An Outsider's Education in Quantitative Trading

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R/Finance 2015

Background

- Entrepreneur

- Software Developer

- Telecom, VoIP, etc

- Formally trained in … absolutely nothing

- Claim to fame: Twitter smart ass

METREOS 😄

CISCO ™ 😳

LUGIRON 😖

Now what?

Wait, did someone say that I can trade from Austin, TX?

Tariten Trading

Started in 2010

Very small team

US equities focused

No outside capital

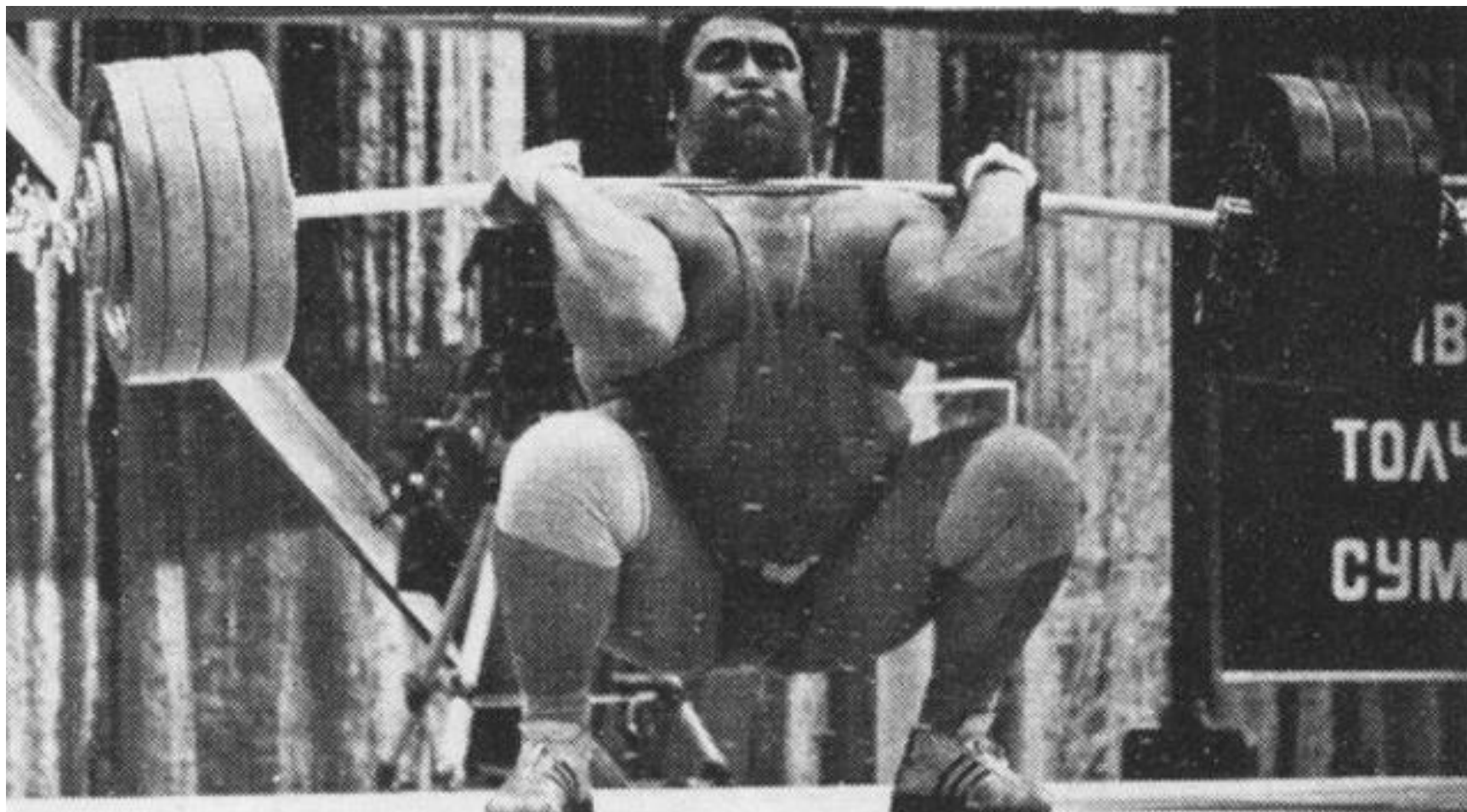# What people think I do when they learn that I do automated trading...
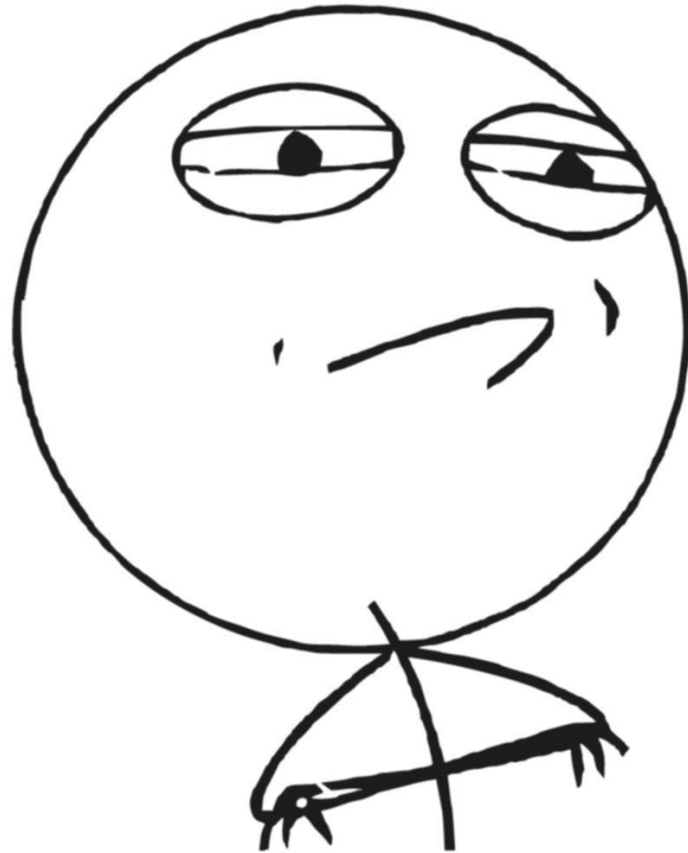
What it feels like…

And the reality…

A Typical Path to First Failure

(and 2nd, 3rd, 4th, 5th, 6th, …)

It can't be that hard!

1. Source and explore some **bad** data.

2. Find confirmation of your preconceived notion.

3. Back test all the things.

4. Sort by PNL.

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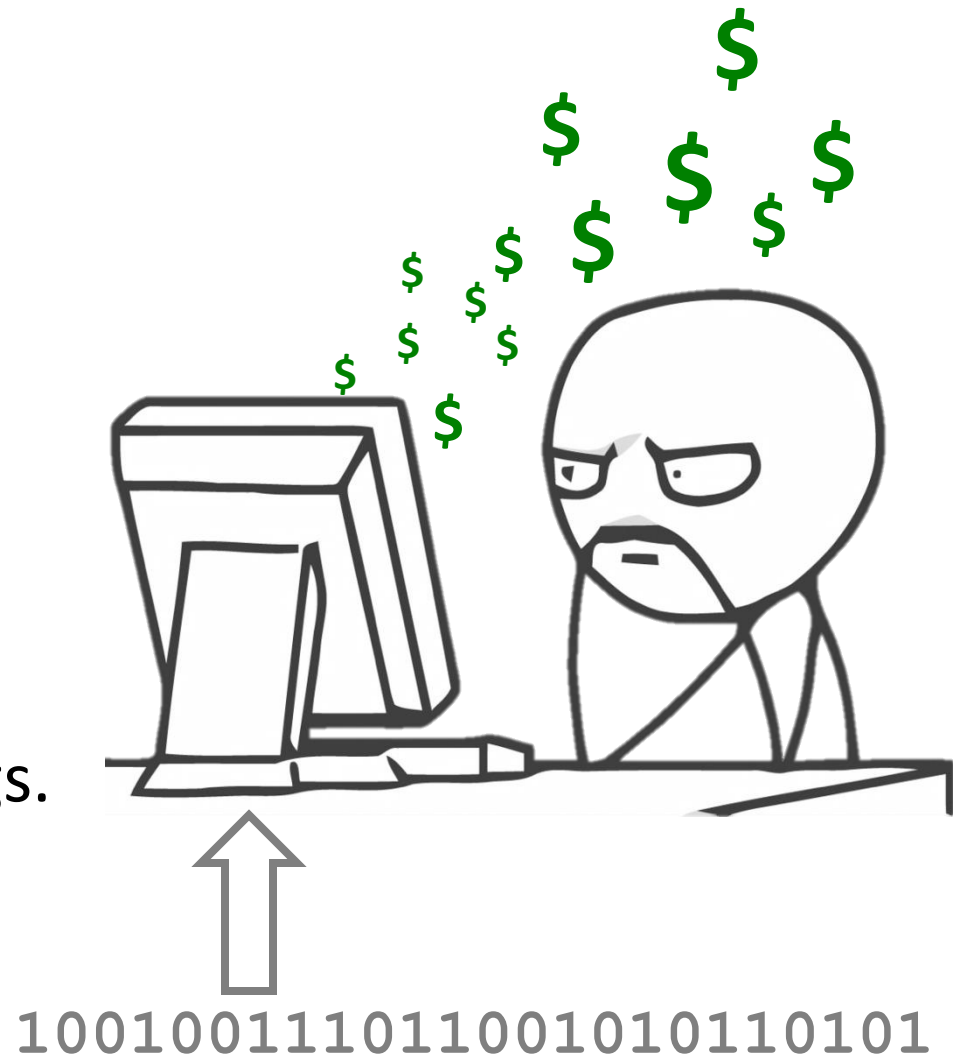
Trade the top performing backtests…

Y U NO

MAKE ALL THE MONEY!?

It's kind of like…

You're not going to backtest your way into being a trader.

As humans, we can only survive this cycle so many times before we give up.

Focus on the strategy

(the #1 thing people fail to do)
… including me

| You find yourself in a dark hallway. There are no
| doors. You may go forward or quit.
> forward

Some unknown force kicked you in the stomach.

| That hurt! You're still in the dark hallway. You
| can't see anything. You may go forward or quit.
> forward

What appears to be a troll punches you in the nose.

| You're nose is bleeding. The hallway seems to be
| getting darker. You may go forward or quit.
>

"Win or lose, everybody gets what they want out of the market. Some people seem to like to lose, **so they win by losing money**."

Ed Seykota

Trading Legend

The technologists curse.

We revert to what we know, so we build infrastructure instead of strategies.
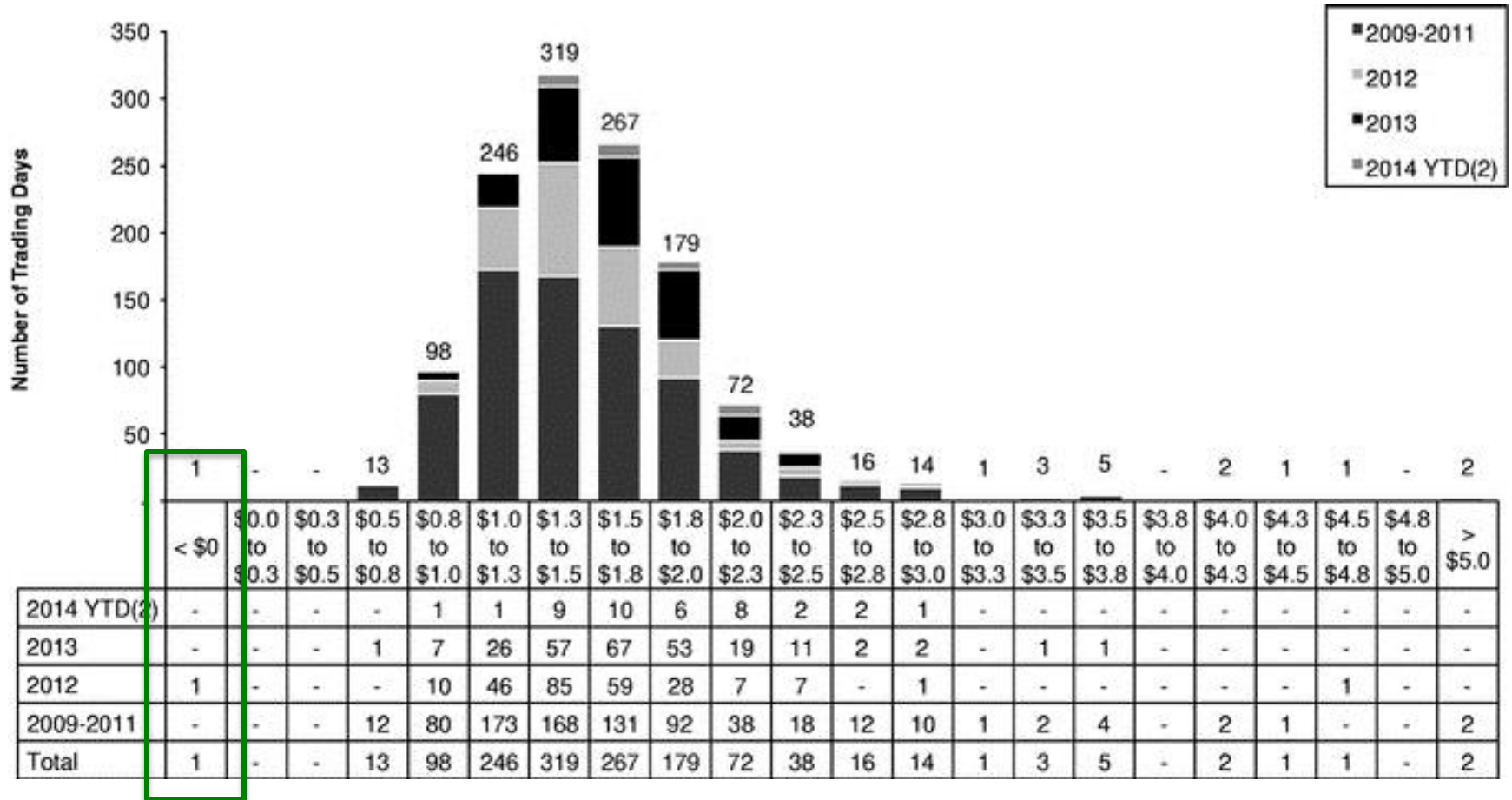
What We All Want

1001001110110010 $$$$$$$$$$$$$$$$

"Just like a pilot will do in a plane, our traders manage the autopilot. **They manage the algorithms. They tweak the settings continuously.** They'll check if there is something happening that the algorithm may not be able to deal with in a correct manner. They manage the process."

Remco Lenterman

Managing Director, IMC Financial Markets

Once you're lucky, twice you're good, 1,331 times you must be cheating…

	< $0	$0.0 to $0.3	$0.3 to $0.5	$0.5 to $0.8	$0.8 to $1.0	$1.0 to $1.3	$1.3 to $1.5	$1.5 to $1.8	$1.8 to $2.0	$2.0 to $2.3	$2.3 to $2.5	$2.5 to $2.8	$2.8 to $3.0	$3.0 to $3.3	$3.3 to $3.5	$3.5 to $3.8	$3.8 to $4.0	$4.0 to $4.3	$4.3 to $4.5	$4.5 to $4.8	$4.8 to $5.0	> $5.0
2014 YTD(2)	-	-	-	-	1	1	9	10	6	8	2	2	1	-	-	-	-	-	-	-	-	-
2013	-	-	-	1	7	26	57	67	53	19	11	2	2	-	1	1	-	-	-	-	-	-
2012	1	-	-	-	10	46	85	59	28	7	7	-	1	-	-	-	-	-	-	1	-	-
2009-2011	-	-	-	12	80	173	168	131	92	38	18	12	10	1	2	4	-	2	1	-	-	2
Total	1	-	-	13	98	246	319	267	179	72	38	16	14	1	3	5	-	2	1	1	-	2

Holy. Cow.

Virtu Financial PnL from S1

Don't Underestimate The Human Factor

10010011110110010 $$$$$$$$$$$$$$$$

HFT Profitability (Tradeworx)

- 5% market share in US equities

- 52-53% winning trades; 86% winning days; 99.9% winning weeks

- 10 minute average holding time

- $ 0.0006 / share edge

Trying to START here is not a good idea.

Do NOT mimic what you THINK other firms do.

They are faster

They have more data

Their edge is uniquely theirs

They probably do something else

"**[I'm] supposed to fail.** According to almost everyone, you have to approach systematic trading (and predictive modeling in general) from the framework of 'Here is a valid hypothesis that makes sense within the context of the markets.' Instead, **I blindly search through the data.**"
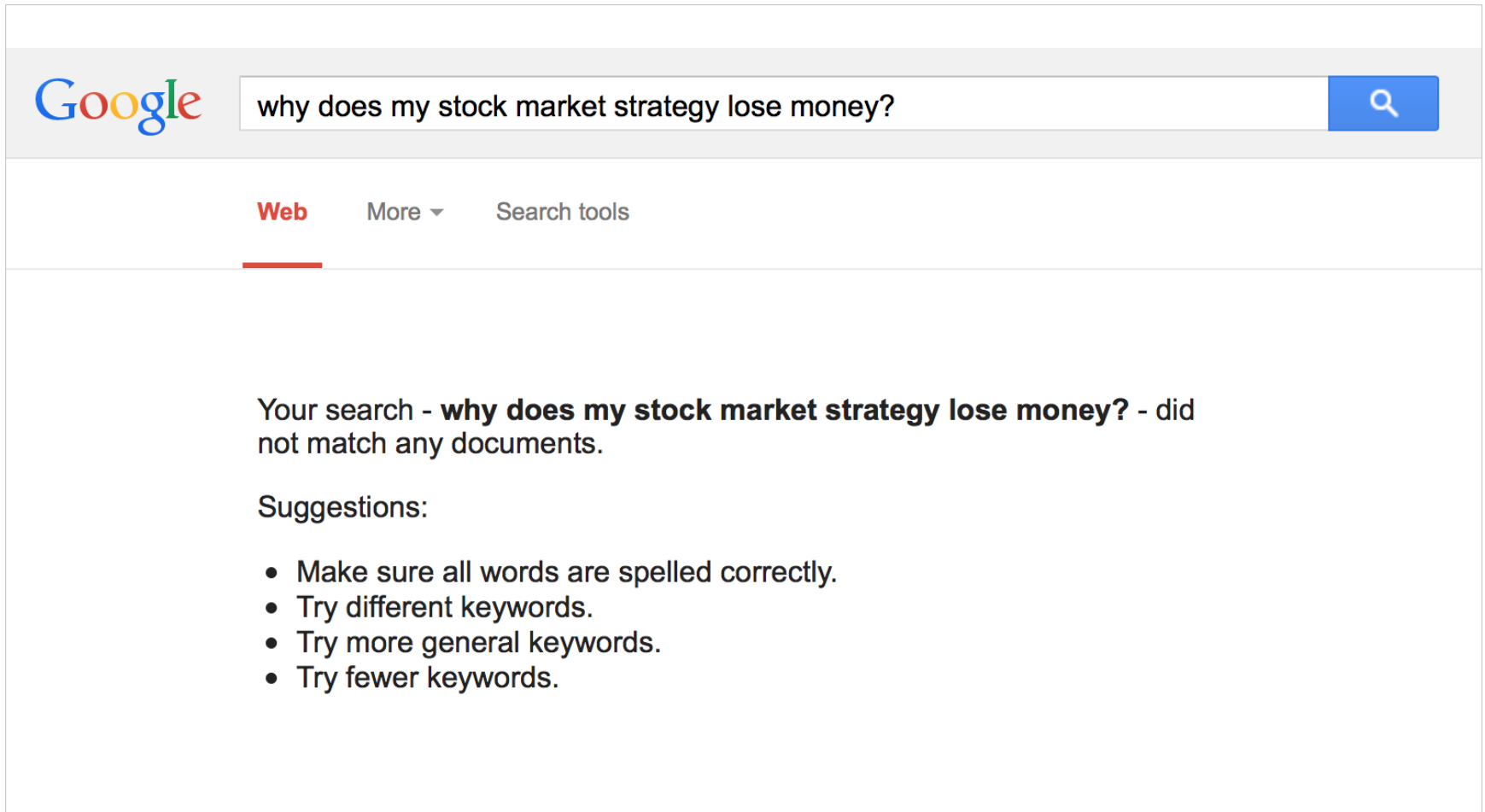
Jaffray Woodriff

Founder, Quantitative Investment Management

The "Right Way" might be the wrong way. Plot your own path.

You are all alone out there...

Work Within Your Constraints

- Personal
- Time
- Capital
- Cost Structure
- Technology
- Infrastructure (co-location, feeds, latency, etc)

Ignore this at your own peril.

Ruthlessly seek out optimal tradeoffs

(this can be a source of edge)

Why do quants fail when they go out on their own?

Everything else is really important too.

"The Art of Algo Strategy: Most developers don't ask questions, most grey box traders can't read code, and most quants think strategies are too simple to work."

Haim Bodek

Managing Principal, Decimus Capital Markets

Order Type & Electronic Market Extraordinaire

Market Data

- ~ 100 GB of new data each day
- Market data messages per day:

| Depth of Book	800 mm	2 bn
Top of Book	500 mm	1 bn

- 23,400 trading seconds per day
- ~ 64k messages/second
- But, it's highly clustered and "bursty"

It is possible for "more data" to be a bad thing.

Execution Matters (a lot)

- Numerous dark and lit venues
- Complex fee schedules
- Numerous order types
- Queue position:
  - 30-35% dark volume → lit venues get the exhaust

Cancel-Trade Ratio (via MIDAS)

ETPs: ~ 90:1

Stocks: ~ 20:1

http://www.sec.gov/marketstructure/
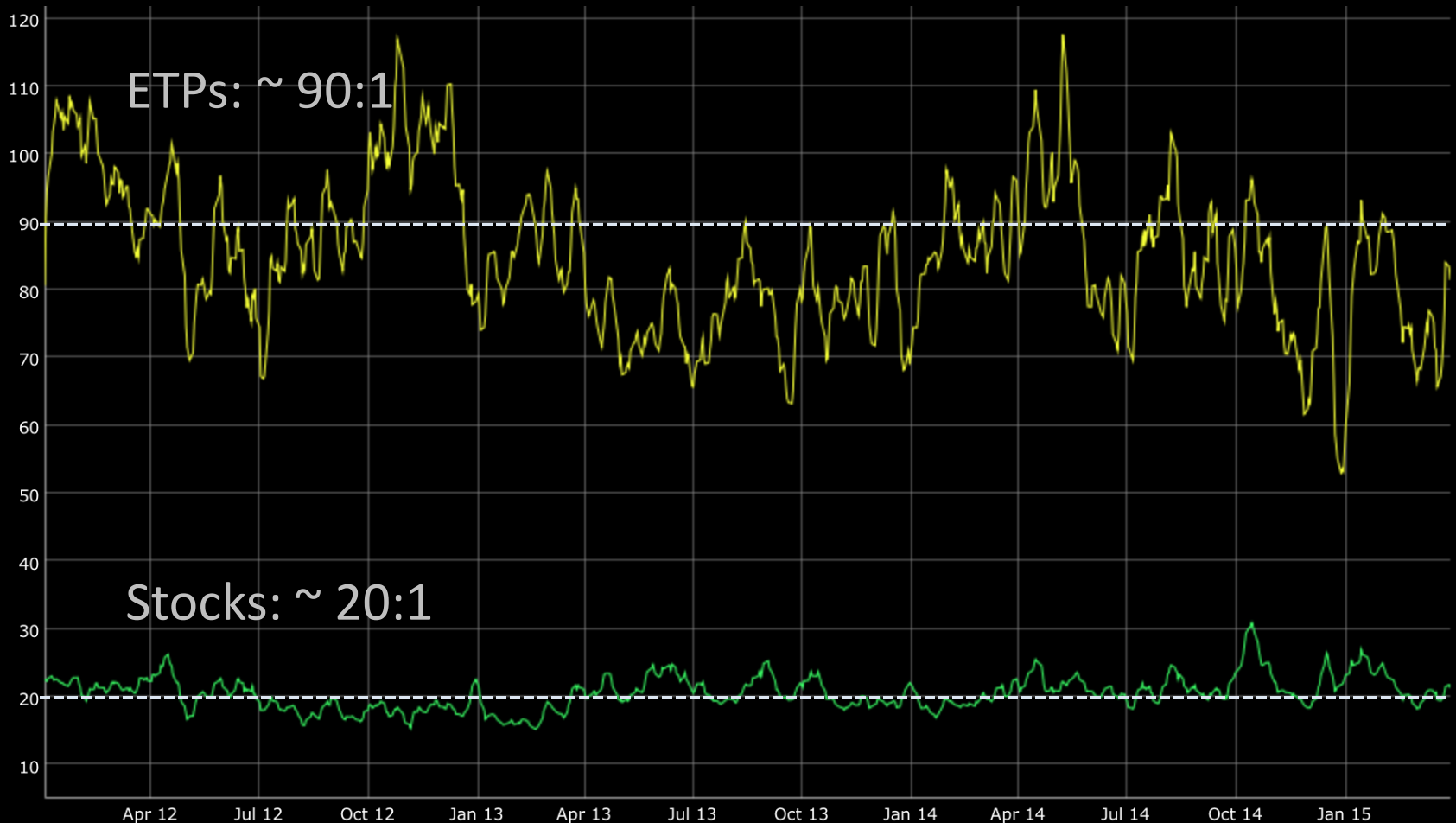
You're not fast enough.

(but that's ok!)

"There is a mythology that speed is central to success but **the reality is that the quantitative predictive aspect is the key to success**. Just trading fast doesn't make you any money if it is the wrong trade. You need to know when to trade and then execute that order as quickly as you can."

Cameron Smith

President, Quantlab Financial

Some Suggestions

- Read absolutely everything you can.

- Pick the most focused market niche you can.

- Make sure your data is good. Buy it.

- Focus on research. Forget production.

- Prove to yourself that your model has predictive power.

Everything else is easier if you can do this.

Thank you.

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