Outbound

Straightforward Insights for Growing Apps

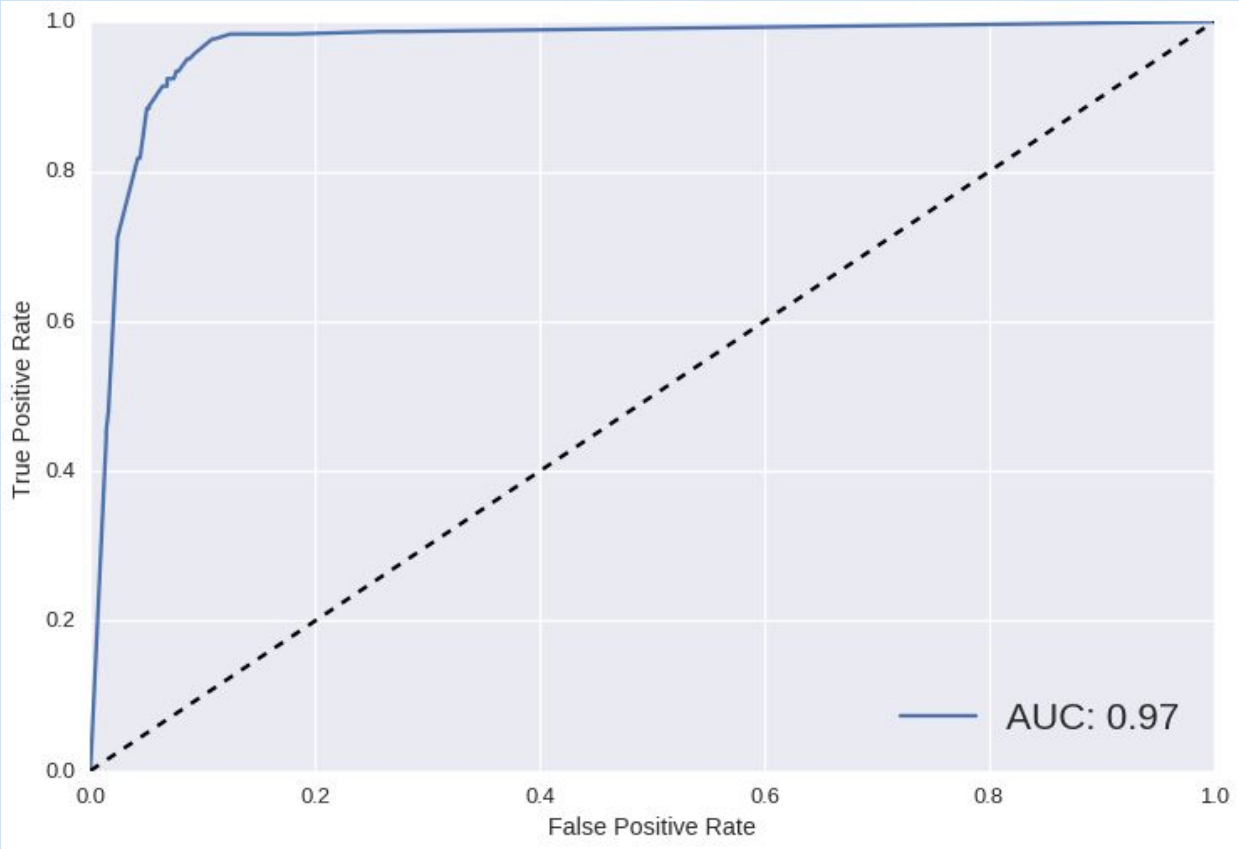
Ben Regner

Problem: Providing actionable insights to a non-specialist clearly and without ambiguity.

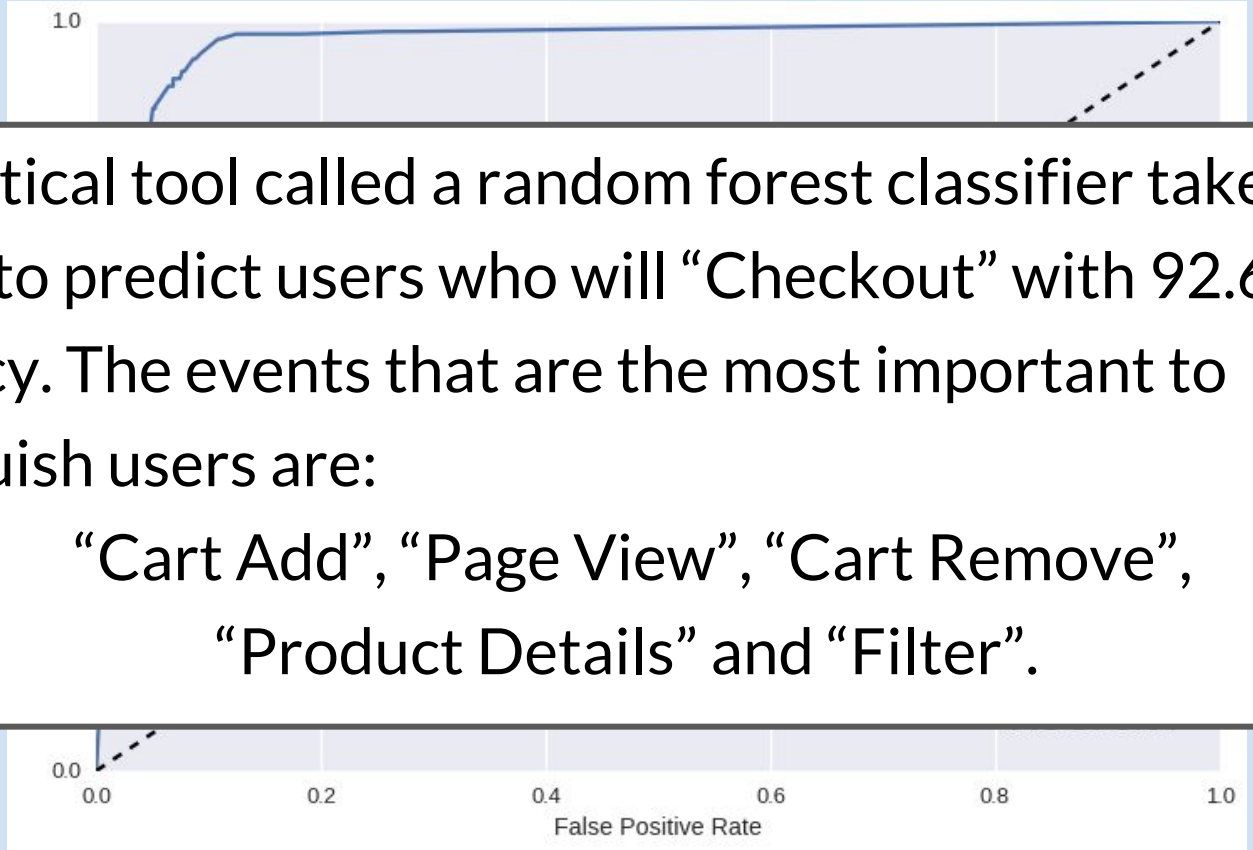
	event_type_id	timestamp	user_id	event_name
0	54e425622c9dcd04356f09ef	2015-02-18 05:38:42	54e425622c9dcd04356f09eb	Signed In

Example event of interest: “Checkout”

Predicting Whether a User Will “Checkout”



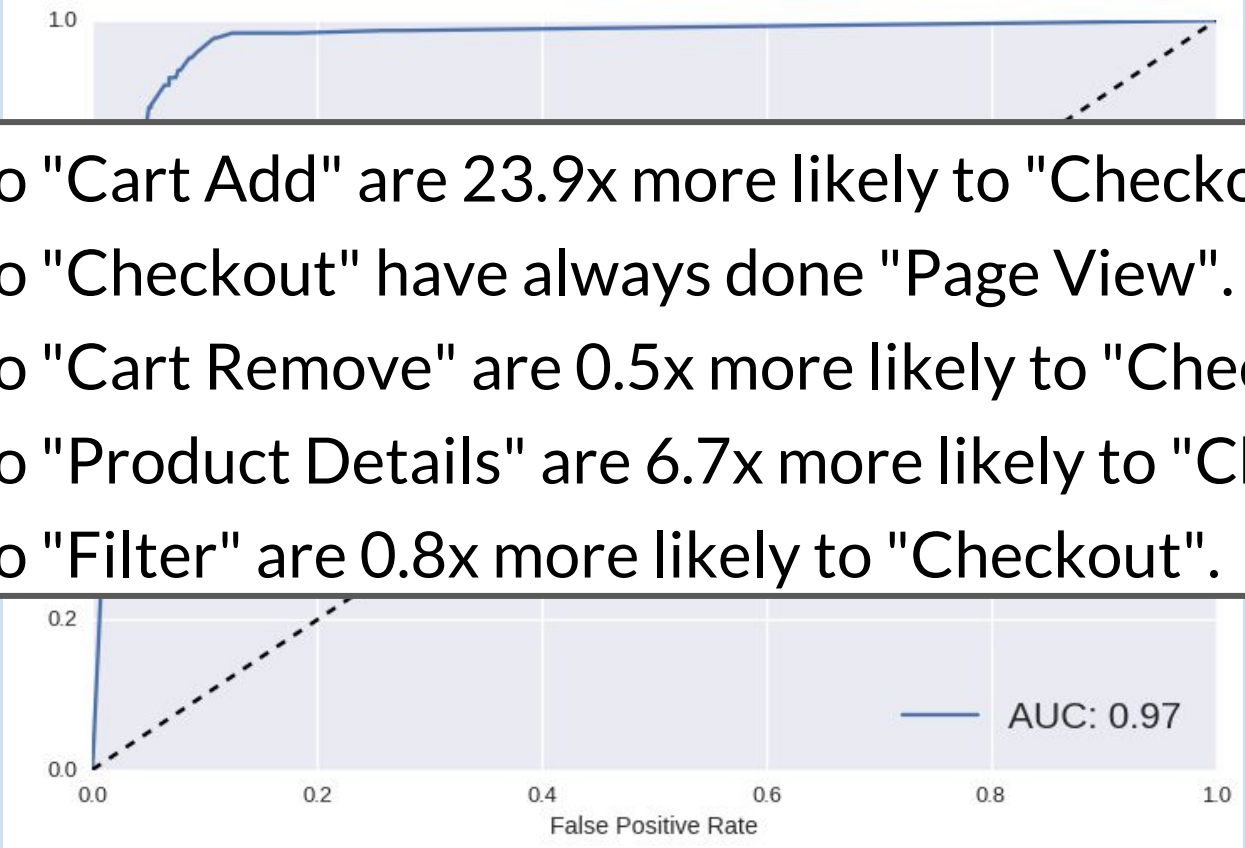
Predicting Whether a User Will “Checkout”



A statistical tool called a random forest classifier takes user events to predict users who will “Checkout” with 92.6% accuracy. The events that are the most important to distinguish users are:

“Cart Add”, “Page View”, “Cart Remove”, “Product Details” and “Filter”.

Predicting Whether a User Will “Checkout”



Users who "Cart Add" are 23.9x more likely to "Checkout".

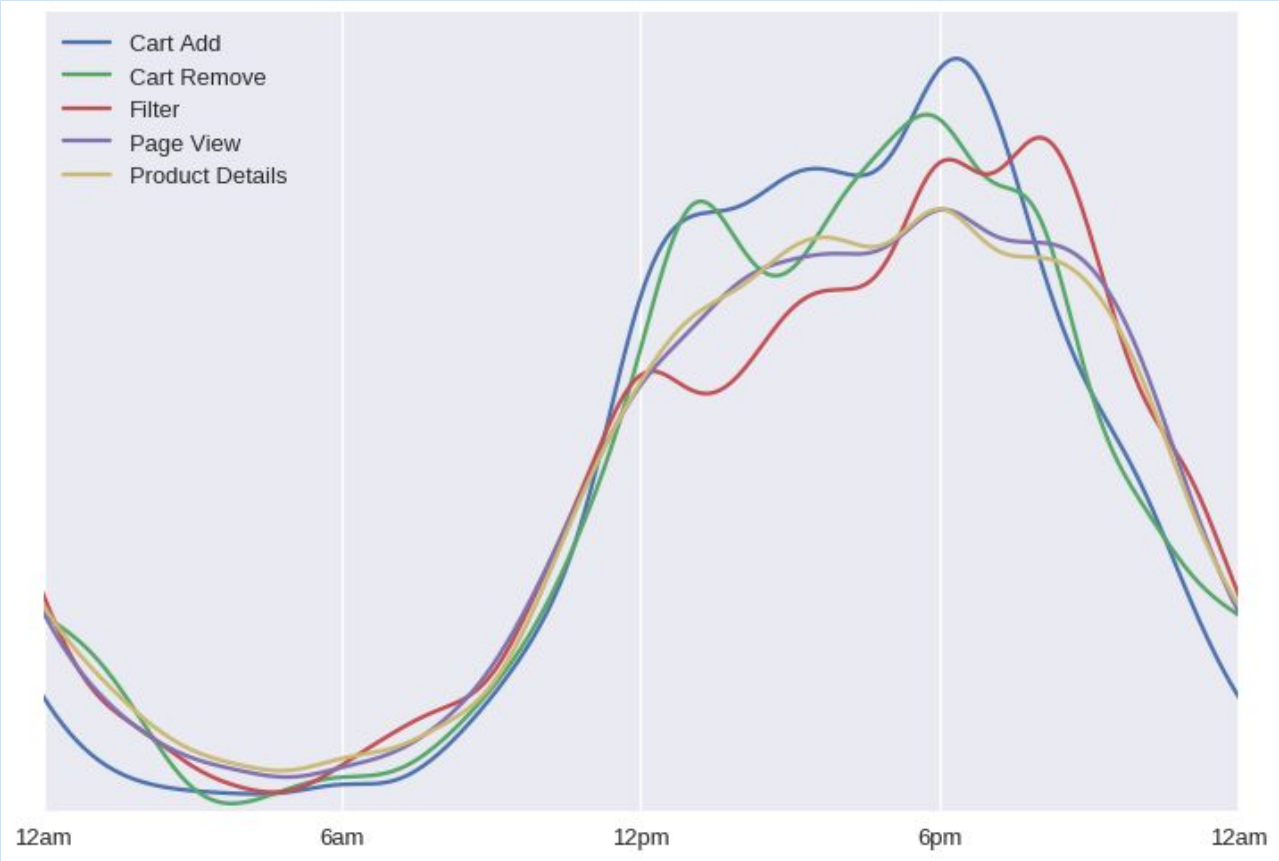
Users who "Checkout" have always done "Page View".

Users who "Cart Remove" are 0.5x more likely to "Checkout".

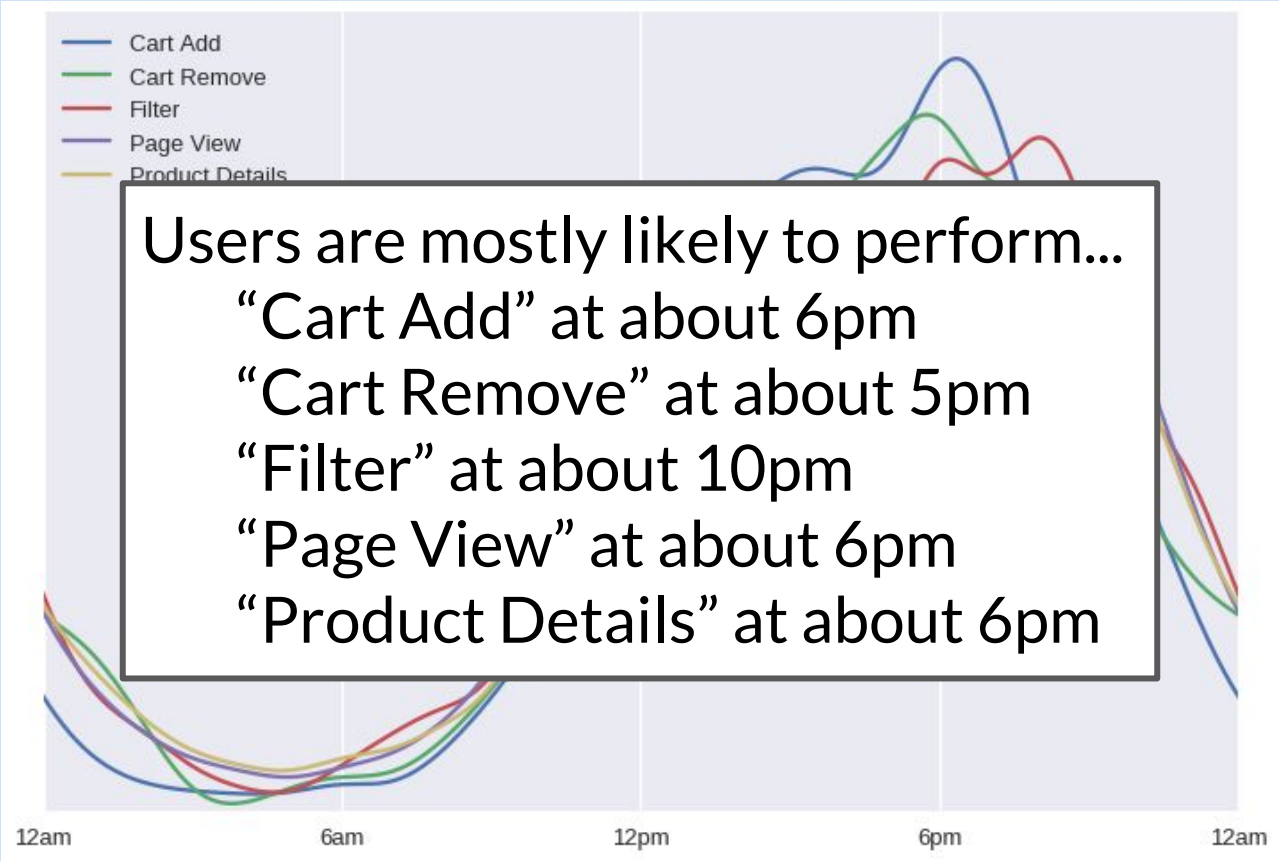
Users who "Product Details" are 6.7x more likely to "Checkout".

Users who "Filter" are 0.8x more likely to "Checkout".

Timing of Daily Events



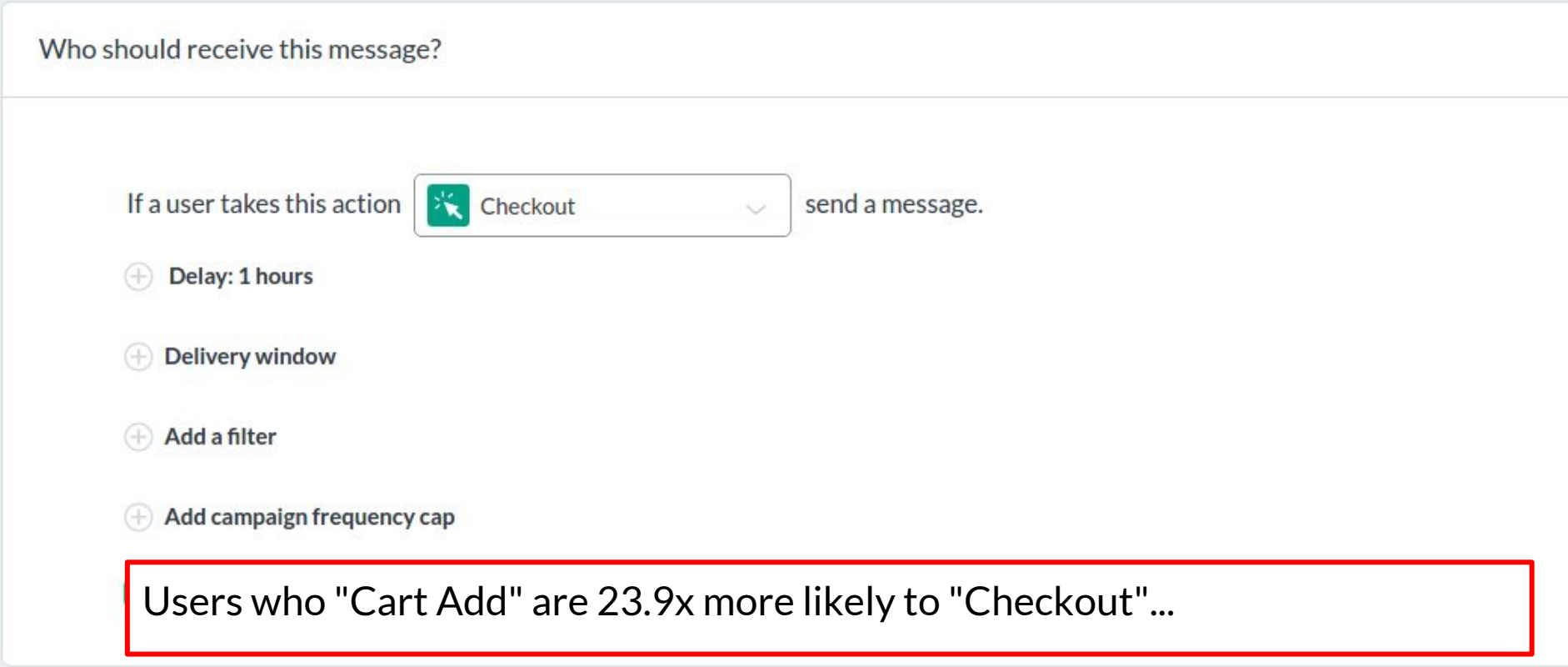
Timing of Daily Events

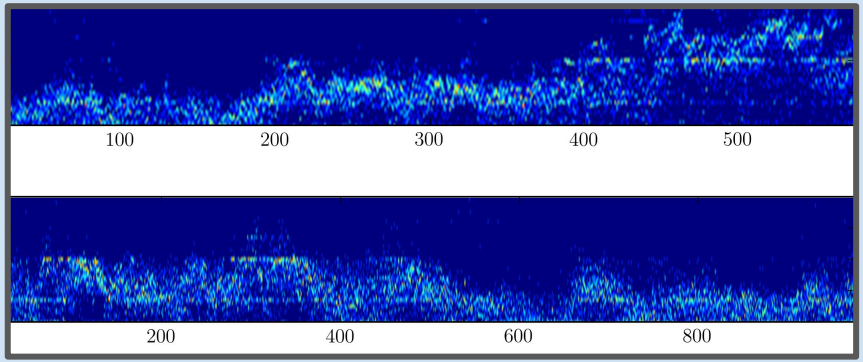


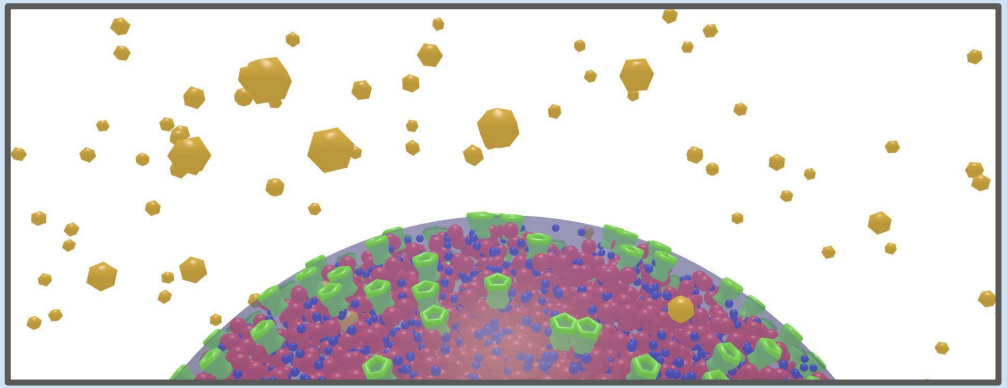
Users are mostly likely to perform...

- “Cart Add” at about 6pm
- “Cart Remove” at about 5pm
- “Filter” at about 10pm
- “Page View” at about 6pm
- “Product Details” at about 6pm

Deliverable







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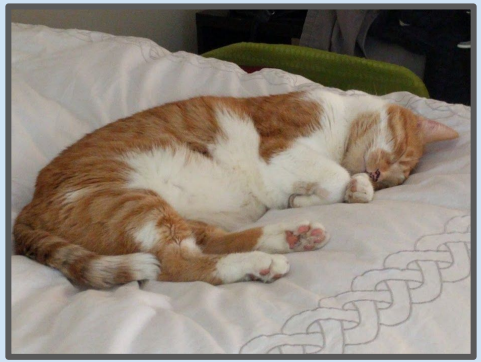
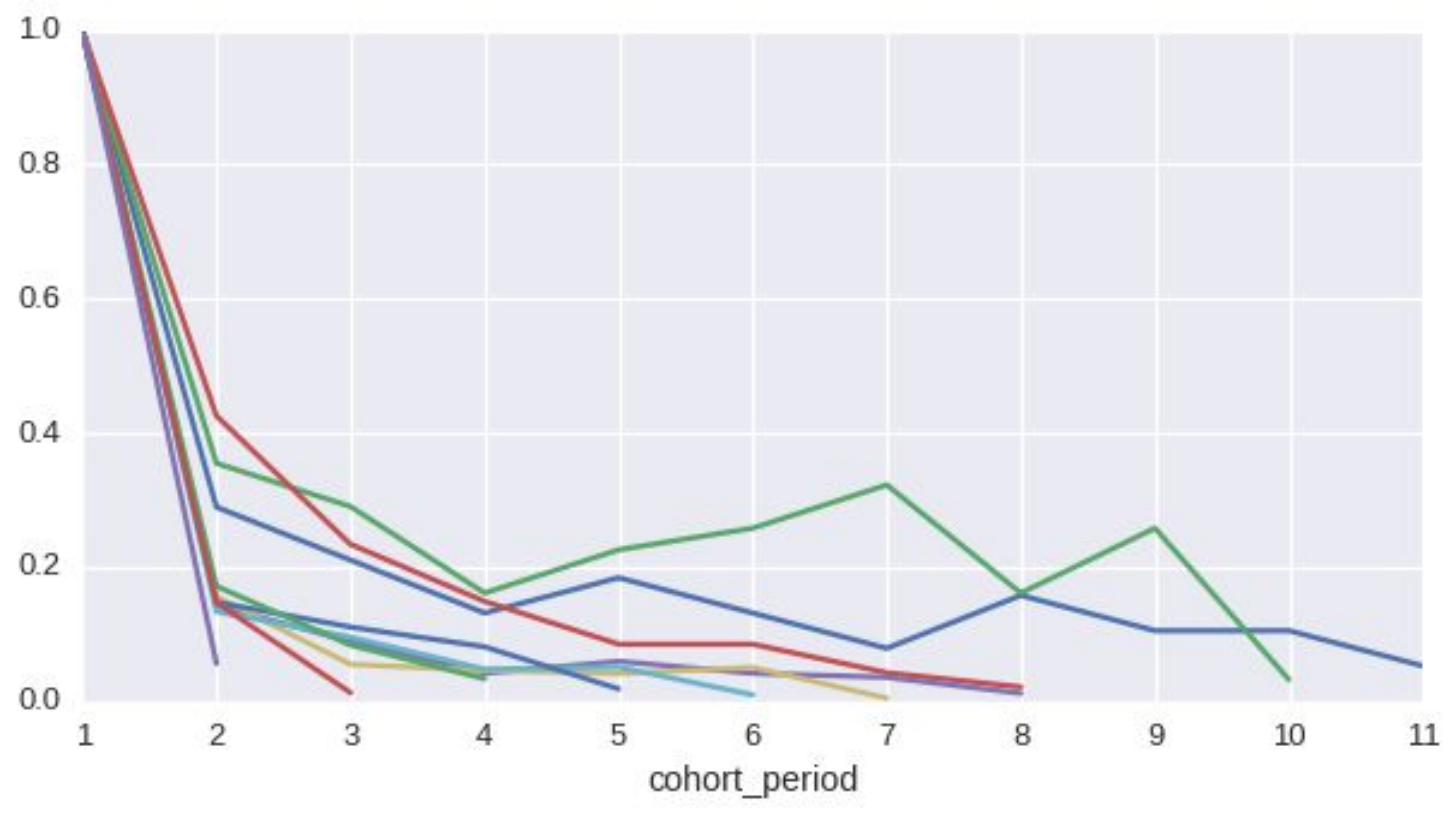
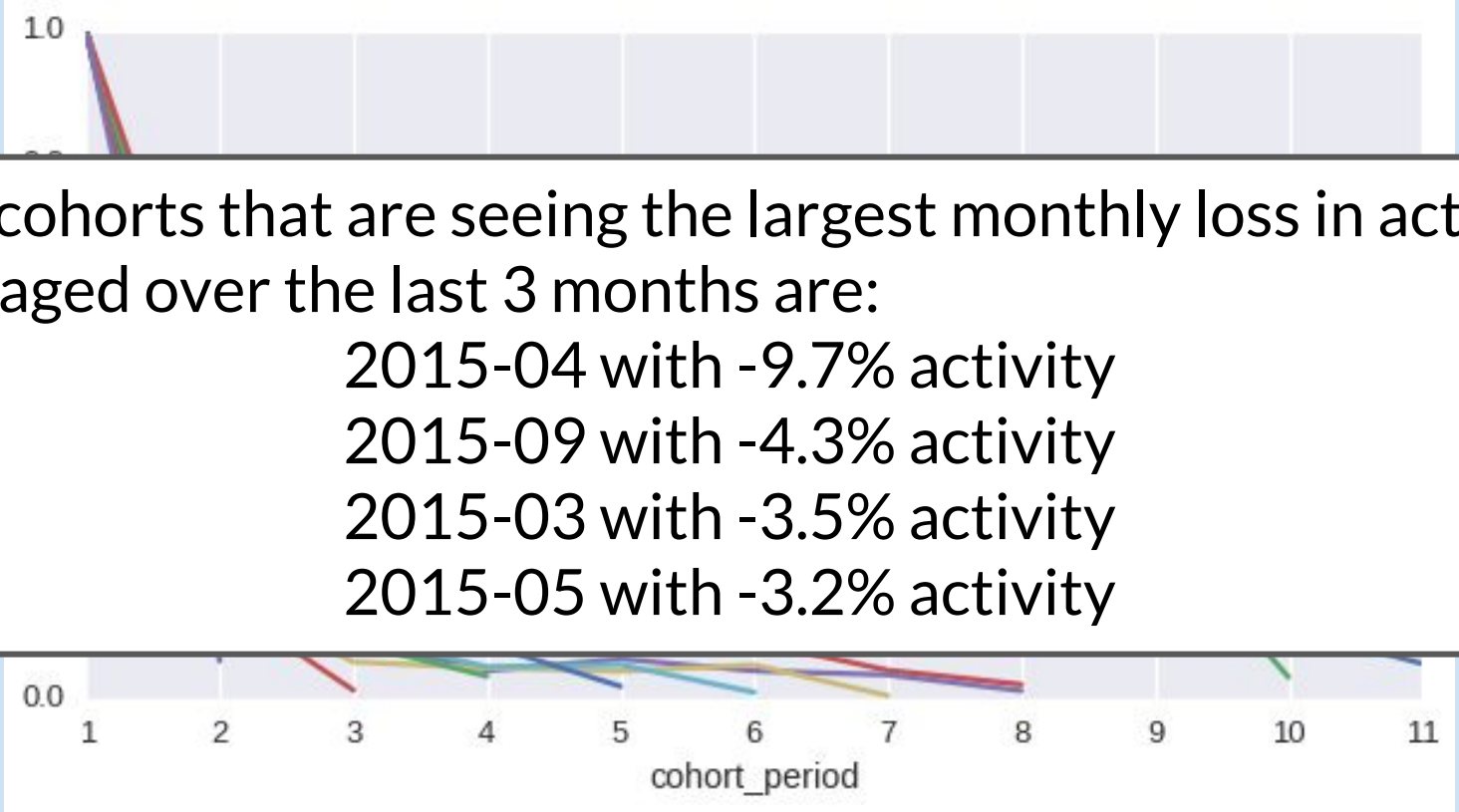


Cohort Analysis



Cohort Analysis



The cohorts that are seeing the largest monthly loss in activity averaged over the last 3 months are:

2015-04 with -9.7% activity
2015-09 with -4.3% activity
2015-03 with -3.5% activity
2015-05 with -3.2% activity

Algorithms

Random Forest Classifier — scalability, handles irrelevant inputs, interpretable

Kernel Density Estimation — clear visualization of noisy timestamp information

Conditional Probability — suggests important dependencies between events

Cohort Analysis — provides context for previous business decisions