

The Defenseman's Paradox

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Overview

1. The Problem Assessing Defensive Talent
2. Hits and Blocked Shots: Good or Bad? (Neither)
3. Recovery: A New Statistic
4. Next Steps

The Problem Measuring Defensemen

- Traditionally, defensemen were measured by their ability to maximize hits and blocked shots

2015-2016 Hit Leaders

RADKO GUDAS
ROMAN POLAK
MARK BOROWIECKI
ALEXEI EMELIN
LUKE SCHENN
NICK HOLDEN
BRAYDEN MCNABB
DUSTIN BYFUGLIEN
JAKE MUZZIN
JOEL EDMUNDSON

2015-2016 Blocked Shot Leaders

FRANCOIS BEAUCHEMIN
KRIS RUSSELL
KARL ALZNER
DAN GIRARDI
ERIK KARLSSON
CALVIN DE HAAN
ERIK JOHNSON
MARK GIORDANO
ALEC MARTINEZ
TREVOR VAN RIEMSDYK

The Problem Measuring Defensemen

- When we control per sixty minutes and maximize hits and blocked shots, we see nearly identical results

2015-2016 Hit Leaders/60

MARK BOROWIECKI
RADKO GUDAS
DYLAN MCILRATH
ROMAN POLAK
LUKE SCHENN
ALEXEI EMELIN
JARED COWEN
ANTHONY BITETTO
ROBERT BORTUZZO
JOEL EDMUNDSON

2015-2016 Blocked Shot Leaders/60

KRIS RUSSELL
BROOKS ORPIK
LADISLAV SMID
ANTHONY BITETTO
ANDREW MACDONALD
DAN GIRARDI
FRANCOIS BEAUCHEMIN
ERIK JOHNSON
CALVIN DE HAAN
NICK SCHULTZ

The Problem Measuring Defensemen

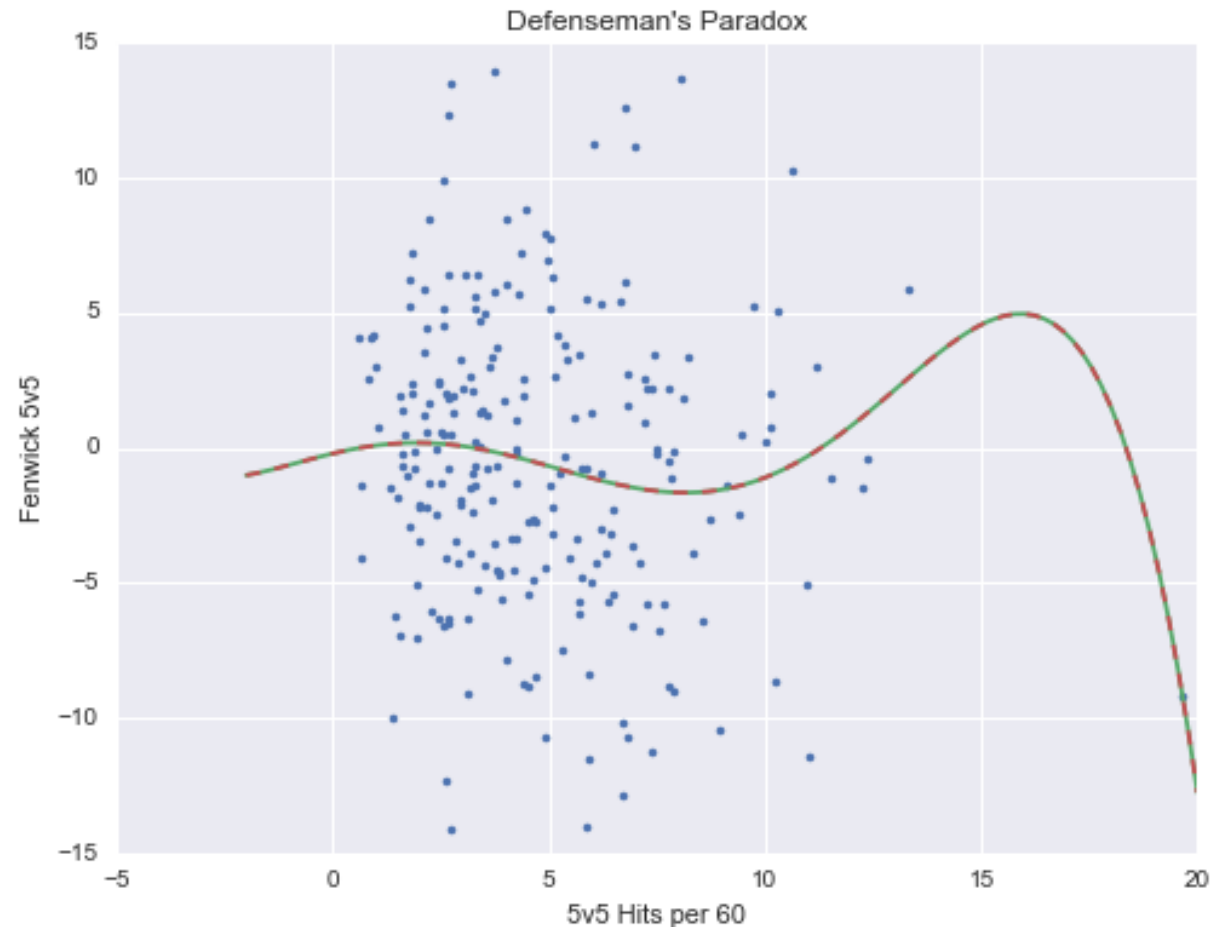
- Advanced analytics have pushed us to consider possession-based metrics, which are a substantial improvement

2015-2016 Fenwick Leaders

DREW DOUGHTY
BRAYDEN MCNABB
JAKE MUZZIN
HAMPUS LINDHOLM
VICTOR HEDMAN
JOSH MANSON
COLTON PARAYKO
BARRET JACKMAN
KRIS LETANG
ANTON STRALMAN

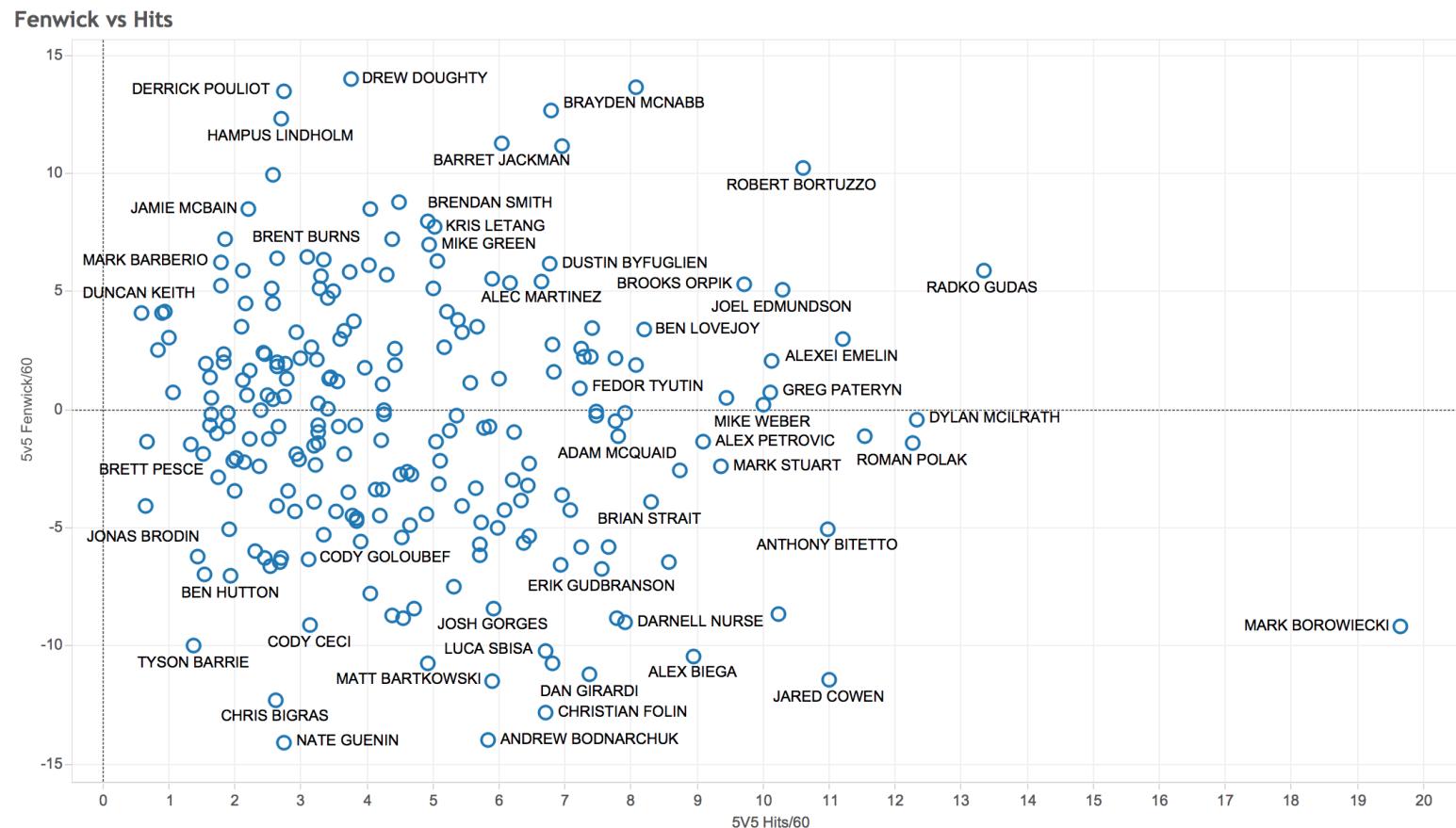
The Problem Measuring Defensemen

- However, when we regress Fenwick against hits, we see a clear upward deviation in the trend. Hits should not be absolutely minimized to maximize performance.



The Problem Measuring Defensemen

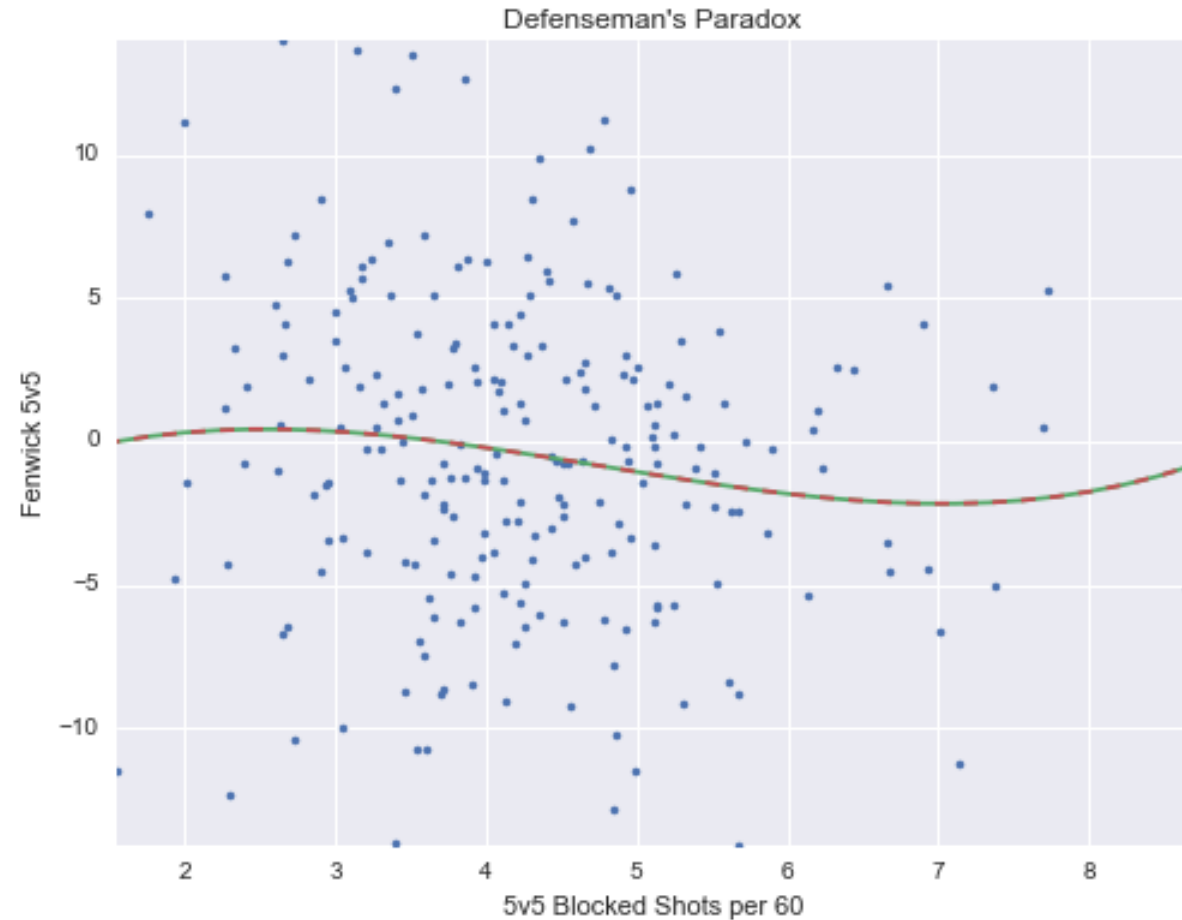
- Even individually strong defensemen average nearly 3.5 hits per sixty minutes of play, not zero hits per sixty minutes.



5v5 Hits/60 vs. Fenwick 5V5/60. The marks are labeled by [First] + ' ' + [Last]. The data is filtered on GP as an attribute and Pos. The GP as an attribute filter ranges from 20 to 84. The Pos filter keeps D.

The Problem Measuring Defensemen

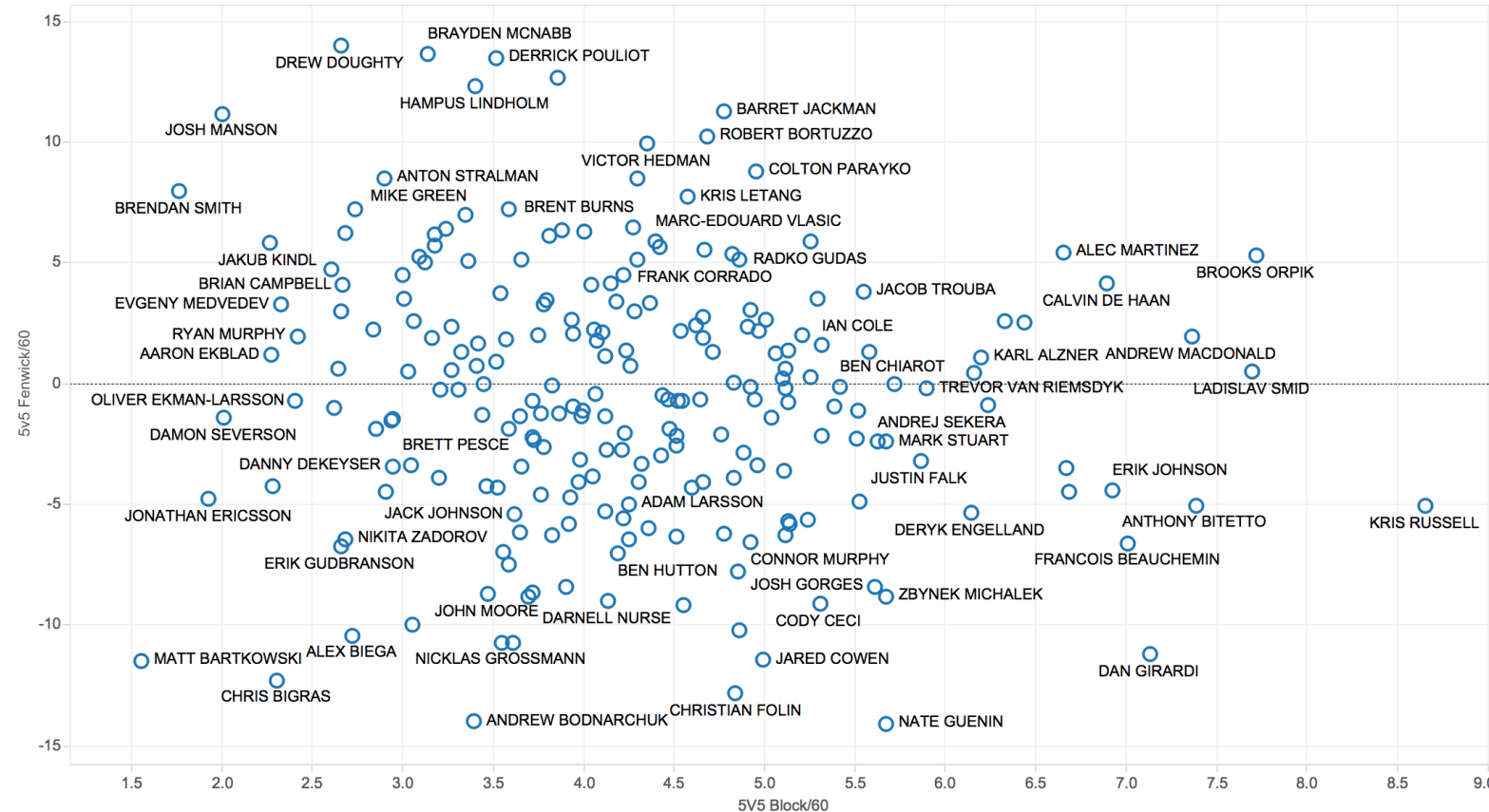
- Likewise, regression Fenwick on blocked shots demonstrates an upward bend before ultimately decreasing. Minimizing blocked shots alone is not correct.



The Problem Measuring Defensemen

- Again, individually strong defensemen produce roughly 3.5 blocked shots per sixty minutes of playing time, a non-zero amount.

Fenwick vs Blocks



5v5 Block/60 vs. Fenwick 5v5/60. The marks are labeled by [First] + ' + [Last]. The data is filtered on GP as an attribute and Pos. The GP as an attribute filter ranges from 20 to 84. The Pos filter keeps D.

The Problem Measuring Defensemen

- **Traditional:** Maximize blocked shots and hits
- **Possession:** Minimize blocked shots and hits
- **Evidence:** There is an optimal number of blocked shots and hits

Hits and Blocked Shots: Good or Bad?

- Blocked shots and hits are neither inherently good or inherently bad. They are context specific.
- Certain types of blocked shots are desirable. Others are undesirable.

Hits and Blocked Shots: Good or Bad?

- **Good blocked shots/hits:** Blocked shots that are not the result of you forfeiting possession are good. You are performing effective defensive play that did not arise because of your own error in requiring that defensive play.
- **Bad blocked shots/hits:** Blocked shots that ARE the result of you forfeiting possession are bad. If you performed defensive play because you caused the need for that very defensive play, you are responsible for the error.

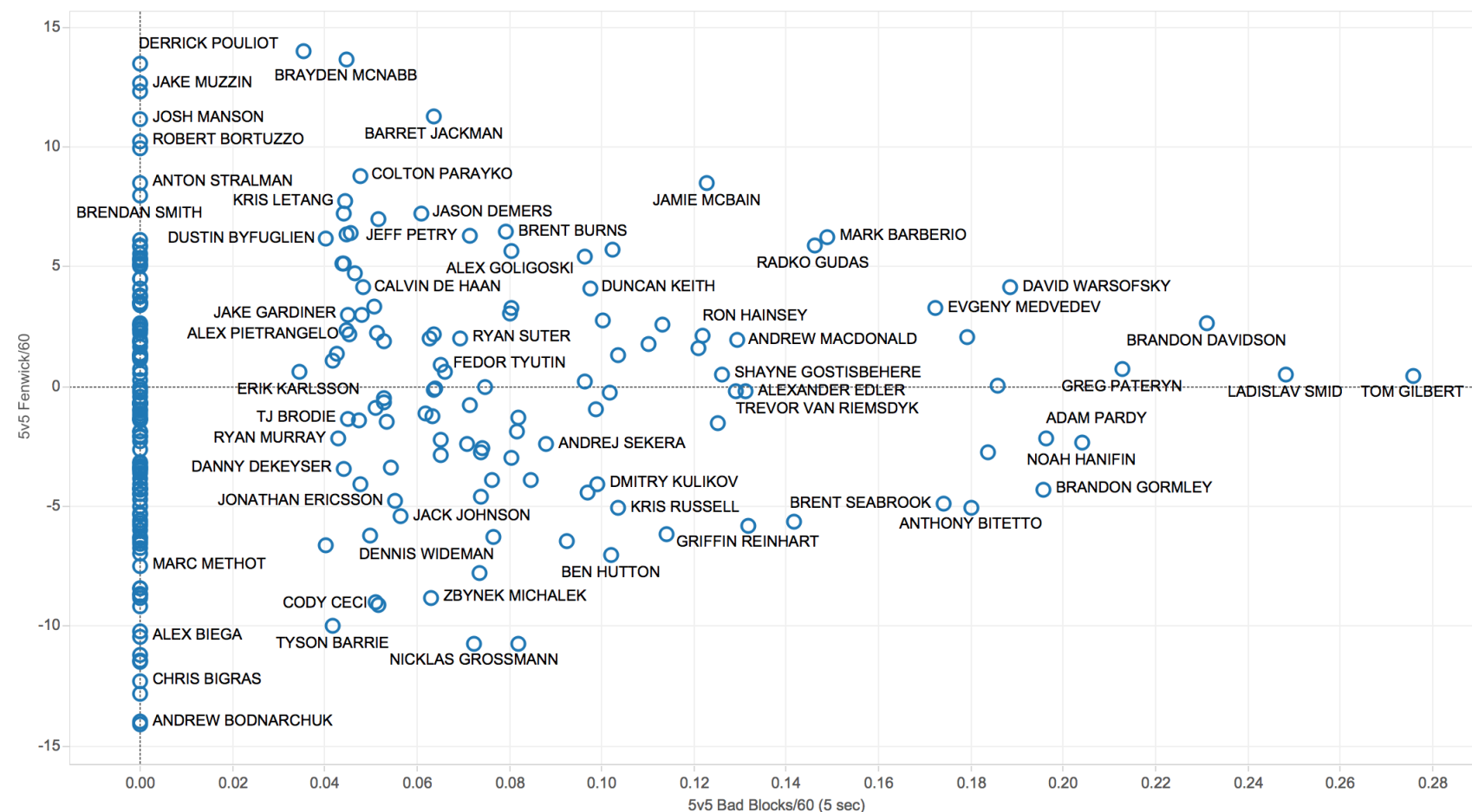
Hits and Blocked Shots: Good or Bad?

- **Good blocked shots/hits:** You made a blocked shot or hit that was not within 5 seconds of your own giveaway
- **Bad blocked shots/hits:** You made a blocked shot or hit that was within 5 seconds of your own giveaway

Hits and Blocked Shots: Good or Bad?

- Fenwick vs bad blocked shots demonstrates strong players despite their errors.
- This causes a follow-up question: what defensive players are most often making up for their mistakes?

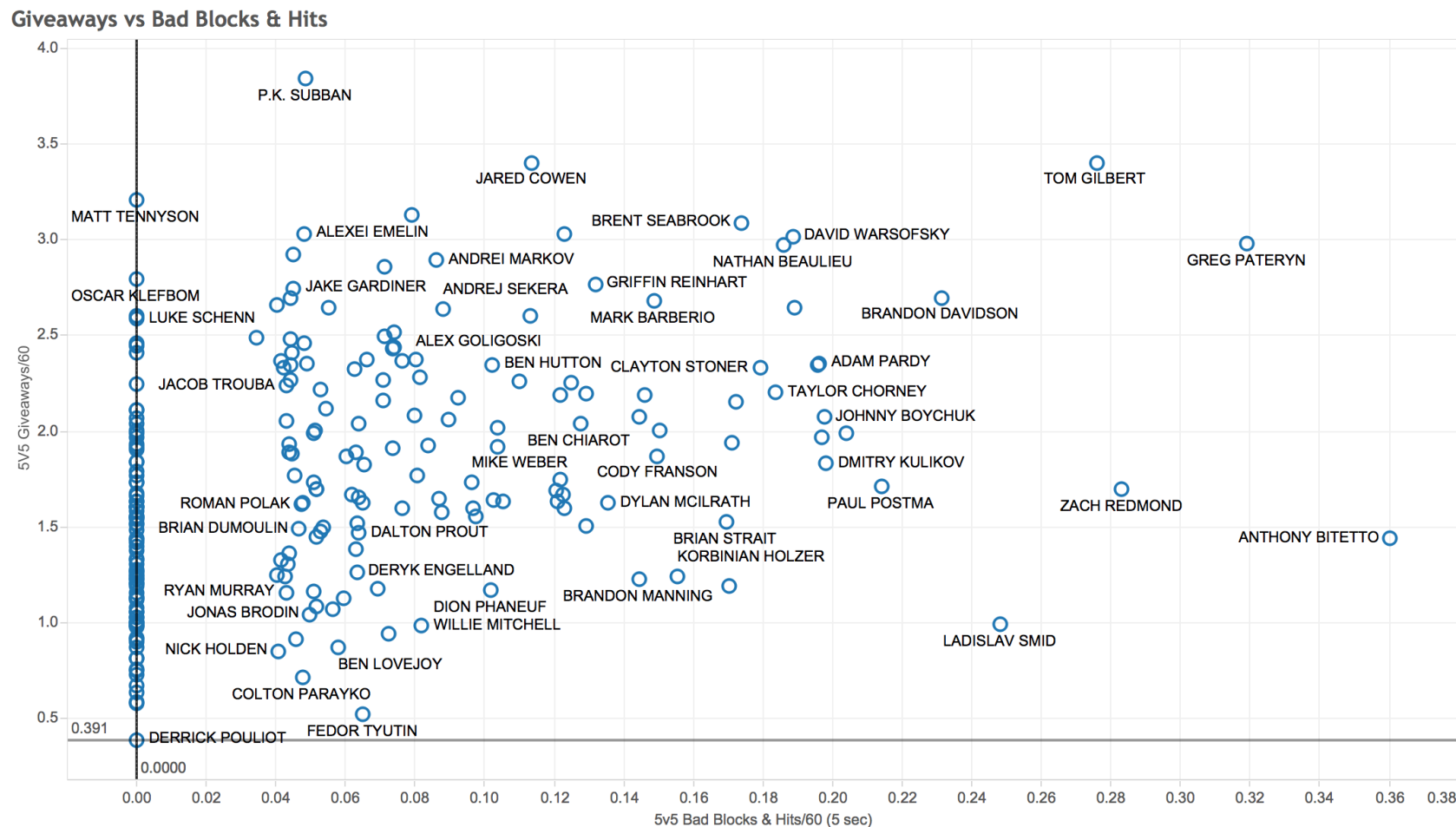
Fenwick vs Bad Blocks



B Block 5 5V5/60 vs. Fenwick 5V5/60. The marks are labeled by [First] + ' + [Last]. The data is filtered on GP as an attribute and Pos. The GP as an attribute filter ranges from 20 to 84. The Pos filter keeps D.

Hits and Blocked Shots: Good or Bad?

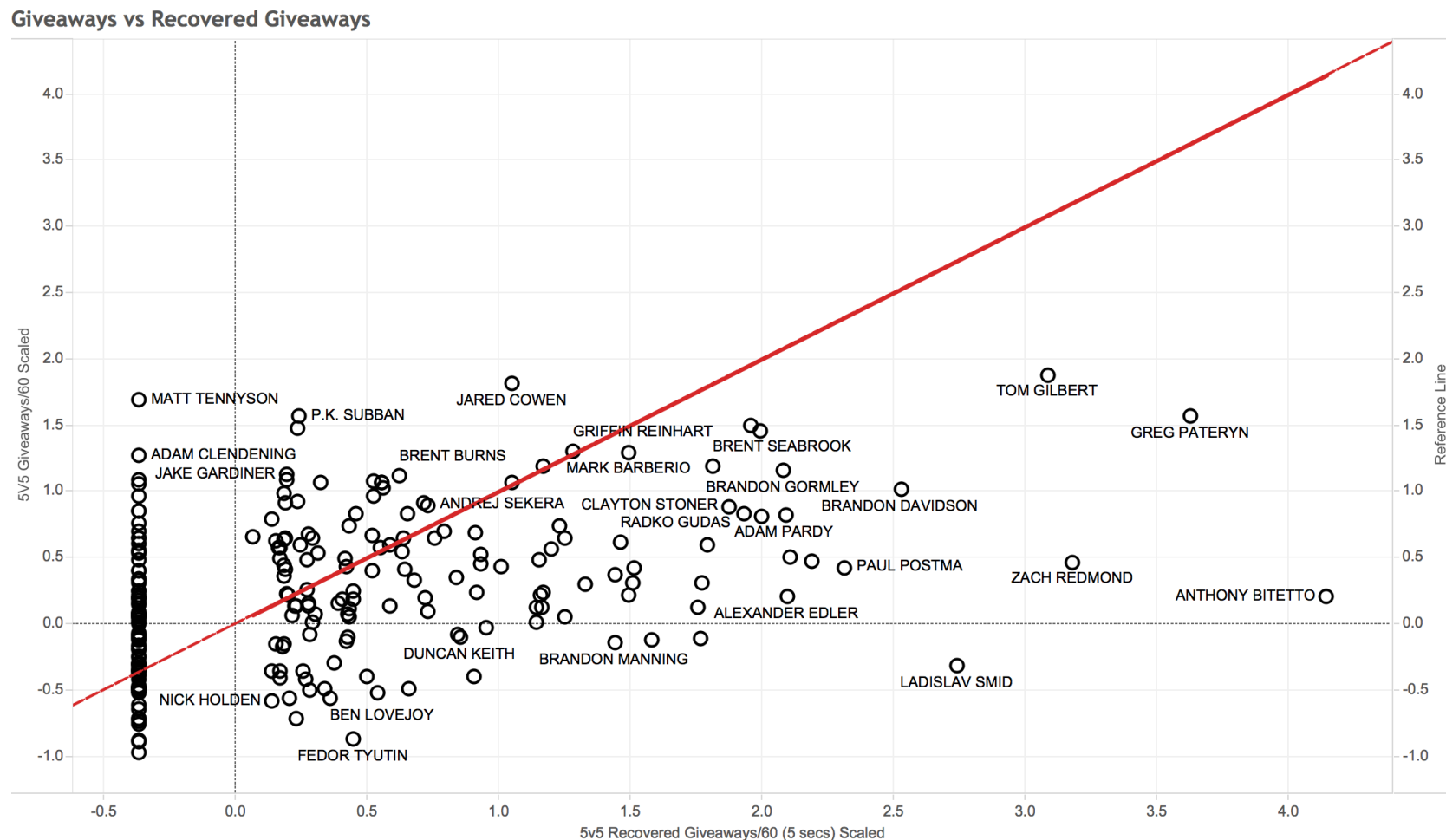
- If we investigate giveaways vs bad blocks, we are asking ourselves: when a player has a giveaway, how often do they immediately have a “bad” block or hit immediately following that giveaway?



B Block Hit 5 5V5/60 vs. 5V5 Give/60. The marks are labeled by [First] + ' + [Last]. The data is filtered on Pos and GP as an attribute. The Pos filter keeps D. The GP as an attribute filter ranges from 20 to 82.

Hits and Blocked Shots: Good or Bad?

- By measuring our values in terms of deviation units (Z-scores) and plotting a line $y=x$, we can objectively say player below this red line make up for their mistakes more often than not, and those above this red line fail to do so.



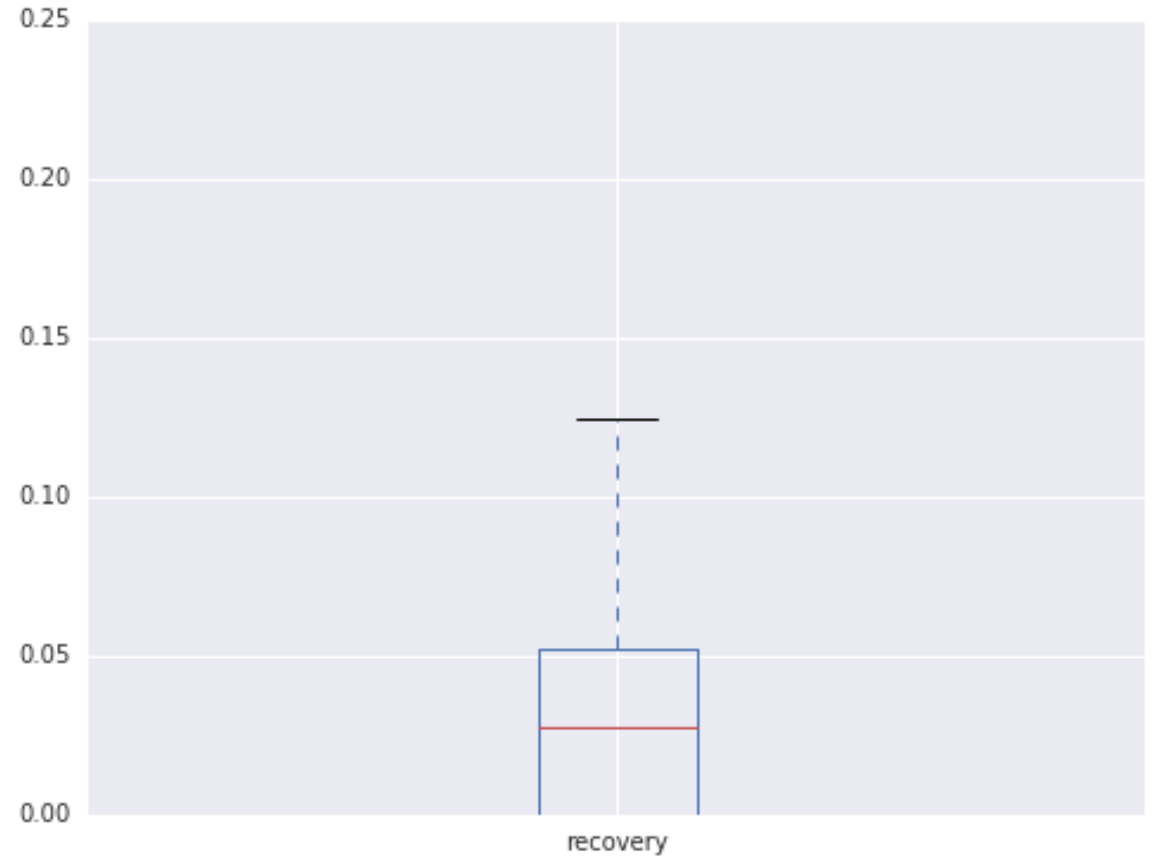
B Bh 5 5V5/60 Scaled vs. 5V5 Give/60 and Reference Line. For pane 5V5 Give/60: The marks are labeled by [First] + '+' + [Last]. For pane Reference Line: Color shows details about Measure Names. The data is filtered on Pos and GP as an attribute. The Pos filter keeps D. The GP as an attribute filter ranges from 20 to 82.

Recovery: A New Statistic

- **Recovery:** Of the times that a given defenseman was the cause of a giveaway, how often did they immediately (within five seconds) log a blocked shot or hit to attempt to make-up for this giveaway.
- Mathematically, recovery =
$$\frac{(\text{bad blocked shots} + \text{bad hits})}{\text{giveaways}}$$

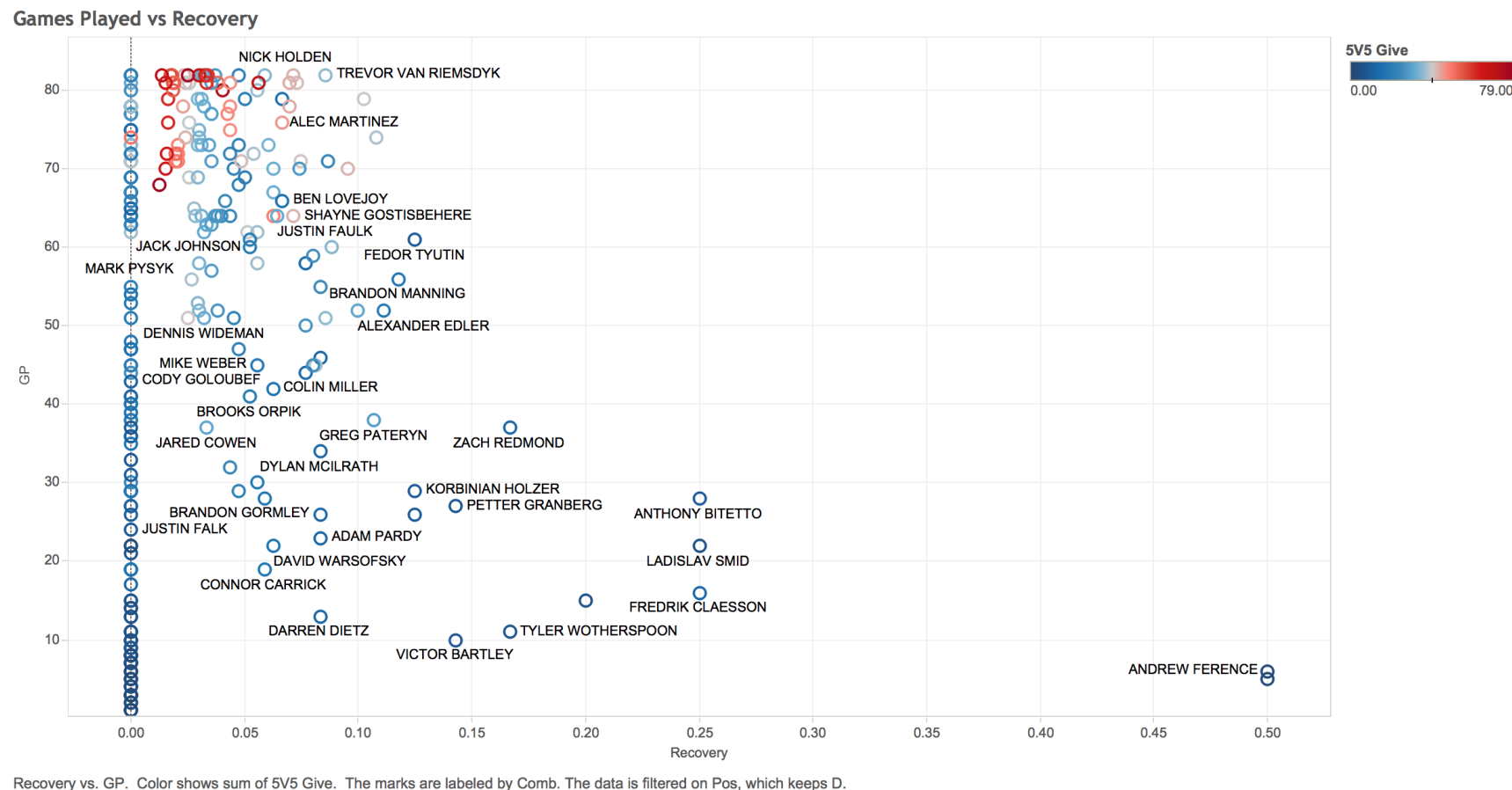
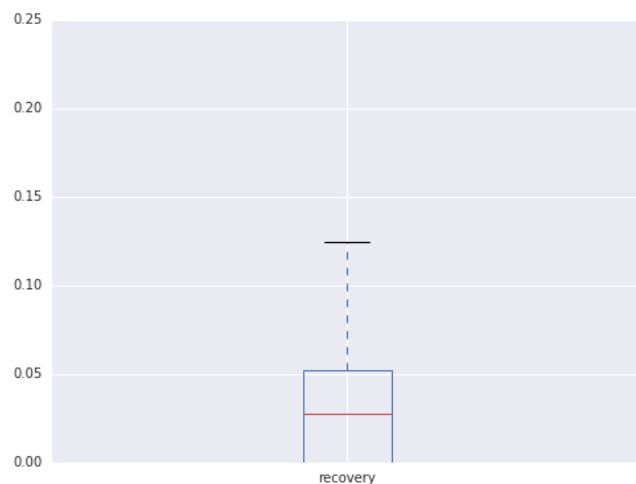
Recovery: A New Statistic

- The average median recovery for defensemen in the 2015-2016 season is 0.027402



Recovery: A New Statistic

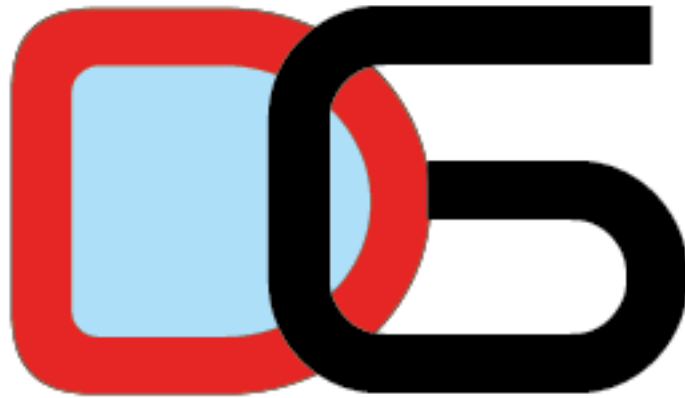
- The average median recovery for defensemen in the 2015-2016 season is 0.027402



Next Steps

- Quantifying the exact point at which we experience the defenseman's paradox: using polynomial interpolation, at what best fit do we experience the optimal number of blocked shots and hits
- Testing additional statistics versus recovery
- Investigate takeaways within five seconds of giveaways
- Testing against the 2016-2017 season

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