LendingClub

Predicting rate of return

at inception

Ezzeri Esa

savarin/rateflask   www.rateflask.com

Peer-to-peer lending platform

Loan sub-grade as risk-reward
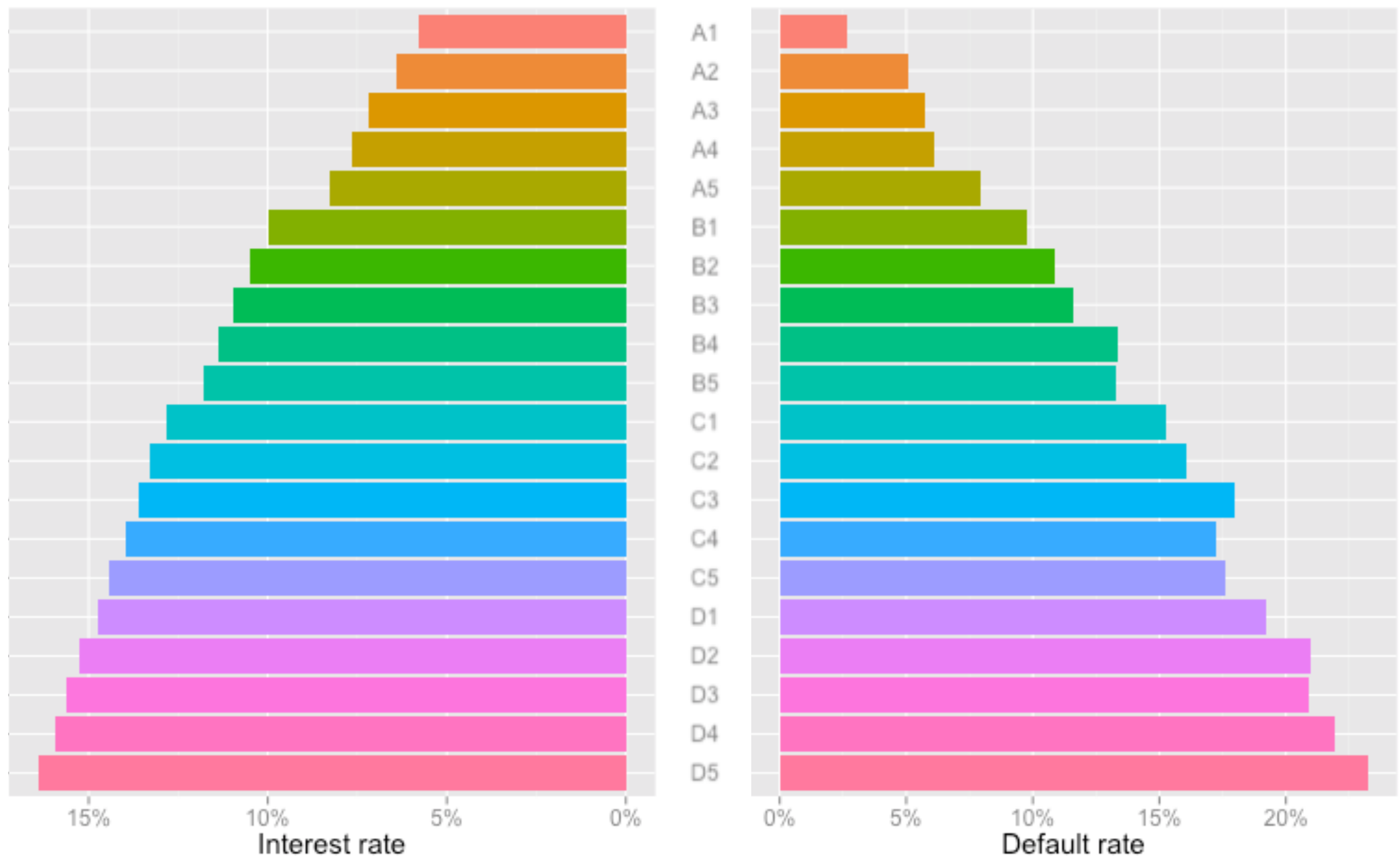
Can we invest on autopilot?

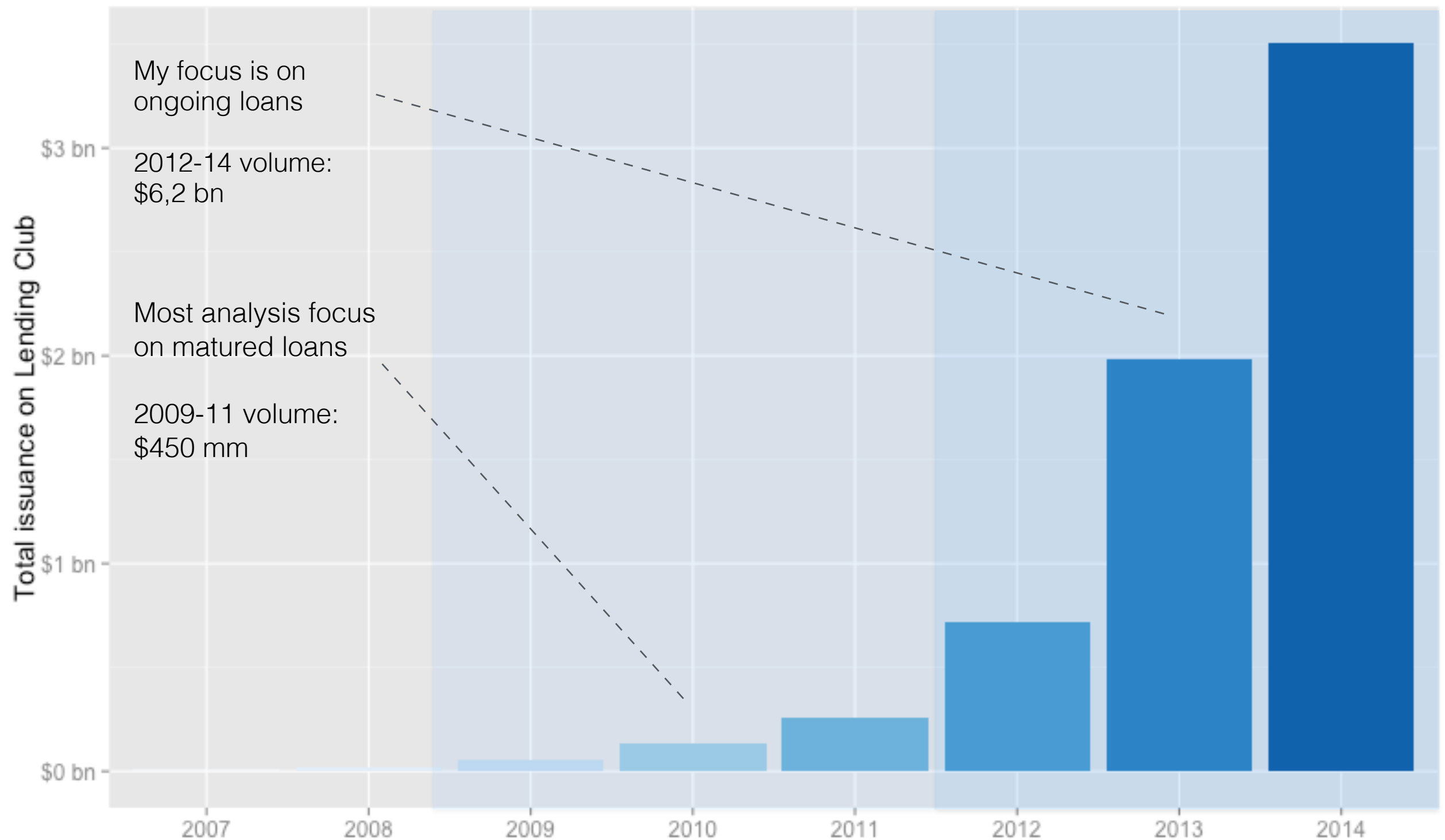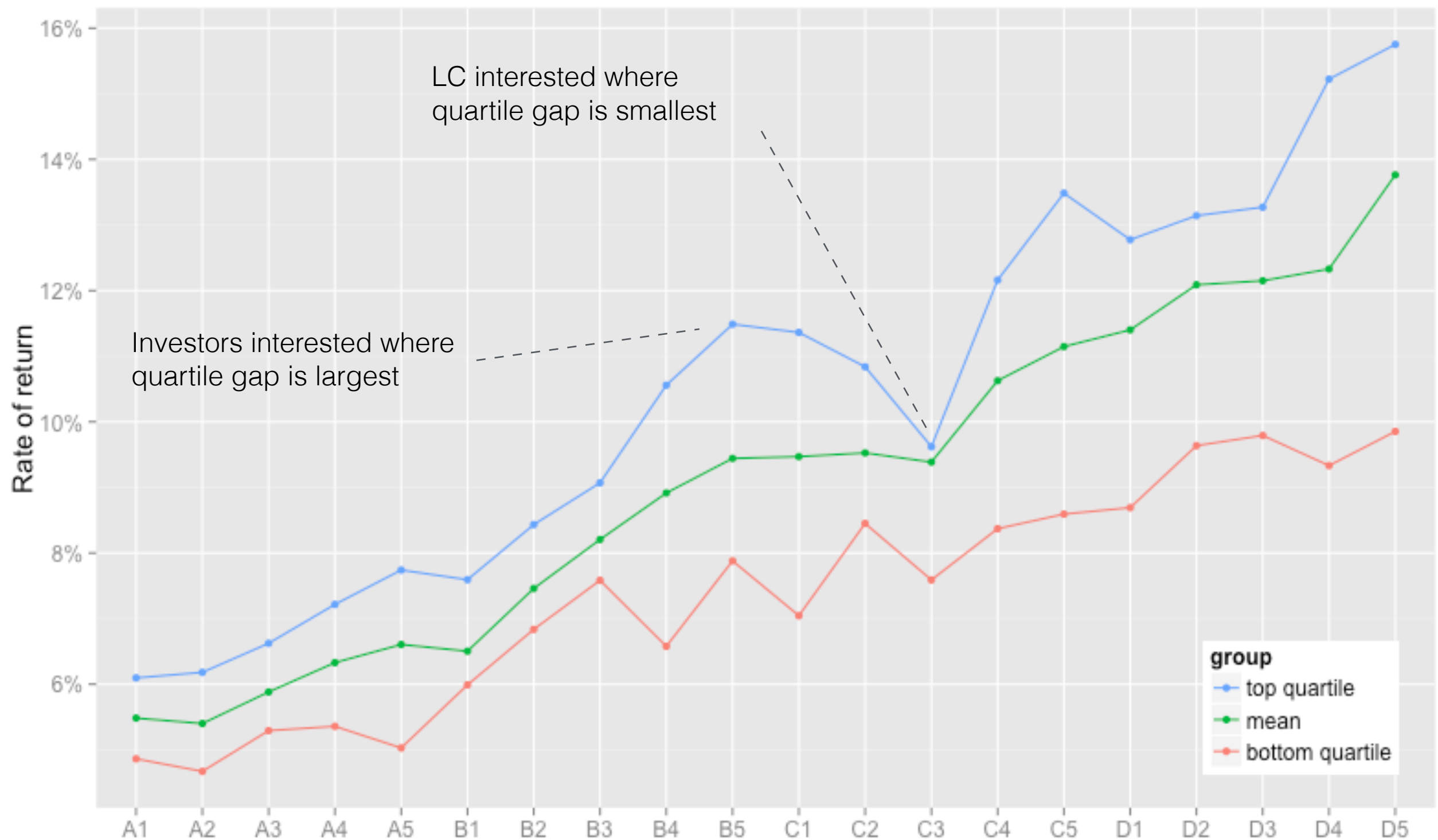| Investment	Rate ▾	Term	FICO®	Amount	Purpose	% Funded	Amount / Time Left
☐ $0	**B 2** 9.17%	36	710-714	$20,675	Loan Refinancing & Consolidation	24%	$15,650 13 days
☐ $0	**B 2** 9.17%	36	685-689	$10,000	Credit Card Payoff	43%	$5,650 13 days
☐ $0	**B 2** 9.17%	36	690-694	$15,000	Loan Refinancing & Consolidation	25%	$11,225 13 days
☐ $0	**B 2** 9.17%	36	675-679	$12,000	Loan Refinancing & Consolidation	22%	$9,300 13 days
☐ $0	**B 2** 9.17%	36	665-669	$12,000	Loan Refinancing & Consolidation	22%	$9,250 13 days
☐ $0	**B 2** 9.17%	36	675-679	$7,000	Loan Refinancing & Consolidation	25%	$5,200 13 days
☐ $0	**B 2** 9.17%	36	680-684	$9,000	Home Improvement	27%	$6,525 13 days

Predicting return at inception

My focus is on ongoing loans

2012-14 volume: $6,2 bn

Most analysis focus on matured loans

2009-11 volume: $450 mm

Total issuance on Lending Club

Does the model work?

Average return across all sub-grades: 9.1%
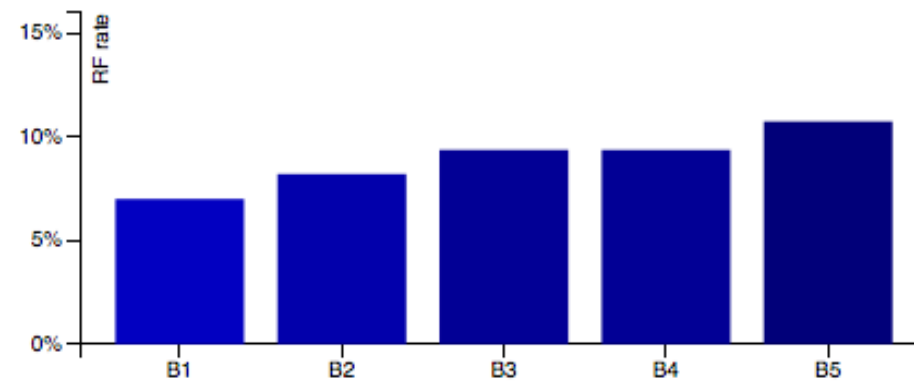
Average return w/ active strategy: 10.4%
Improvement vs passive: 1.3%
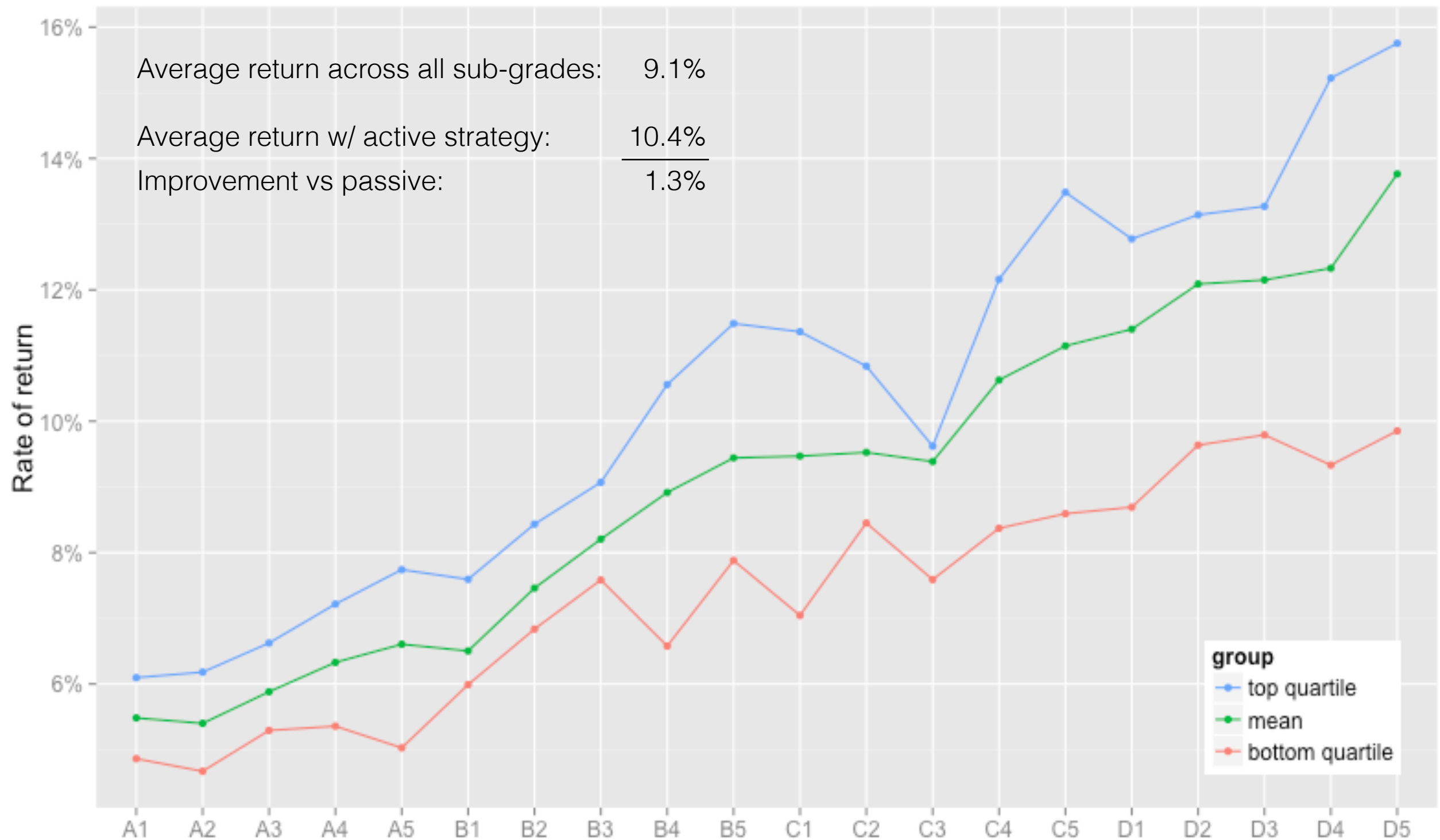
Why should I care?

Screenshot
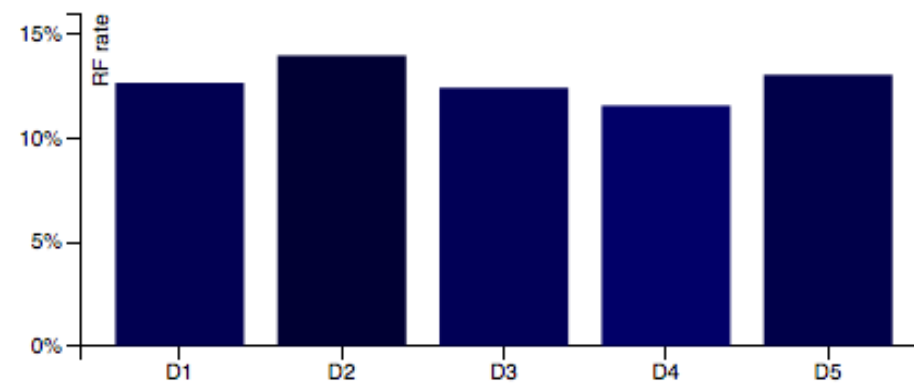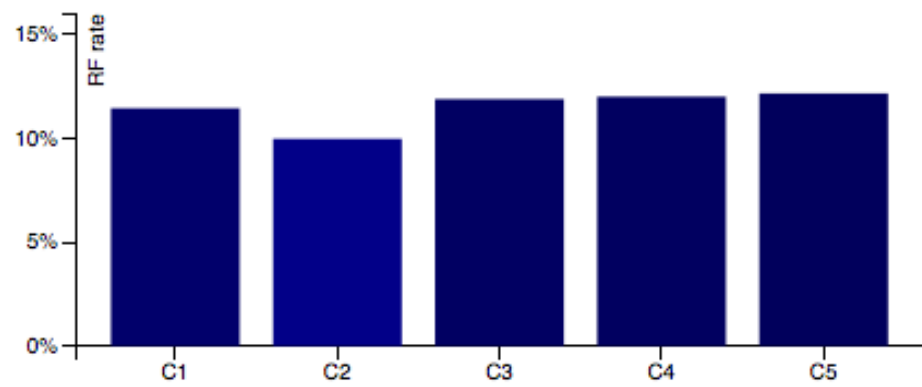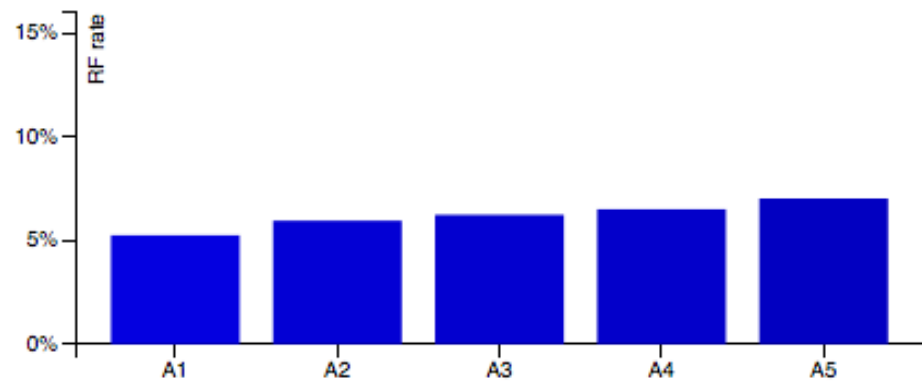
RF rate details here, last update Mar 18 2015 07:34 UTC

Smallest difference b/w LC rate and RF rate indicate best risk-reward

Show 10 entries   Search: B2

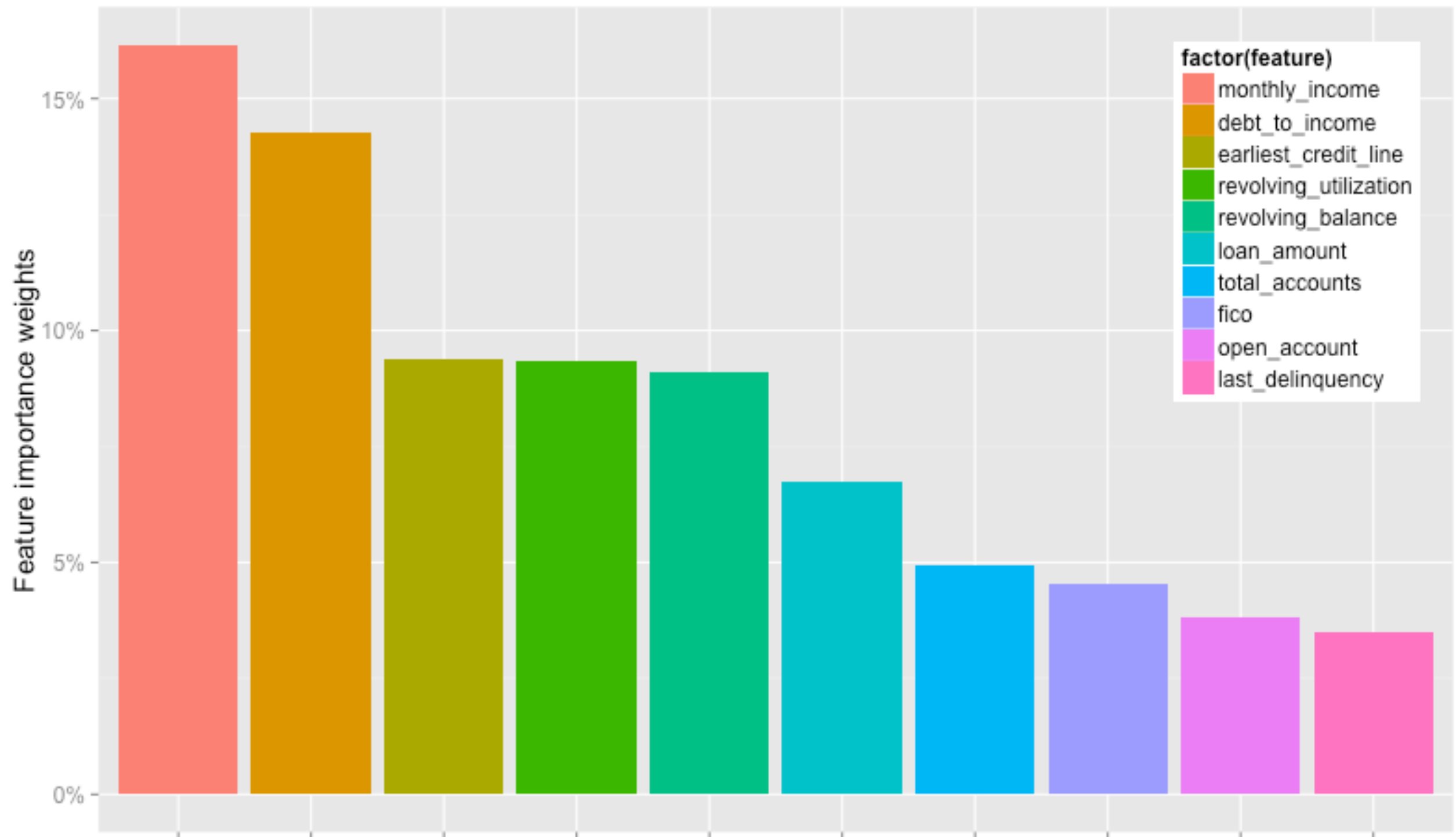| Loan ID	Sub-grade	Term	Amount	% Funded	LC rate	RF rate	% Difference
40970873	B2	36 mth	$24,000	26.0	9.17%	7.47%	19.0
41640246	B2	36 mth	$7,800	27.0	9.17%	4.01%	56.0
42495199	B2	36 mth	$6,500	30.0	9.17%	6.32%	31.0
42984485	B2	36 mth	$30,000	22.0	9.17%	4.95%	46.0
43076162	B2	36 mth	$6,000	53.0	9.17%	2.54%	72.0

Pipeline of data product

Random Forests Regressor
4 x 36 sub-models

Parameter tuning:
max_depth: 10 (out of 36)

PostgreSQL

processed data
+ results

API

Scikit-learn

results

Flask

API call

pre-processed data

visualization: D3.js, Bootstrap

MongoDB
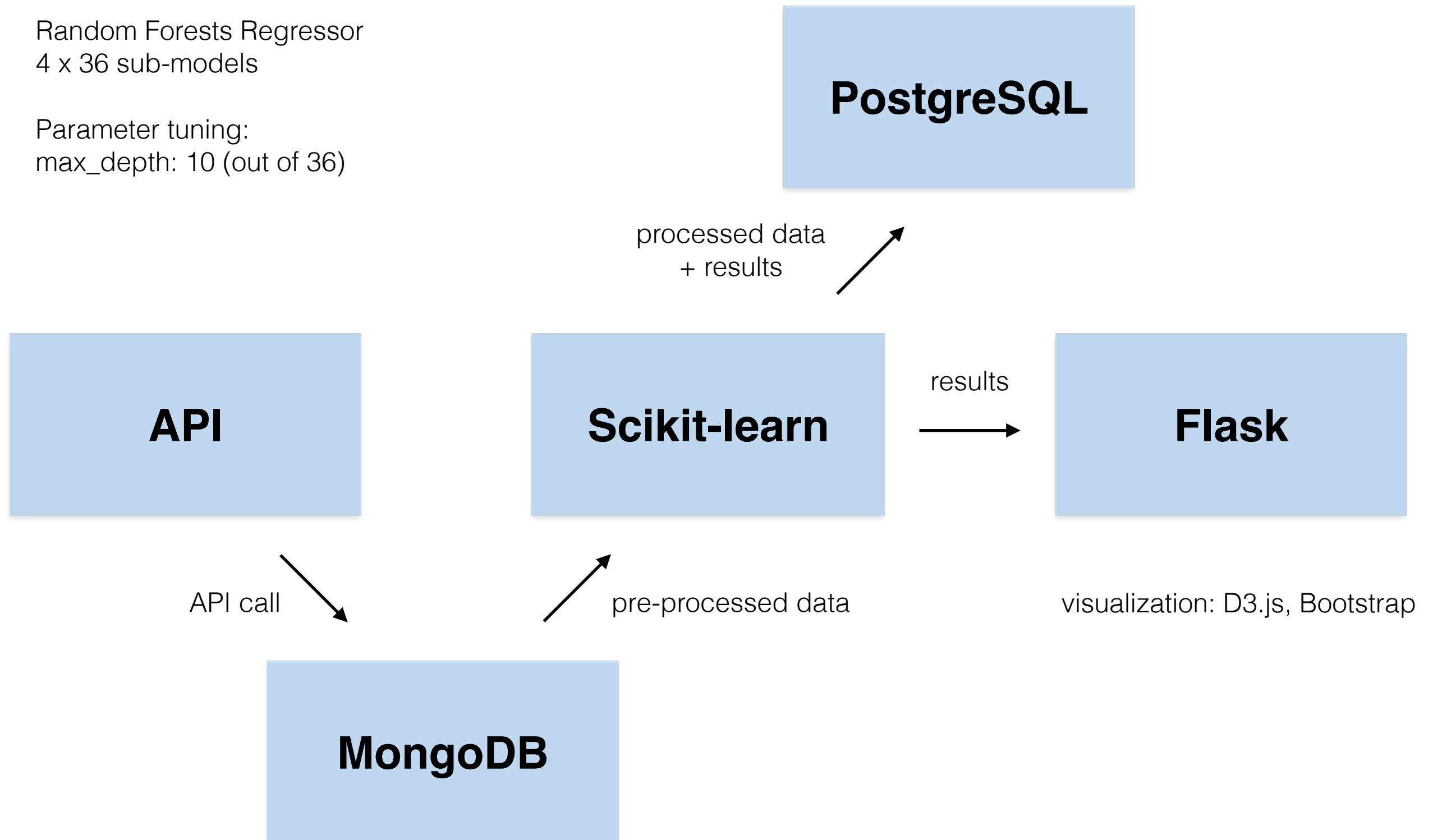
Feature importance

Conclusion

1. Training data - ongoing loans

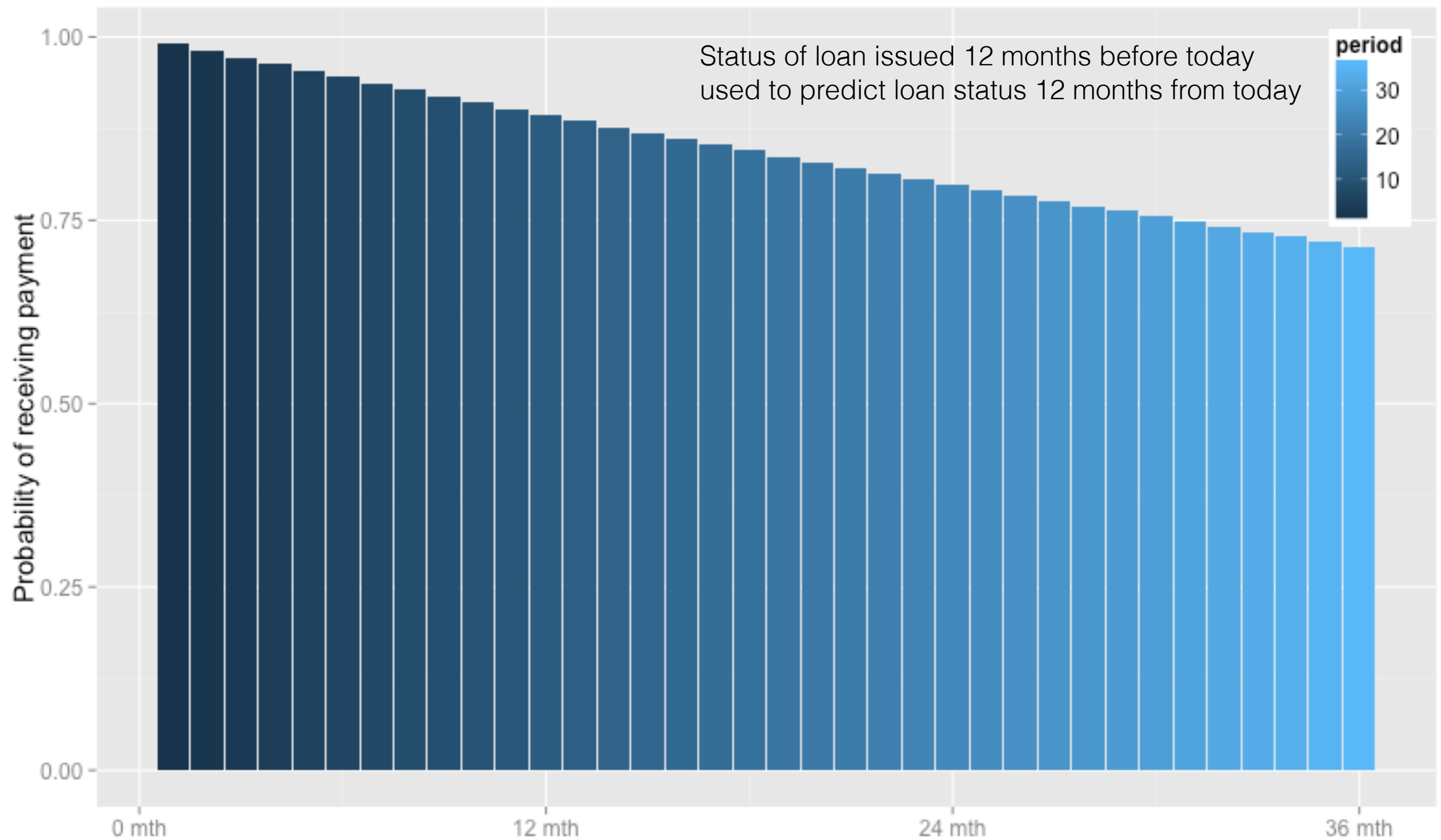2. Predict rate of return

3. At inception

Thank you for listening!

Ezzeri Esa

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What can we learn?

Expected vs actual return

Lending Club headline rate

Predicted return estimated purely with loan features

Actual return calculated purely from payment details

Rate of return

group
headline
predict
true