

What does it mean to be data driven?



- What kind of data is collected by companies?
- How is this data currently used in businesses?
- How could data be used to do more?

What data do companies collect?

What data gets collected?

- Any and all customer interaction gets tracked e.g.
 - Visiting a online store and looking at an item
 - Using your card at an ATM or in a store
 - Playing a game on your phone
 - What you buy and when if you use a loyalty scheme card
- The level of detail in this data is very high
- This is made possible by the advent of non-stop internet connectivity + very cheap data processing and storage costs

What data gets collected in games



| <input type="checkbox"/> NAME | DESCRIPTION |
|---|--|
| <input type="checkbox"/> achievement | The achievement event provides support for achievements wit... |
| <input type="checkbox"/> adClosed | Reports when an ad was closed. |
| <input type="checkbox"/> adjustAttribution | Attribution event for customers using Adjust. |
| <input type="checkbox"/> adRequest | Reports the result of a request to an ad network for the next ad. |
| <input type="checkbox"/> adShow | Reports when an ad has been shown. |
| <input type="checkbox"/> appsFlyerAttribution | Attribution event for customers using AppsFlyer |
| <input type="checkbox"/> characterCreated | This event should be launched when a player creates a new c... |
| <input type="checkbox"/> characterDeleted | The characterDeleted event is triggered when the player remo... |
| <input type="checkbox"/> characterUpdated | The characterUpdated event is triggered when the player upd... |
| <input type="checkbox"/> clientDevice | This event should only be fired at the start of each player sessi... |
| <input type="checkbox"/> engageConverted | This event is automatically generated by the deltaDNA platfor... |
| <input type="checkbox"/> engagement | engagement |
| <input type="checkbox"/> engageResponse | This event is automatically generated by the deltaDNA platfor... |
| <input type="checkbox"/> featureUnlocked | The featureUnlocked event is an event that will track wheneve... |

- Typical event list for a F2P game might have 20-30 events
- Equates to ~100 events per user / day
- Avg. F2P game has 100k users a day = 10 million events a day
- deltaDNA processes 1 billion events per day

How is data currently used?

- Data is typically used in three ways
 - KPI tracking
 - Core set of performance metrics e.g. revenue, active users, retention, etc
 - AB testing
 - Test new decisions by splitting user base
 - Machine Learning
 - Use historical data to predict future user behaviour

KPI tracking dashboards



Blog

Home > Demo Co > deltaCrunch > Live > Blog

isaac.roseboom@deltdna.com

EDIT DASHBOARD

Active Users

| Date | Active Users |
|--------|--------------|
| Mar 16 | 27,000 |
| Mar 18 | 27,000 |
| Mar 20 | 27,000 |
| Mar 22 | 27,000 |
| Mar 24 | 27,000 |
| Mar 26 | 27,000 |
| Mar 28 | 27,000 |
| Mar 30 | 28,000 |
| Apr 01 | 29,000 |
| Apr 03 | 29,000 |
| Apr 05 | 29,000 |
| Apr 07 | 29,000 |
| Apr 09 | 29,000 |
| Apr 11 | 29,000 |
| Apr 13 | 29,000 |
| Apr 15 | 29,000 |

Retention

| Date | Retention (days) |
|--------|------------------|
| Mar 16 | 25 |
| Mar 18 | 25 |
| Mar 20 | 25 |
| Mar 22 | 25 |
| Mar 24 | 25 |
| Mar 26 | 25 |
| Mar 28 | 25 |
| Mar 30 | 25 |
| Apr 01 | 25 |
| Apr 03 | 25 |
| Apr 05 | 25 |
| Apr 07 | 25 |
| Apr 09 | 40 |
| Apr 11 | 15 |
| Apr 13 | 5 |

Spenders vs Day

| Day | Spenders |
|-----|----------|
| 16 | 0.010 |
| 17 | 0.010 |
| 18 | 0.010 |
| 19 | 0.010 |
| 20 | 0.010 |
| 21 | 0.010 |
| 22 | 0.010 |
| 23 | 0.010 |
| 24 | 0.010 |
| 25 | 0.010 |
| 26 | 0.010 |
| 27 | 0.010 |
| 28 | 0.010 |
| 29 | 0.010 |
| 30 | 0.010 |
| 31 | 0.010 |
| 01 | 0.010 |
| 02 | 0.010 |
| 03 | 0.010 |
| 04 | 0.010 |
| 05 | 0.010 |
| 06 | 0.010 |
| 07 | 0.010 |
| 08 | 0.010 |
| 09 | 0.010 |
| 10 | 0.010 |
| 11 | 0.010 |
| 12 | 0.010 |
| 13 | 0.010 |
| 14 | 0.010 |
| 15 | 0.010 |

FTUE

| Step | Percentage | User Count |
|---------------------------|------------|-------------|
| 1 Install | 100% | 20961 users |
| 2 Reach Home Screen | 100% | 20961 users |
| 3 Start Tutorial | 99% | 20694 users |
| 4 Tutorial Part 1 | 92% | 19206 users |
| 5 Tutorial Part 2 | 67% | 13974 users |
| 6 Start First Mission | 55% | 11564 users |
| 7 First Level Up | 47% | 9819 users |
| 8 Claim First Achievement | 40% | 8435 users |
| 9 Start Second Mission | 36% | 7276 users |

ARPPDAU

| Date | ARPPDAU |
|--------|---------|
| Mar 16 | 0.100 |
| Mar 18 | 0.050 |
| Mar 20 | 0.070 |
| Mar 22 | 0.060 |
| Mar 24 | 0.070 |
| Mar 26 | 0.070 |
| Mar 28 | 0.060 |
| Mar 30 | 0.060 |
| Apr 01 | 0.050 |
| Apr 03 | 0.060 |
| Apr 05 | 0.060 |
| Apr 07 | 0.080 |
| Apr 09 | 0.050 |
| Apr 11 | 0.060 |
| Apr 13 | 0.050 |
| Apr 15 | 0.150 |

IAP Purchase Funnel

| Date | Unique Users |
|------|--------------|
| 16 | 100 |
| 17 | 80 |
| 18 | 65 |
| 19 | 50 |
| 20 | 35 |
| 21 | 25 |
| 22 | 15 |
| 23 | 10 |
| 24 | 5 |
| 25 | 5 |
| 26 | 5 |
| 27 | 5 |
| 28 | 5 |
| 29 | 5 |
| 30 | 5 |
| 31 | 5 |
| 01 | 5 |
| 02 | 5 |
| 03 | 5 |
| 04 | 5 |
| 05 | 5 |
| 06 | 5 |
| 07 | 5 |
| 08 | 5 |
| 09 | 5 |
| 10 | 5 |
| 11 | 5 |
| 12 | 5 |
| 13 | 5 |
| 14 | 5 |
| 15 | 5 |

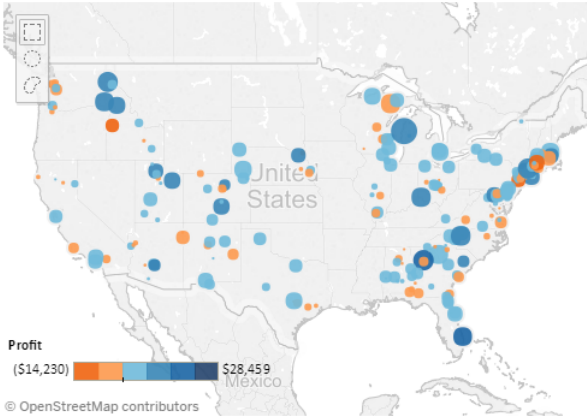
Better KPI tracking Dashboards



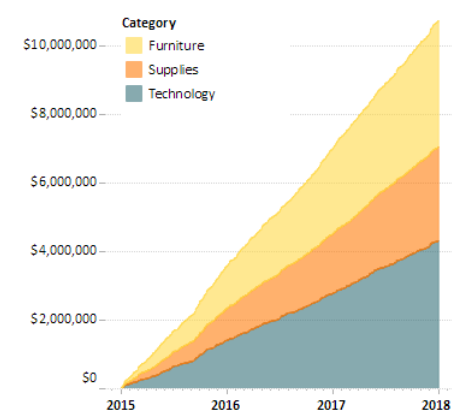
Executive Dashboard | Product Dashboard | Sales Dashboard

Executive Dashboard

Geographic Summary (Click on zip codes below to filter)



Sales by Category (hover for details)



Select Region:

- (All)
- Central
- East
- South
- West

Select Category:

- (All)
- Furniture
- Supplies
- Technology

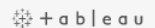
Select Year:

- (All)
- 2015
- 2016
- 2017

Monthly Performance

| | | January | February | March | April | May | June | July | August | September | October | November | December |
|-------------------|----------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Furniture | Order Quantity | 2,348 | 2,618 | 2,746 | 2,405 | 2,971 | 2,214 | 2,660 | 2,602 | 3,004 | 2,618 | 2,591 | 3,304 |
| | Sales | \$331,075 | \$318,555 | \$301,527 | \$295,774 | \$298,076 | \$218,170 | \$201,697 | \$328,355 | \$362,707 | \$305,942 | \$298,941 | \$417,732 |
| | Profit Ratio | 10.99% | 0.93% | -3.01% | 1.69% | 6.63% | -0.49% | -3.84% | 0.26% | 6.75% | 3.31% | 4.08% | -0.05% |
| Supplies | Order Quantity | 6,885 | 7,075 | 7,146 | 7,254 | 9,235 | 6,997 | 7,211 | 7,850 | 7,447 | 8,467 | 6,282 | 7,599 |
| | Sales | \$227,241 | \$205,914 | \$235,893 | \$206,478 | \$195,727 | \$271,689 | \$206,954 | \$213,858 | \$199,771 | \$288,502 | \$221,204 | \$276,387 |
| | Profit Ratio | 10.69% | 14.41% | 14.30% | 13.44% | 4.39% | 12.15% | 10.61% | 7.12% | 14.70% | 13.07% | 18.40% | 13.95% |
| Technology | Order Quantity | 3,060 | 2,983 | 3,152 | 3,132 | 4,066 | 3,312 | 3,138 | 2,913 | 3,650 | 3,047 | 3,368 | 3,178 |
| | Sales | \$357,235 | \$325,489 | \$331,000 | \$322,355 | \$414,802 | \$307,629 | \$344,813 | \$261,358 | \$444,754 | \$430,274 | \$362,434 | \$392,318 |
| | Profit Ratio | 13.60% | 14.80% | 18.14% | 16.36% | 16.59% | 17.15% | 20.20% | 14.85% | 15.03% | 17.72% | 11.01% | 13.79% |

← Undo → Redo ↶ Reset



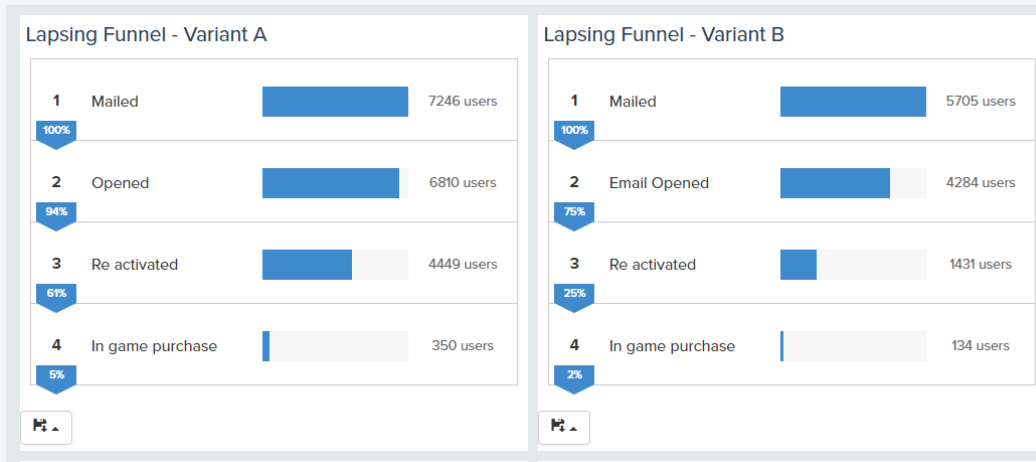
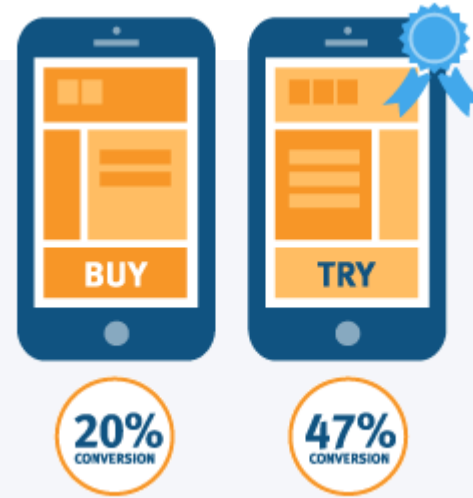
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Share Download

- Great for getting visibility of data in company
- Can react quickly if something is wrong
- Doesn't really help decide what to do though

AB testing

- Build multiple versions of game components and see which works best
- Typically choose one success criteria (e.g. conversion) but can track multiple KPIs across variants
- Allows you to make informed decisions at the cost of having to build multiple versions



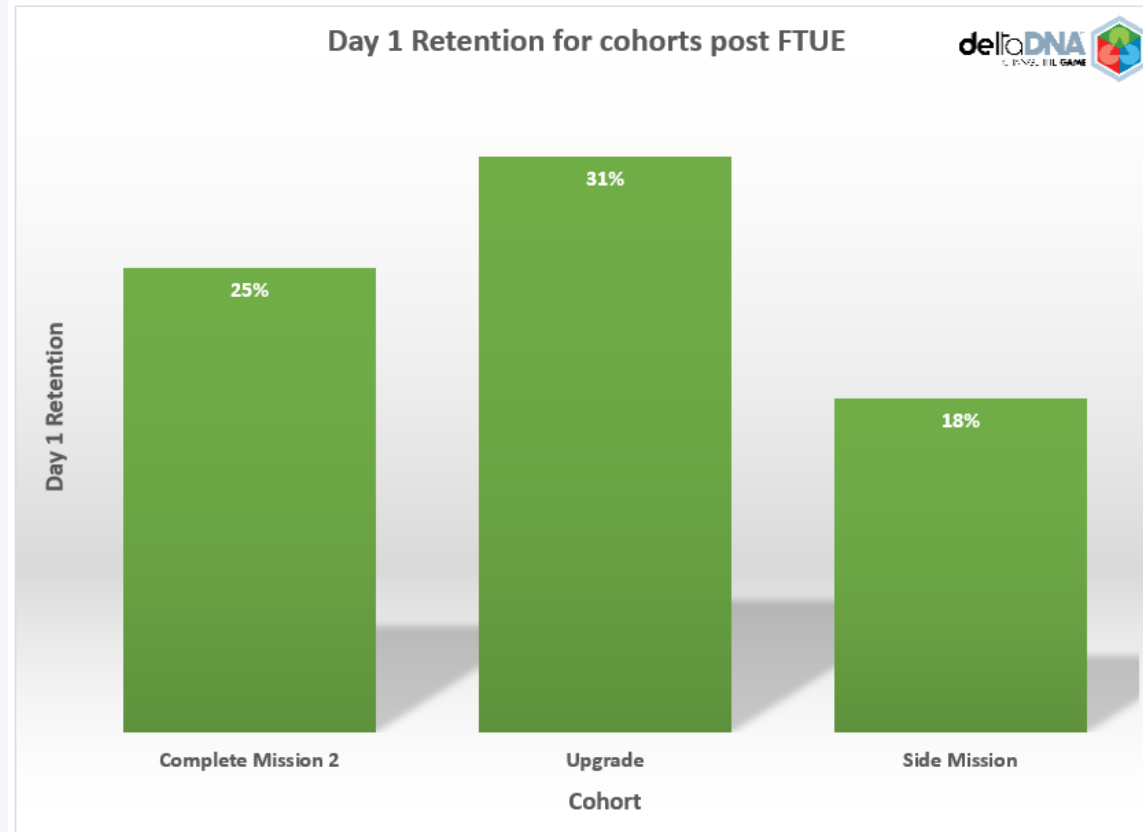
- Use of machine learning is growing
- 90%+ of usage fits into one of two scenarios
 - What is the likelihood a user will spend or churn?
 - What should I recommend to a user that likes X,Y,Z?
- Output of both tends to be some messaging to the player e.g.
 - If a player has a high likelihood to churn send them a gift
 - If a player might like X direct them towards it in the UI
- Very hard to glean anything interesting from these models: simply act as black box that can incrementally increase KPIs

- Data only really comes into play at either end of the decision making process i.e
 - Is there something wrong? Do we need to change something?
 - Which proposed change should we adopt?
- What if data could be used to answer other types of questions?
 - What kind of designs should we explore?
 - What do our customers like/want/hate?
 - What opportunities are we currently missing out on?

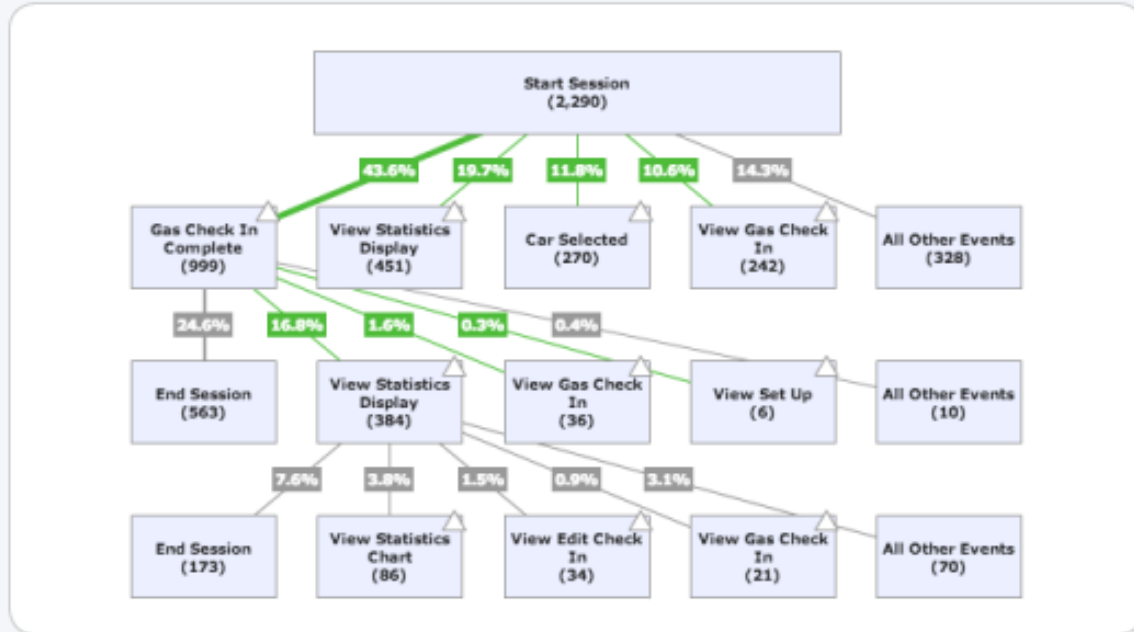
How could data be used to do more?

- Most analytics focuses on the product first e.g.
 - How many times is something purchased?
 - How many players complete a mission?
 - How many times is a web page viewed?
- This is useful, but ignores the outcome for the user.
- Questions that can motivate design focus on the user
 - What fraction of customers that purchase X go onto spend again?
 - What fraction of players that complete mission X churn?
- This allows not just popularity to be assessed but the impact of user decisions

- Scenario - Post tutorial there are three options:
 - Progress directly to mission 2
 - Complete a side quest
 - Upgrade their character
- Look at return rate based on decision



- Can expand this to consider different user paths and their outcomes
- Can be a bit unwieldy but powerful if done right



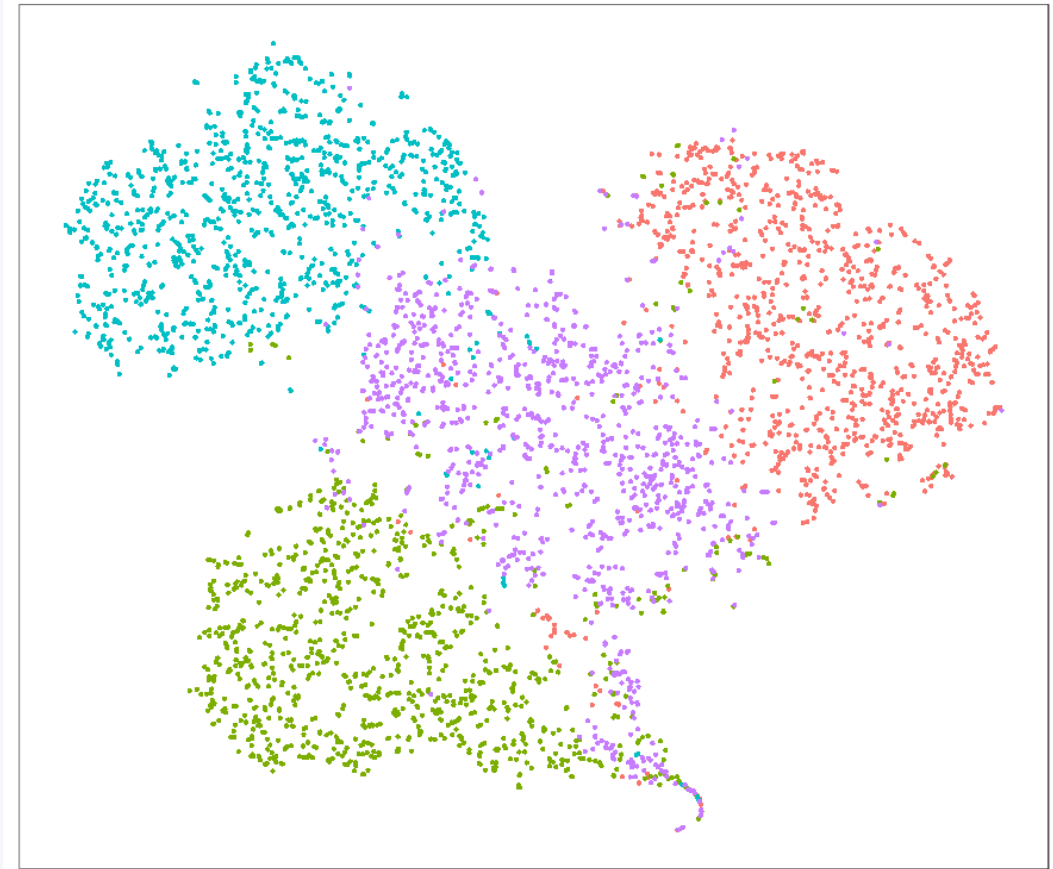
- Performing this kind of analysis across many player decisions allows individual performance of design to be assessed
- Design outcomes of this could be
 - Signposting towards better performing options
 - Create more of what works well, remove things that don't
 - Examine why features underperform and modify them

- User centric analysis can be naïve because not all players are the same
- Build archetypes from looking at clustered behaviours
- Inform not just how users interact with your product, but also which segments may be underperforming
- Ultimately drive design that better matches user base

- Identify player behavioral metrics
 - Engagement: how often they play, session length, etc
 - Competence: win rate, leveling rate, etc
 - Aggression: risk/stakes, speed of play, etc
 - Social: in game friends, gifting, etc
- Use clustering algorithms to segment players
- Can be hard to visualize with lots of dimensions

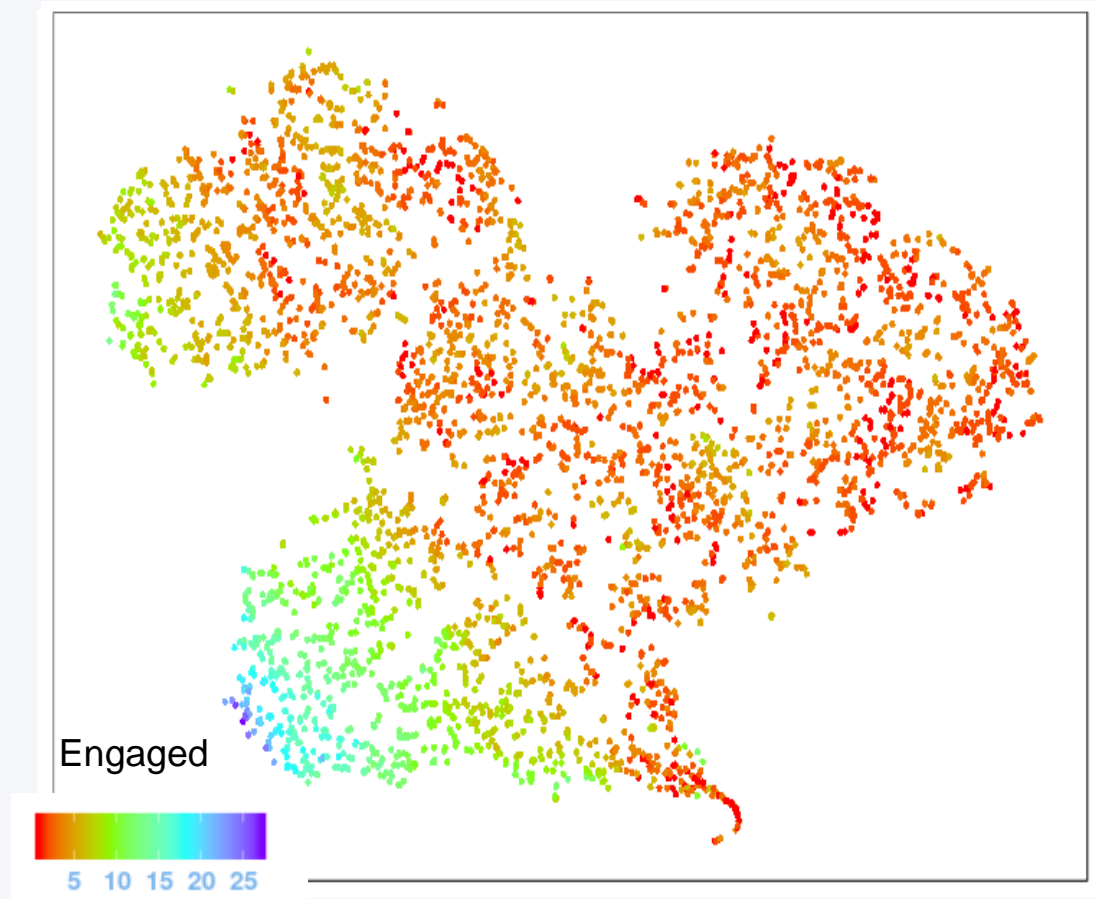
Player Profiling for Games

- Use combination of clustering technique (k-means)
- With visualization technique (t-SNE)
- Example: identify 4 clusters in 8 metrics
- This approach is good for identify trends within clusters



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- Example: identify 4 clusters in 8 metrics
- This approach is good for identify trends within clusters
- Can build up profile of players

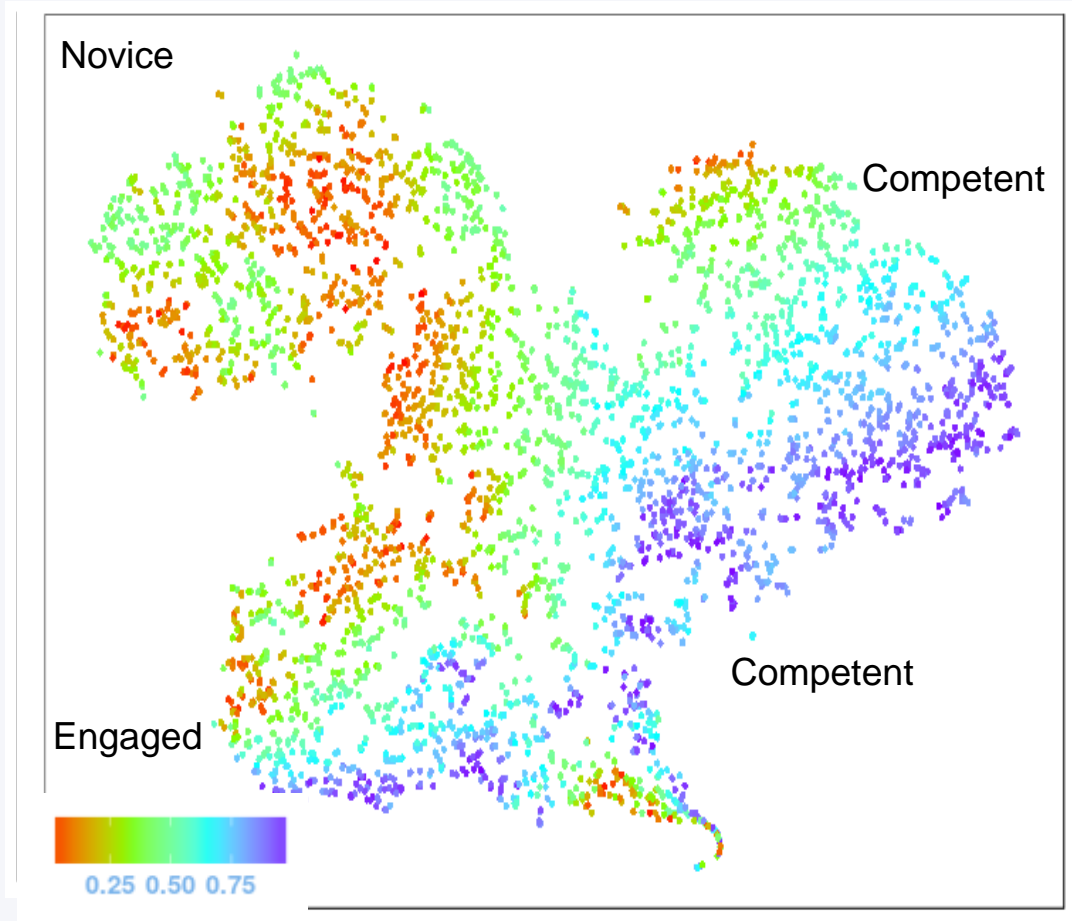
Missions per Session



Player Profiling for Games

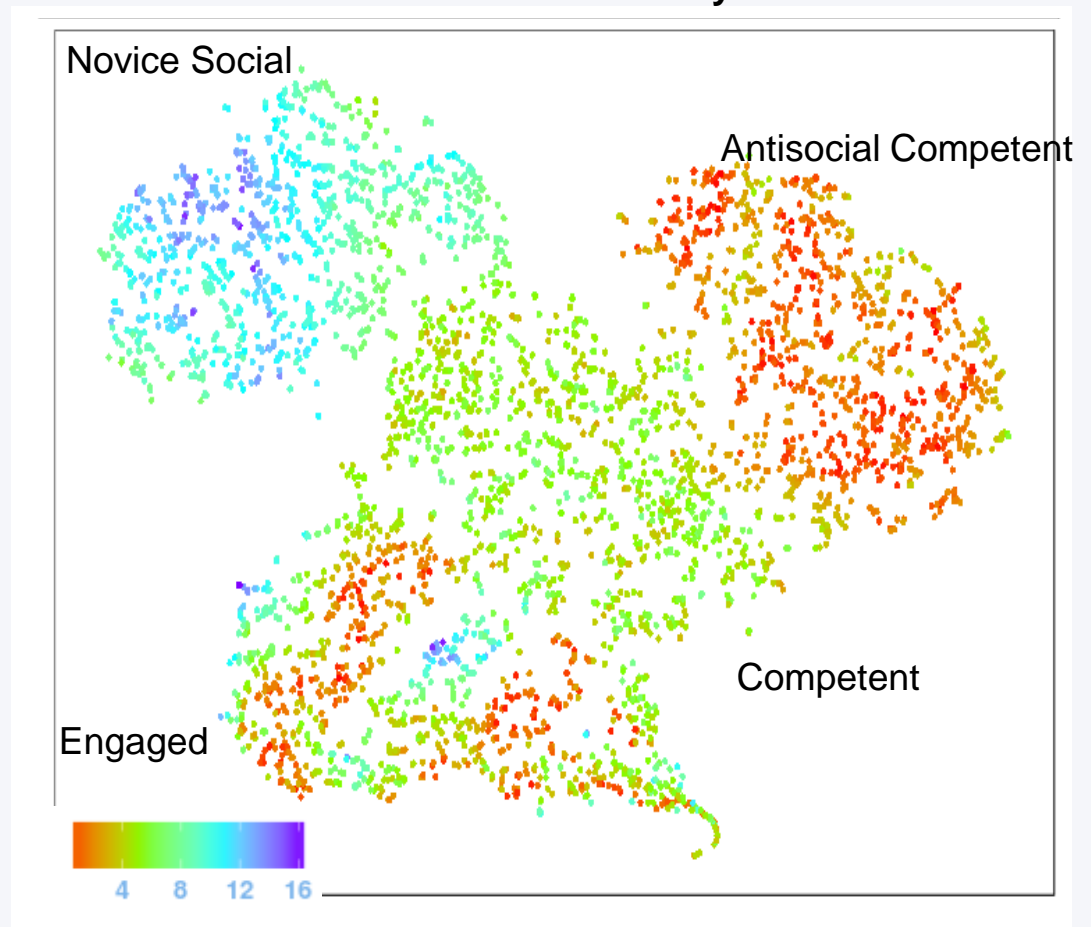
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Win Rate



Player Profiling for Games

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- By this process build up a view of player
- By understanding different playing style can build out strategies to improve game e.g.
 - The most engaged players have a wide range of competency and social propensity – don't want to change too much overall
 - Why are some of the most competent players lowly engaged and anti-social?
 - Most novice players seem to be very social, is it because they need so much help?

- Modern companies track a LOT of data
- Typically the data is only used in the most basic fashion
- With the right perspective, and visualization, much more could be done to unlock the power of data to drive better design

Thank you!



[/deltaDNA](#)

info@deltadna.com



[@deltaDNA](#)



YOUR HOST

Isaac Roseboom

Isaac.roseboom@deltadna.com