

Encouraging Broker and Adviser Background Checks: A Randomized Study on Twitter

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Research Question

- How can we encourage retail investors to check the backgrounds of their broker advisors or registered investment advisers online?
 - A small fraction of US investors are aware of regulatory websites (i.e., FINRA's BrokerCheck and the SEC's IAPD) which enable background checks of retail intermediaries.
 - FINRA's 2015 US investor survey found that only 7% of investors have ever used BrokerCheck, while 16% of investors were aware of it.

Related Studies

- A number of studies find effects from behavioral messaging primarily from the emphasis of social norms or peer comparisons, e.g.:
 - Schultz (1999), Cialdini and Goldstein (2004), Alcott (2009), Gerber, Green, and Larimer (2008), Beshears, Choi, Laibson, Madrian, and Milkman (2015), Hallsworth, List, Metcalfe, and Vlaev (2017), Verhallen, Brügger, Post, and Odekerken-Schröder (2018).
- Other research shows limited effect from behavioral messaging, e.g.:
 - Bauer, Eberhardt, and Smeets (2018), Chong, Karlan, Shapiro, and Zinman (World Bank Economic Review, 2015)
 - Bhargava and Manoli (AER 2015) find ineffective messaging emphasizing social benefits and overcoming stigma, respectively. SBST (2015) reports limited impact from peer comparisons in US tax payments.

Tweet List

Messages tweeted through SEC_DERA, then retweeted through either SEC_News or SEC investor Ed along four main themes:

1. General info:

Did you know? You can check the background of your investment professional here: investor.gov.

2. Aspiration:

Smart investors do their homework and check their investment professional's background. Check on yours: investor.gov.

Tweet List

3. Mistrust:

Studies suggest that 1 in 14 investment professionals have a record of misconduct! Check on yours: investor.gov.

Fraud is often conducted by unregistered investment professionals! Check that yours is registered here: investor.gov.

4. Loss aversion:

Avoid losing money to misconduct by an unlicensed investment professional! Check that yours is licensed here: investor.gov.

Timing

- Automatic tweets by SEC_DERA 2 PM then manual retweets around 2:30 PM every weekday (Mon-Fri).
- Data collected at 2 PM for each tweet the following day (Tues-Sat).
- Dependent variable(s): clicks on the tweet link, engagements (link clicks, detail & profile expands, retweets, likes, replies, follows), and impressions.

Tweet Order

Tweets deployed in randomized order each week for five weeks.

- Phase 1 through SEC_News (Jan 22nd – Feb 23rd, 2018):

Week #	Mon	Tues	Wed	Thurs	Fri
1	2	3	1	4	5
2	4	1	2	5	3
3	3	4	5	2	1
4	1	5	4	3	2
5	5	2	3	1	4

1.) Did you know? You can check the background of your investment professional here: 2.) Smart investors do their homework and check their investment professional's background. 3.) Studies suggest that 1 in 14 investment professionals have a record of misconduct! 4.) Fraud is often conducted by unregistered investment professionals! 5.) Avoid losing money to misconduct by an unlicensed investment professional!

Tweet Order

- Phase 2 through SEC Investor Ed (April 2nd – May 4th plus June 11th-15th, 2018):

Week #	Mon	Tues	Wed	Thurs	Fri
1	3	2	4	5	1
2	4	5	2	1	3
3	1	4	5	3	2
4	2	3	1	4	5
5	5	1	3	2	4
6	1	4	5	3	2

- Week 3 omitted while week 6 added because of retweet error.

Hypotheses

- **Hypothesis 1 (behavioral messaging):**

Tweets 2 through 5 should draw more link clicks than tweet 1.

- **Hypothesis 2 (message fatigue):**

Tweets during week 1 should draw the highest average impressions and engagements, while tweets during week 5 should draw the lowest.

Results by Tweet: Phase 1

	Differences from Tweet 1		
Tweet	Links Clicks	Engagements	Impressions
2	-0.000208**	-0.000187	0.004506
	0.027	0.151	0.677
3	-0.000191**	-0.000024	0.002057
	0.039	0.450	0.580
4	-0.000159*	-0.000028	0.006883
	0.074	0.443	0.763
5	-0.000204**	-0.000094	-0.001911
	0.030	0.305	0.415

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4.) Fraud is often conducted by unregistered investment professionals!

5.) Avoid losing money to misconduct by an unlicensed investment professional!

Results by Tweet: Phase 2

	Differences from Tweet 1		
Tweet	Links Clicks	Engagements	Impressions
2	-0.000121	0.000000	-0.002246
	0.125	0.500	0.435
3	-0.000046	0.000072	0.002180
	0.332	0.566	0.572
4	0.000001	0.000501	0.039115
	0.513	0.883	0.963
5	-0.000227**	0.000047	-0.001174
	0.012	0.543	0.467

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Min/Max by Tweet: Phase 1

	Maximum		
	Links	Engagements	Impressions
Tweet #	1	1	4
Value	24.4*	48.4	5887
P-val	0.0559	0.9233	0.8717

	Minimum		
	Links	Engagements	Impressions
Tweet #	2	2	5
Value	14.2	39.2	5457
P-val	0.8411	0.6543	0.8791

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Min/Max by Tweet: Phase 2

	Maximum		
	Links	Engagements	Impressions
Tweet #	1/4	4	4
Value	5	20.6	2241.4
P-val	0.4519	0.5035	0.1205

	Minimum		
	Links	Engagements	Impressions
Tweet #	5	2	2
Value	2*	14	1697.8
P-val	0.0599	0.9862	0.7884

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Findings by Tweet

- **Tweet 1** (“Did you know? You can check the background...”) and **Tweet 4** (“Fraud is often conducted by unregistered...”) were the most popular for both phases.
 - Only tweet 1 was statistically significant as the maximum in terms of *link clicks* in phase 1.
- **Tweet 2** (“Smart investors do their homework...”) and **Tweet 5** (“Avoid losing money to misconduct...”) were the least popular for both phases.
 - Only tweet 5 was statistically significant as the minimum in terms of *link clicks* in phase 2.

Min/Max by Day-of-Week: Phase 1

	Maximum		
	Links	Engagements	Impressions
Day	Monday	Monday	Monday
Value	22.4	57.2*	6217
P-val	0.2476	0.0549	0.1614
	Minimum		
	Links	Engagements	Impressions
Day	Thursday	Thursday	Friday
Value	12.4	38	4932***
P-val	0.445	0.4947	0.0078

Min/Max by Day-of-Week: Phase 2

	Maximum		
	Links	Engagements	Impressions
Day	Thursday	Thursday	Monday
Value	5	18.2	2308**
P-val	0.4519	0.9159	0.0122
	Minimum		
	Links	Engagements	Impressions
Day	Tuesday	Friday	Friday
Value	2.6	12.4	1640.6
P-val	0.3408	0.7254	0.179

Min/Max by Week: Phase 1

	Maximum		
	Links	Engagements	Impressions
Week #	1	1	3
Value	24.8**	55.6	6044
P-val	0.0356	0.131	0.4908

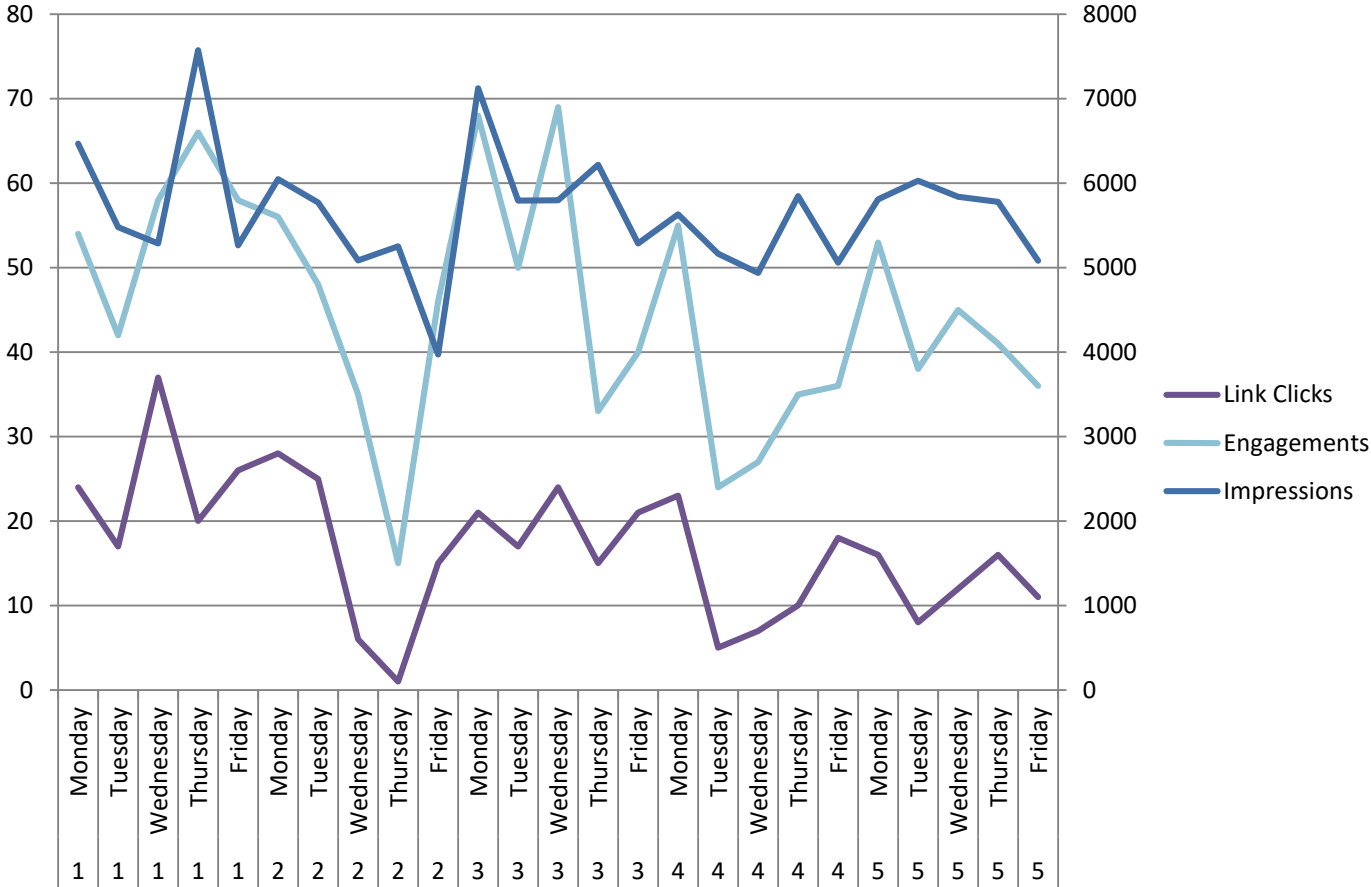
	Minimum		
	Links	Engagements	Impressions
Week #	4,5	4	2
Value	12.6	35.4	5226
P-val	0.489	0.2058	0.3116

Min/Max by Week: Phase 2

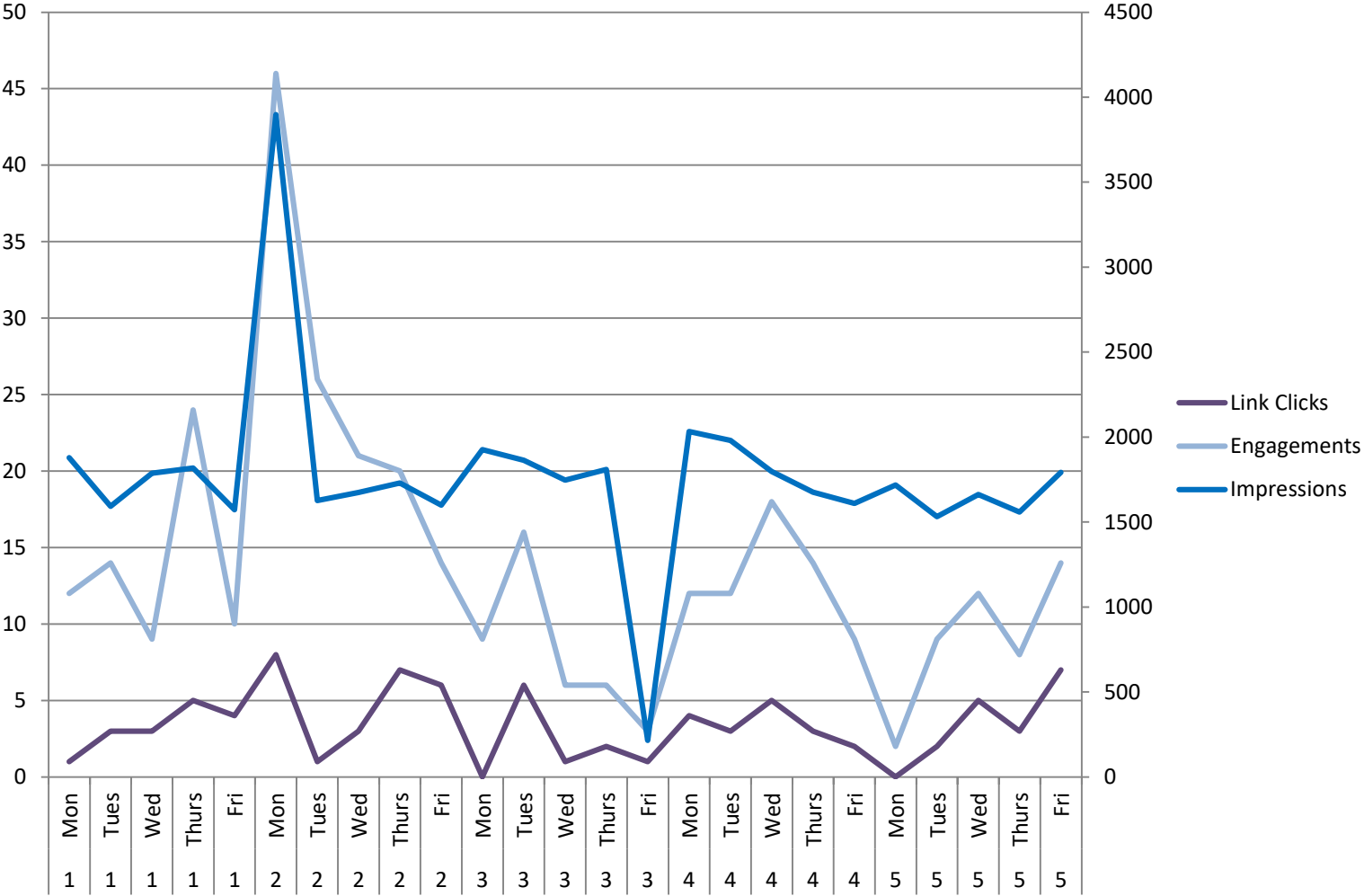
	Maximum		
	Links	Engagements	Impressions
Week #	2	2	2
Value	5	25.4**	2105.2
P-val	0.4519	0.0124	0.8679

	Minimum		
	Links	Engagements	Impressions
Week #	1	5	5
Value	3.2	9**	1652.6
P-val	0.8505	0.0283	0.2835

Results over Time: Phase 1



Results over Time: Phase 2

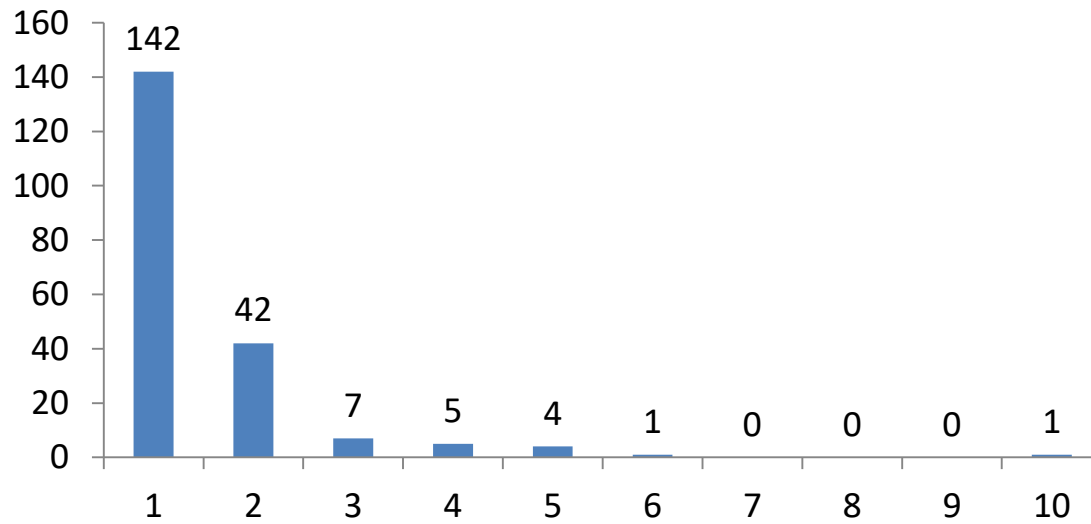


Repeat Interactions

	Total Users	Mean Interactions	Median Interactions	95th Percentile Interactions	% of Users with One Interaction	% of Users Interacting in Both Phases
Phase 1	137	1.47	1	3.2	74%	
Phase 2	69	1.45	1	3.6	70%	
Combined	202	1.50	1	3.9	70%	2.5%

Interaction Analysis

Frequency



Interacting Users



Elizabeth Guarino @BestEverYou
 Elizabeth Hamilton-Guarino | Founder/#CEO of #BestEverYou #Compliance4 & @FoodAllergyZone | @HayHouse Author of @PercolateBook | #TipsToBeYourBest
 Portland, ME BestEverYou.com
 70.1K Following 94.5K Followers

Elizabeth Guarino @Best... · 1/17/18
 Happy Birthday Betty White who is 96 today! Love having her in my book #Percolate #bettywhite amazon.com/Percolate-Your...

Tweets Tweets & replies Media Likes

Yko de boer @de_yko
 71 Following 17 Followers

Gregory Mannarino @Greg... · 7/30/18
 Despite the US Dollar getting punished today, Gold-which is priced in dollars, just went negative for the day. #RIGGED #FAKEMARKETS #GOLD
 3 10 36

Michael J. Morrison @Offic... · 7/25/18
 FLASHBACK: Obama threw a reporter out for asking a question he wasn't happy with and the rest of the media was cheering him on.

Tweets Tweets & replies Media Likes

Phase 1 (Retweeted by SEC News)					Phase 2 (Retweeted by Investor Ed)				
Row Labels	Com	Like	RT	Total	Row Labels	Com	Like	RT	Total
Grand Total	29	124	78	231	Grand Total	14	58	47	120
BestEverYou		10		10	_anthony_seger_			4	4
de_yko	6			6	disciples2424	2	2		4
ComplianceFour		5		5	simpleotc		2	2	4
Monetka_Easy_27		4	1	5	Utahsecurities			4	4
CryptoAdvice4u		3	1	4	StevenPGregory1			1	2
PaulVH87		4		4	StumpSurgeon		2	1	3
WolfieMcCarthy		4		4	AdamJMarquardt			1	1
AlGlory93		3		3	albaprona			2	2
CryptoLando		2	1	3	Captain_M0rgan3			1	1
marisastio		2	1	3	chris_MO88			1	1
vikas_dera		3		3	esgarchitect			1	1
XCISXx	1	1		2	FINRA			1	1
agurreamartinez		1	1	2	GarofoliSergio			1	1
AmericanBeastCo		1	1	2	glenngitomer				2
aum_boi		2		2	GregoryLawUS		1	1	2
BeefEnt		1	1	2	IvanaBoastsky			1	1
DataAnalytics_1		2		2	LMatherne			1	1
drastichs		1	1	2	mwillis001			1	1
Georginayoung17		1	1	2	SamsonD50785243			1	1
Irelandia		1	1	2	SSEKLaw			1	1
jenijenicat		1	1	2	StocksMax			1	1
JustTradingHoy		1	1	2	aaronchall			1	1
KeithBean21	1	1		2	ALIJJJI			1	1
Lillyandpnpkin		1	1	2	andretsc				1
MakerZoneShow		2		2	bitcoinbella_		1		1
MayaPhilipson		1	1	2	boringfileclerk	1			1
MikeSaville1			2	2	BruceWaves			1	1
MrFelt_		1	1	2	cre8factory			1	1
notarymary		1	1	2	dgveras			1	1
otavioemmert		2		2	EffingDope_NY			1	1
RippleLove_XRP		1	1	2	Enforce_Update				1
sc2Bren		1	1	2	Fernand68116863			1	1
ScareQuotePro		1	1	2	Foutis1			1	1
SiFuPeterson		1	1	2	GaryLeeMPG			1	1
starree		2		2	hokagedlabit			1	1
TamirGuy1			2	2	InvestorDeck			1	1
TheBudinGroup		1	1	2	JackEdwardsEsq				1
_anthony_seger_			1	1	JasonJRoque			1	1



Anthony Seger @_anthony_seger_
 Tree-of-Knowledge
 swissvoc.com
 128 Following 1,676 Followers

Tweets Tweets & replies Media Likes

Anthony Seger Retweeted
SwissVoC @SwissVoC · 12h
 * Cryptocurrencies Cybersecurity Technologies [\$50 Billions PetaBytes Bayesian Nodes Trees]
 * Cybersecurity Probabilistic Merkelized * Tokenization Cross Chains Transactions * e-Institutions, e-Finance, e-Banking * Massively Instant Real-Time * Cybersecurity #TallinnEvents

percy gabriel II @disciples2424
 Toronto, Ontario
 152 Following 31 Followers

Tweets Tweets & replies Media Likes
 percy gabriel II @disciples... · 6/25/18
 Sweet Sweet Episode. The Best, brought tears to my eyes. Great entertainment James Corden!!!

James Corden @JKCorden
 Ok, so here it is. Quite possibly the best #CarpoolKaraoke we've done so far. I hope you like it. I'll never ever forget it. Take a breath and jump in yououtu.be/QjvzCTqkBDQ x

Conclusions

- There is some evidence that shorter, simpler calls to action worked best:
 1. The control tweet (“*Did you know? You can check the background...*”) and the registration/fraud tweet (“*Fraud is often conducted by unregistered...*”) may have worked the best.
 2. The aspirational tweet (“*Smart investors do their homework...*”) and the loss-aversion tweet (“*Avoid losing money to misconduct...*”) may have worked the worst.
- There is some evidence of greater (lower) engagement at the beginning (end) of the week. There appeared to be limited attrition in views and engagements over time.
- Many replies were negative and originated by spam-oriented accounts. Nonetheless, replies appeared to have a positive effect on link clicks.

Next Steps

- Expanding study to fraud reporting and other forms of investor engagement?
- Testing use of images and video?
- Study using promoted tweets? Website A/B testing?