-based data.
- ▶ Metrics generated by long term averages.

EXAMPLES: CONCURRENT USERS, DAU DELTA, ARPU DELTA, 24H TOTAL SPEND DELTA, 24H TOTAL FUND DELTA, 24H NEW PLAYERS DELTA, UPTIME, TWEETS.

DAILY REPORTS

Good for:

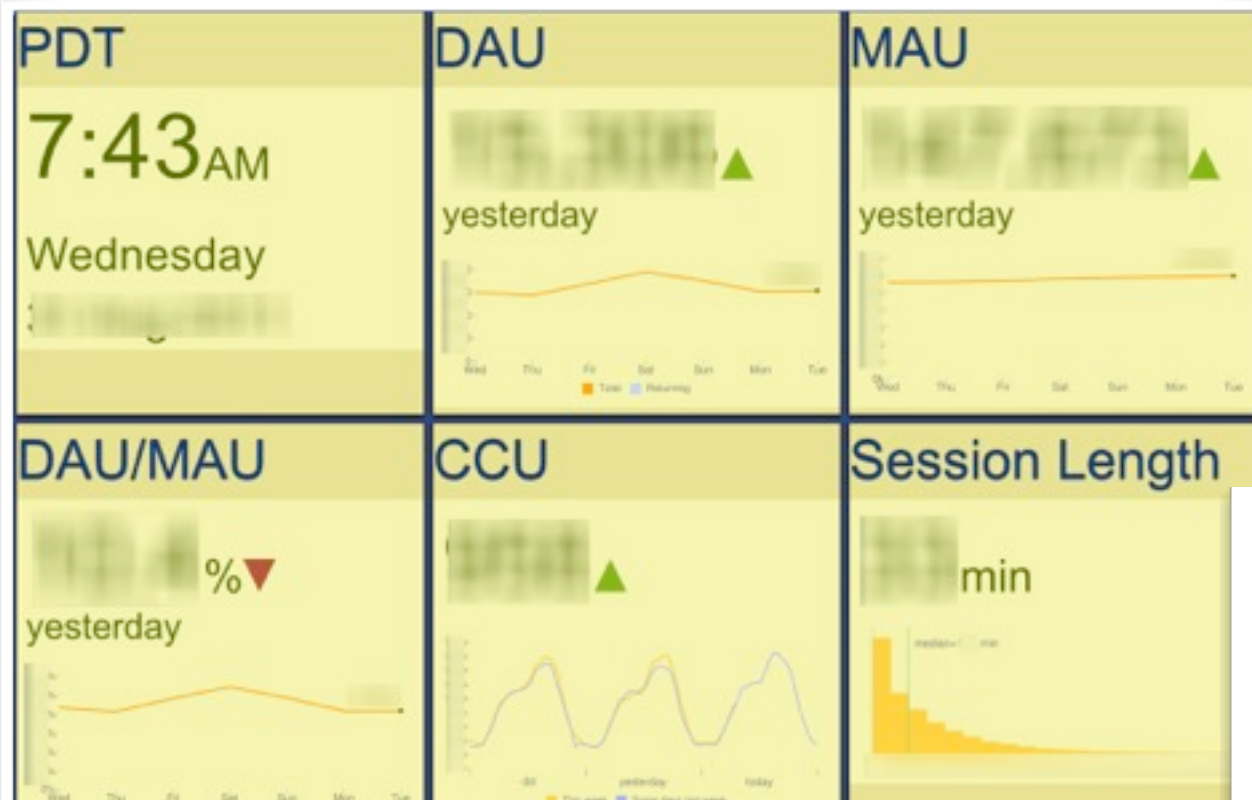
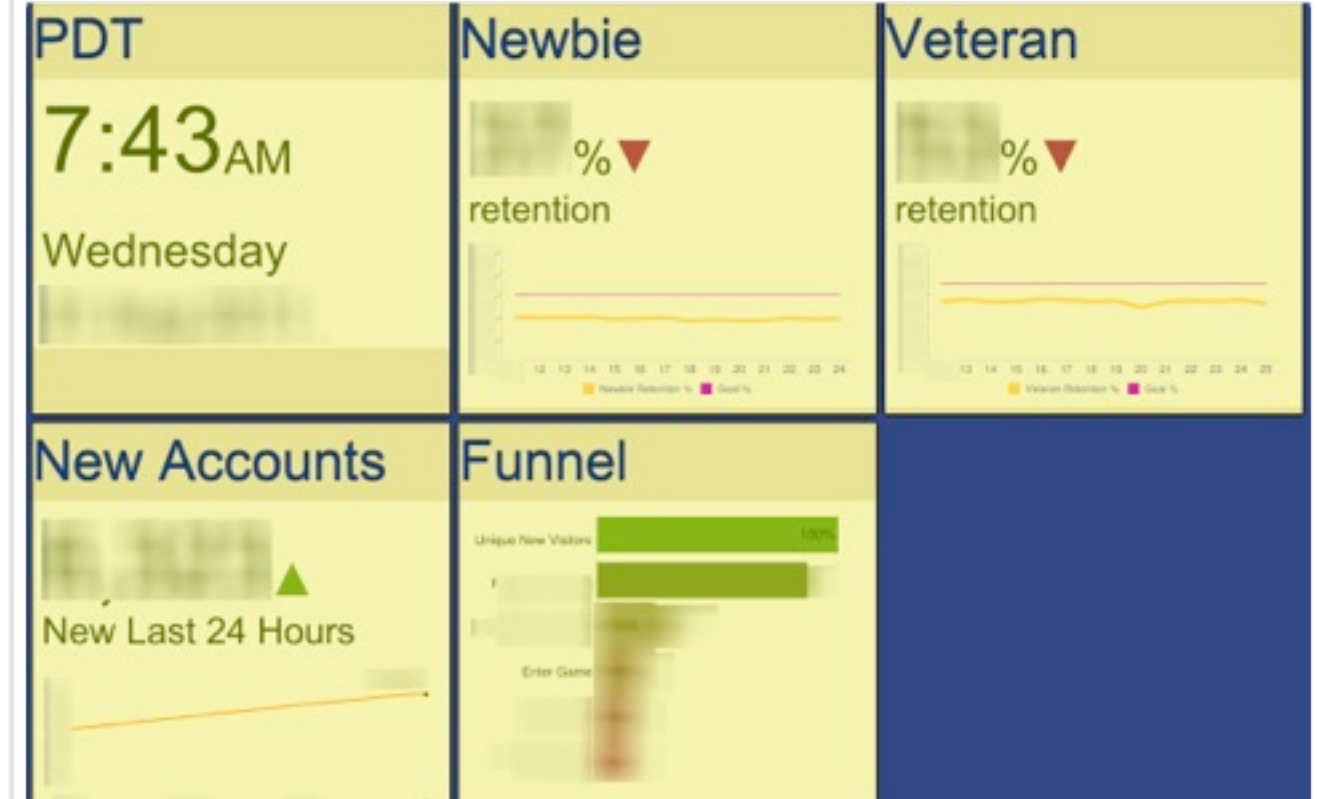
- ▶ 24 hour and 7 day trends.
- ▶ Cohort-based data.
- ▶ Tracking to goals.
- ▶ Executives.

Bad for:

- ▶ Metrics that change in real time.
- ▶ Metrics that have immediate operational consequences.

EXAMPLES: ACQUISITION FUNNEL, REGISTRATION FUNNEL, TOP SELLING ITEMS, COHORT CONVERSION.

LIVE DASHBOARDS



DAILY REPORTS

From: <ReportingServices@>
Reply-To: <ReportingServices@>
Date: Wed, 06:35:39 -0700
To: <ReportingServices@>
Subject: Daily Stats: 20

Report Date: 20

7-Day deltas shown in italic brackets

Gameplay Metrics

Average CCU 0.5 [+4%]
Peak CCU at 4:37pm PDT

Daily Active Users [+5%]
Monthly Active Users [+8%]
DAU/MAU % [-0%]

Newbie Retention % [-2%]
Veteran Retention % [-1%]

Monetization Metrics

Active Paid Users % of MAU Count [&Delta]
Sub Only % [+1%]
MTX Only % [+17%]
Both % [+12%]
Total % [+7%]

Plan New Cancelled Active [&Delta]
1-Month []
12-Month []
6-Month []
Total []

Bundle #Buyers Count [&Delta]
US \$ 4.95 [+10%]
US \$ 9.95 [+33%]
US \$ 19.95 [+5%]
US \$ 49.95 [-50%]
US \$ 89.95 []
Total [+15%]

Weekly cohort (active week) % Converted
Week ending 8/30 %
Week ending 8/9 %
Week ending 7/12 %

Revenue Today &Delta
Sub \$ [+5%]
MTX \$ [+14%]
Total \$ [+9%]

Churn Rate Cumulative Rolling 30d
Sub % %

Website Metrics

Daily Web Visitors [+10%]
New [+17%]
Returning [+1%]

New Registrations [+7%]

Acquisition Funnel (Daily)

No. of unique browser cookies
Visitors % &Delta%
Unique New Visitors (100%) [+0%]
Registration Name (87%) [+1%]
Registration Password (40%) [-2%]
Registration (32%) [-3%]
Registration (31%) [-2%]
Registration (31%) [-3%]
Registration (30%) [-3%]
Registration Success (26%) [-2%]

Monetization Funnel (Daily)

No. of unique browser cookies
Subscriptions Visitors % &Delta%
Confirm Page (100%) [+0%]
Payment Page 7% [-4%]
New Subs [+0%]

MTX Visitors % &Delta%
Confirm Page (100%) [+0%]
Payment Page 1% [-2%]
MTX Buyers 3% [+0%]

Earned

Total per Active &Delta/Active
Last Day [+1%]
Last 7 Days [-2%]
Last 30 Days [+1%]

Spent

Total per Active &Delta/Active
Last Day [+5%]
Last 7 Days [-2%]
Last 30 Days [+4%]

Top Selling Items

Today:

1. [-15%]
2. [-12%]
3. [-30%]
4. [+18%]
5. [-38%]
6. 3 [+35%]
7. 38%
8. 57%
9. 100%
10. -78%

Past 7 days:

1. 11%
2. -20%
3. 14%
4. 769 [+1%]
5. 100%
6. 100%
7. 100%
8. 100%
9. 100%
10. 100%

Past 30 days:

1. 100%
2. 100%
3. 100%
4. 100%
5. 100%
6. [-10%]

AD HOC

Shoptown Hero (prod-admin.wn00.com) - StoreSkin UpgradeTwo

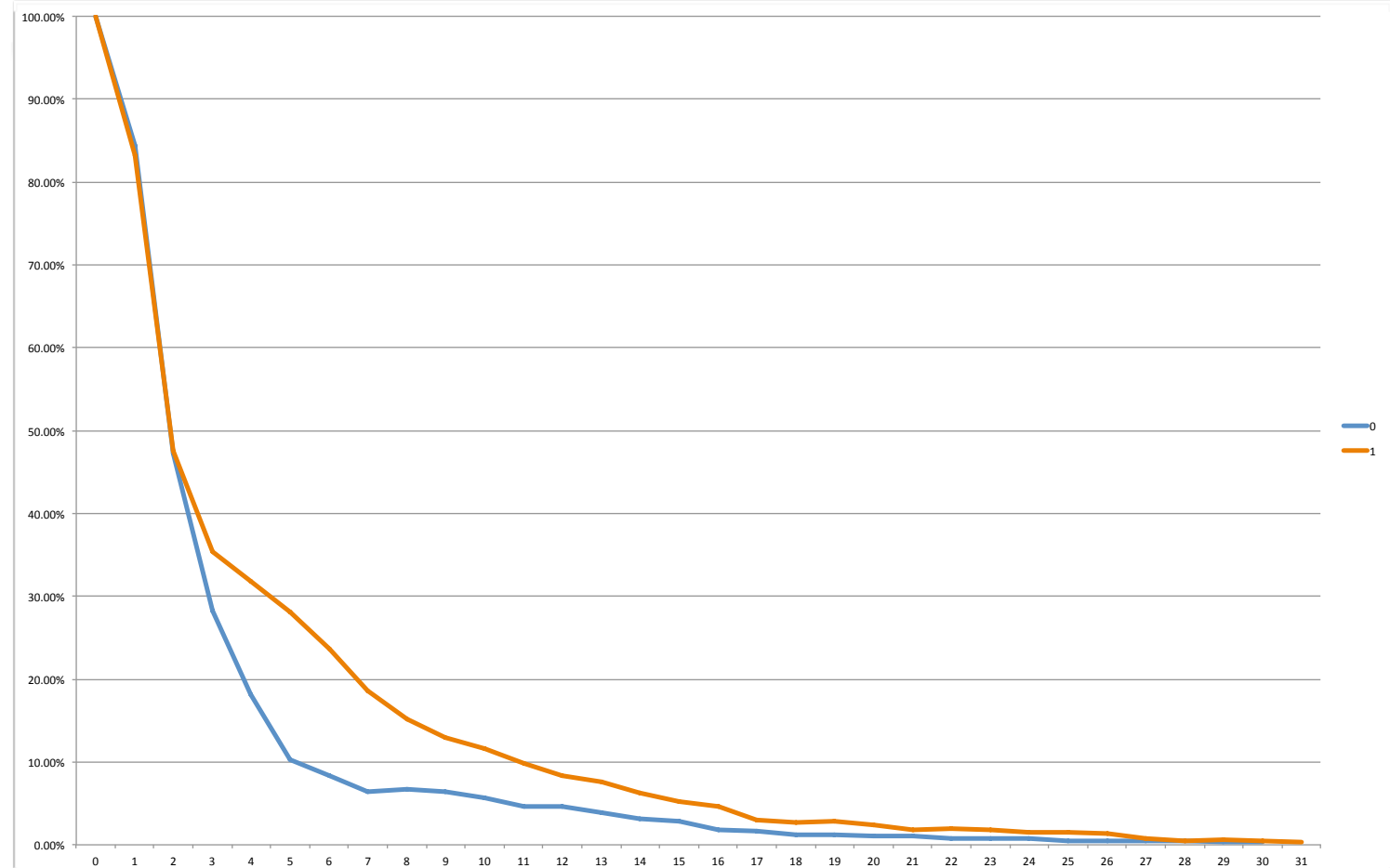
BL v1.3.80(Mon Dec 19 17:04:38 2011 -0800)

CorePlatform v1.3.49(Thu Jan 12 16:28:26 2012 -0800)

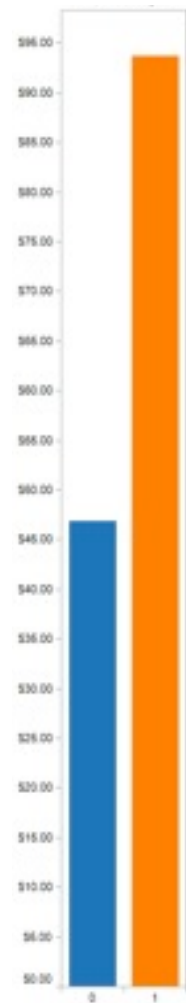
	Name	A/B	Effect	A/B	Change	A/B	Price	A/B	Premium Price	A/B	Bonus Item	A/B	Asset Name
☐	Welcome Mat	add	FIRST_UPGRADE	add	0.1	add	500	add	0	add		add	welcomeMatUpgr
☐	Pot-Belly Stove	add	SECOND_UPGRADE	add	0.15	add	650	add	0	add		add	heaterUpgrade
☐	New Floor	add	THIRD_UPGRADE	add	0.2	add	844	add	0	add		add	floorUpgrade
☐	Interesting Shelve	add	FOURTH_UPGRADE	add	0.25	add	1125	add	0	add		add	wallDecorationUp
☐	Buy Store	add	BUY_STORE	add	0.3	add	1500	add	0	add		add	nextStoreUpgrad



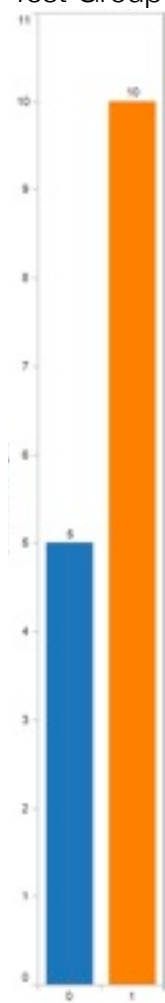
Players by Level AB Test Group



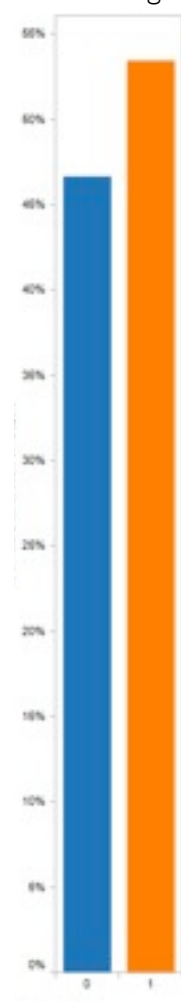
Sales by Test Group (CAD)



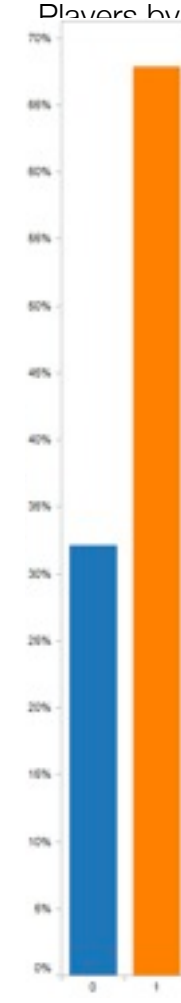
Count of Payers by Test Group



Breakdown of Day 1 Returning



Breakdown of Day 3 Returning Players by



TRICKS AND TIPS



Tricks and Tips

VANITY METRICS

Vanity Metrics use data that looks good but is not actionable.

Sometimes the data itself is useful, but trending or baselines are missing.

VANITY METRICS

REGISTRATIONS TO DATE
TOTAL HOURS PLAYED
TOTAL [COWS] PURCHASED
TOTAL LIKES

CONCURRENT USERS

USEFUL METRICS

REGISTRATIONS LAST 24H
SESSION LENGTH
[COWS] PURCHASED LAST 24H
LIKES LAST 24H

CONCURRENT USERS

Some questions to ask to determine if the data you're looking at is a vanity metric.

- ▶ Is this good?
- ▶ Is this improving?
- ▶ Can I do anything to change this number?
- ▶ Is there anything I can do to make this go down?

PUTTING THE DATA ON TRIAL

Putting the data on trial is a common reaction when you don't like what the data says.

Day 1 retention went from 50% to 3% for every cohort since your new tutorial flow was released.

I think we should revert it.

Did you segment that by zodiac sign, gender and party affiliation? I want to see that first.

Also, I hate you.



Some questions to ask to determine if you're putting the data on trial.

- ▶ Is the problem with the data something you've seen previously?
- ▶ Would making the change the data suggests be easier than changing the data methodology?
- ▶ Am I protecting my baby?

GETTING DATA DRUNK

It's not uncommon for a team with access to new data to get **data drunk**.

I agree there's a weird drop between level 8 and 9. We should fix that.

...but first let's take a look at the number of Mages who have the Horn of Simian Summoning who reach level 9. I've always felt like that Horn is way overpowered.

And can we see how many of them play the game on mute?



Some questions to ask to determine if you're data drunk.

- ▶ Would the action I take change with additional data?
- ▶ Would making the change the data suggests be easier than going deeper in to the data?
- ▶ Are we spending more time pulling and analyzing data than shipping?



Thank you.

dan.fiden@signiavc.com