Score Effects by Pressure

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Vancouver BC
Vancouver Hockey Analytics Conference
March 11, 2017

Score Effects

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  - 25% more shots, 1% more goals

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  - 25% more shots, 1% more goals
- But they usually still lose.

Causes of Score Effects

What causes score effects?

- Bench-shortening?

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  - **No. (around 10%)**
- Trailing teams pushing? Leading teams sitting back?

Causes of Score Effects

What causes score effects?

- Bench-shortening?
  - **No. (around 10%)**
- Trailing teams pushing? Leading teams sitting back?
  - **Leading teams sit back, but home teams push.**

Big Idea

Problem: Score effects vary over time.

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Solution: Consider **pressure** as the independent variable instead of time itself.

Big Idea

By looking at shot rates as a function of pressure, we can learn:

- Who is responsible for score effects.
- Make adjustments that better reflect what we see.
- Make adjustments that better correlate to future winning.

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By looking at shot rates as a function of pressure, we can learn:

- Who is responsible for score effects.
  - **Mostly the home team (but also leading teams)**
- Make adjustments that better reflect what we see.
  - **Yes (a tiny bit)**
- Make adjustments that better correlate to future winning.
  - **Not really (the same)**

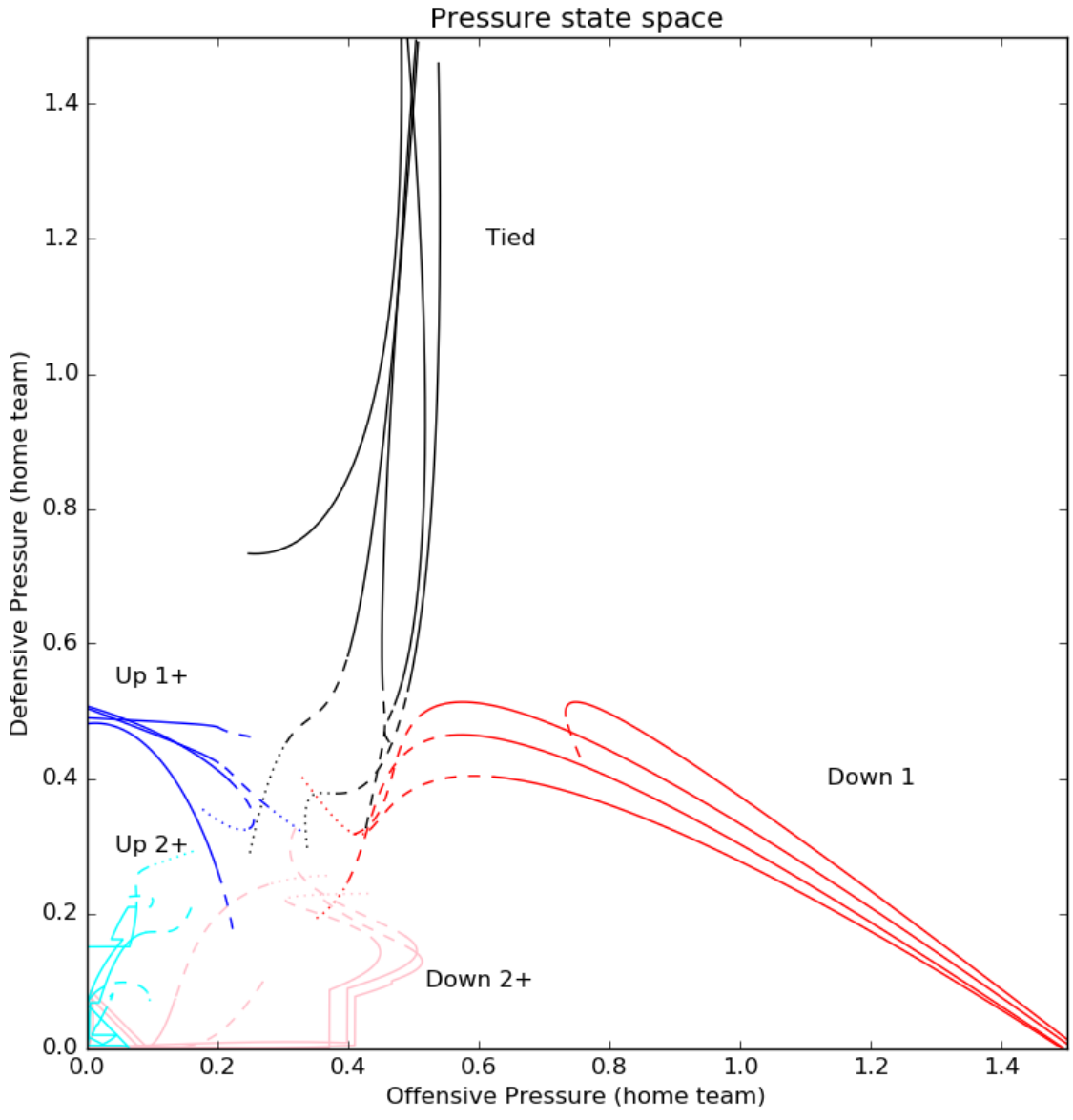
Pressure Definition

- *Defensive* Pressure is how much you lose if you're scored on.
- *Offensive* Pressure is how much you gain if you score.

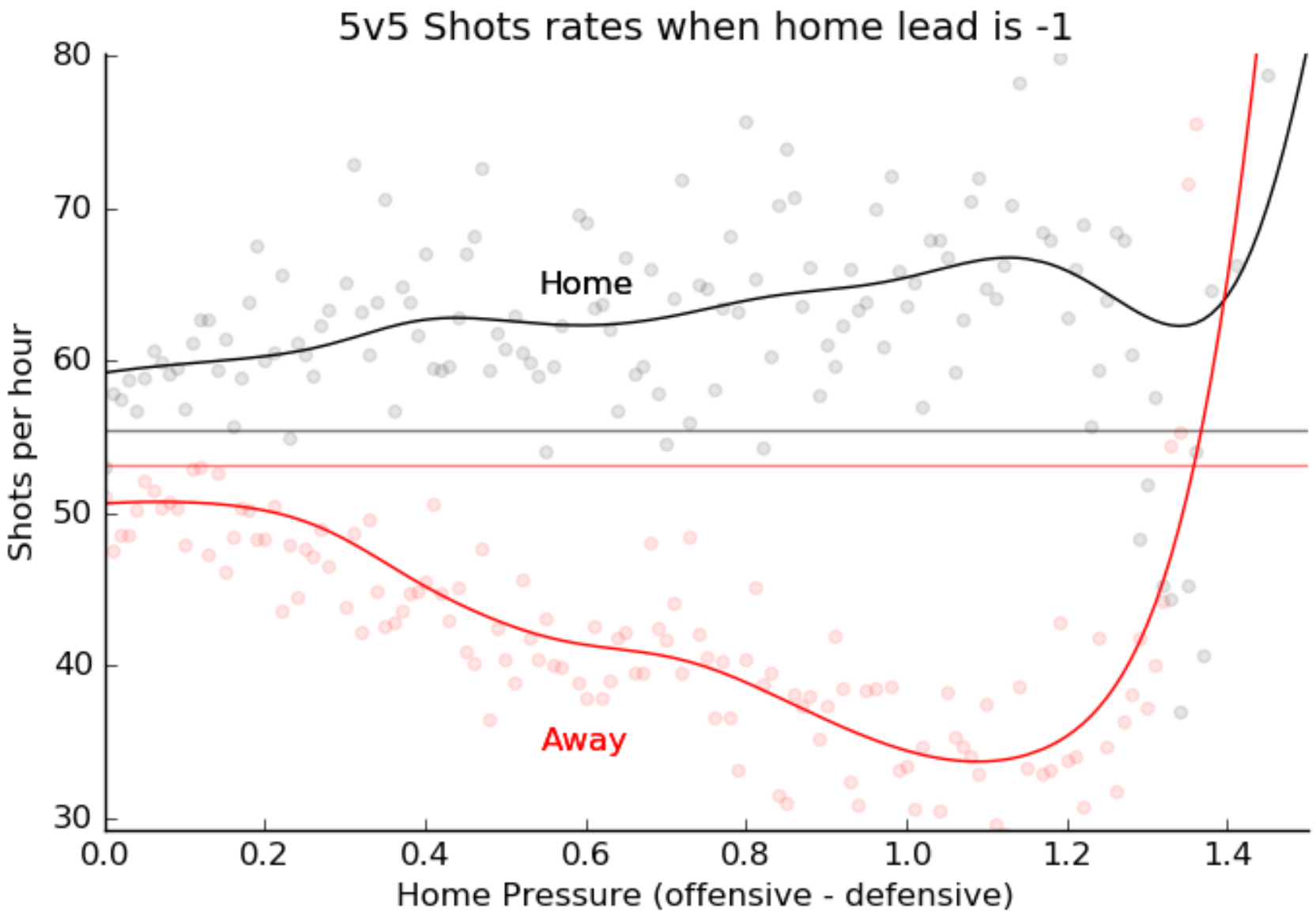
Pressure Definition

- *Defensive* Pressure is how much you lose if you're scored on.
  - **(Expected) Standings points lost.**
- *Offensive* Pressure is how much you gain if you score.
  - **(Expected) Standings points gained.**

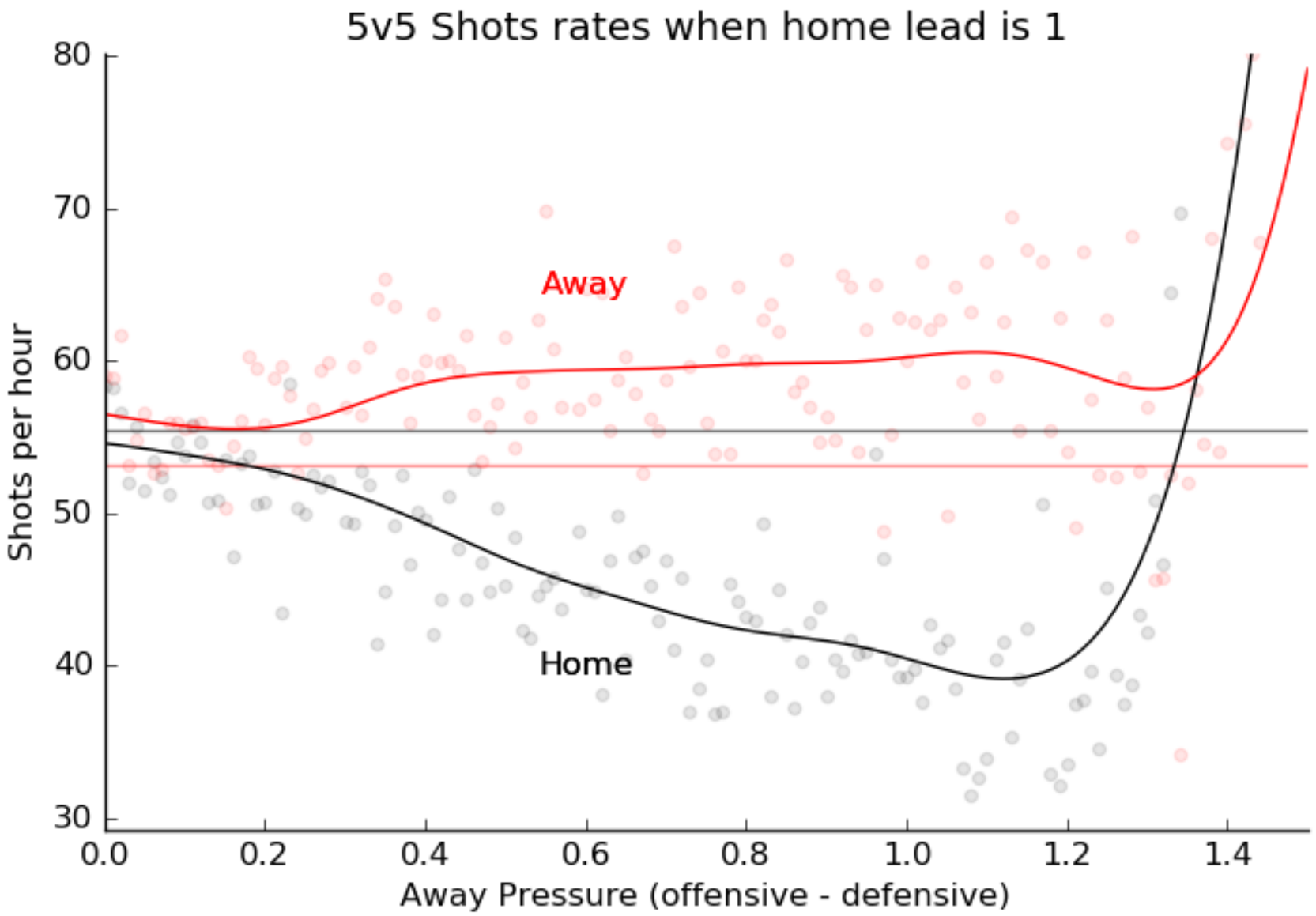
Game Pressures



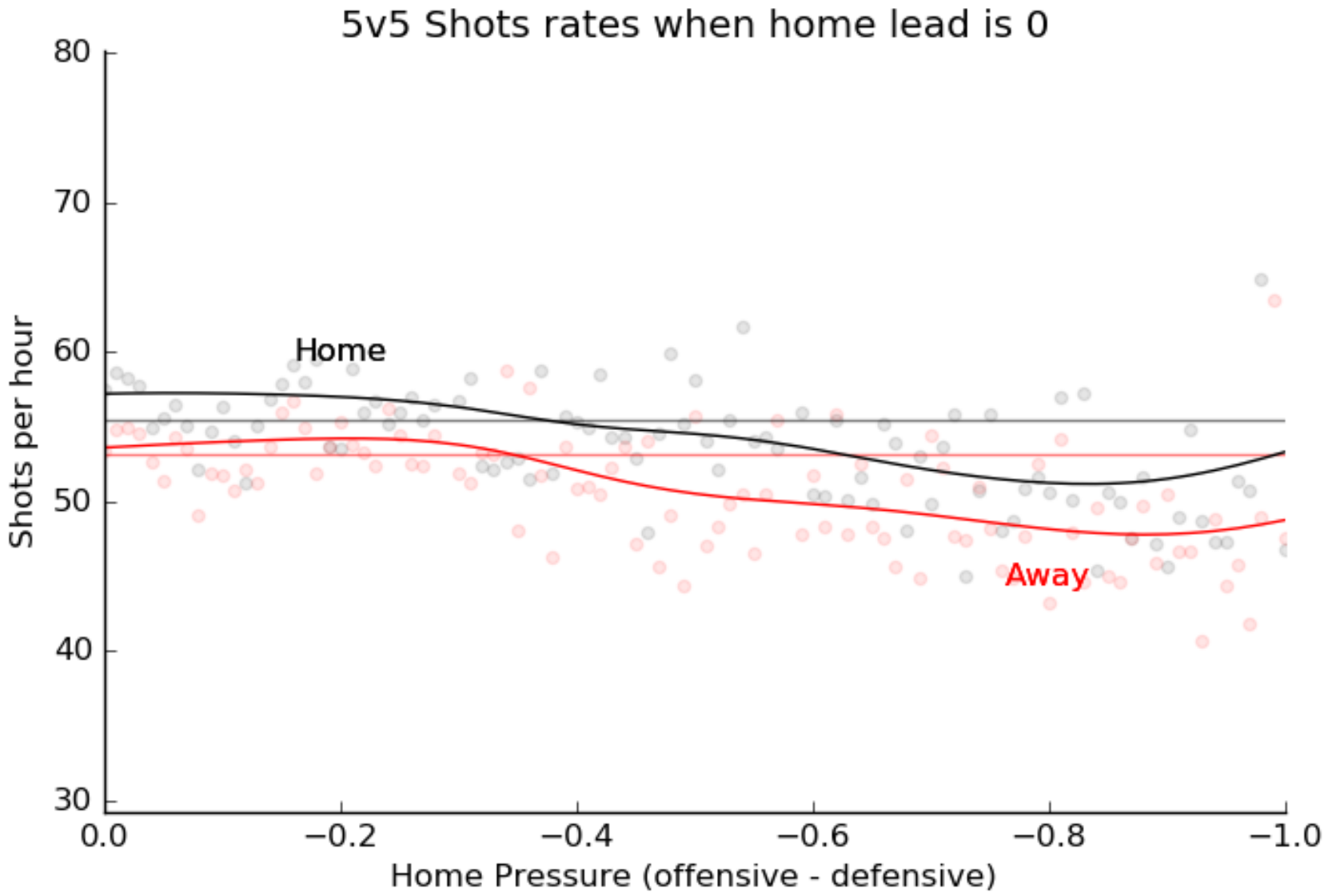
Home team down a goal



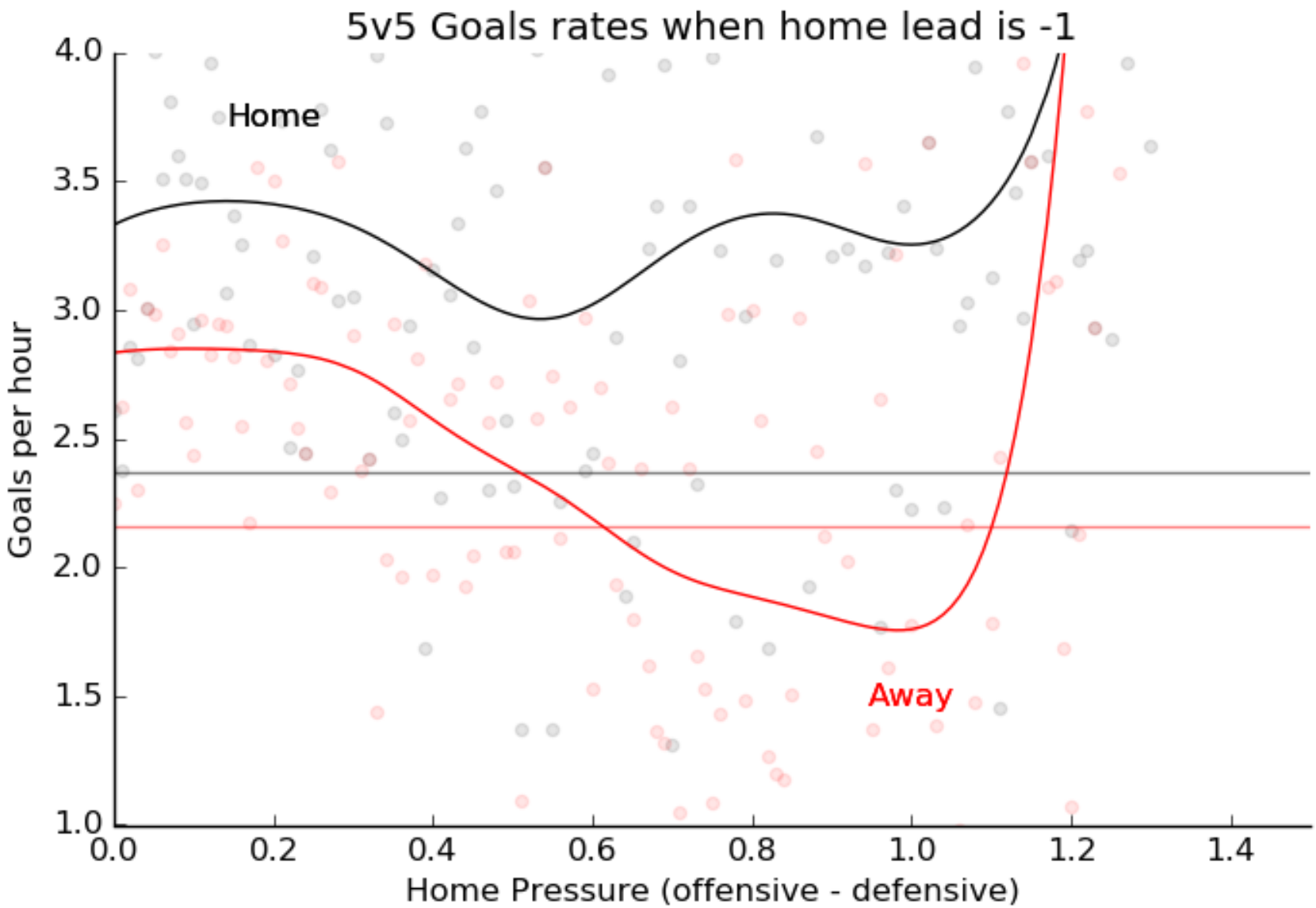
Away team down a goal



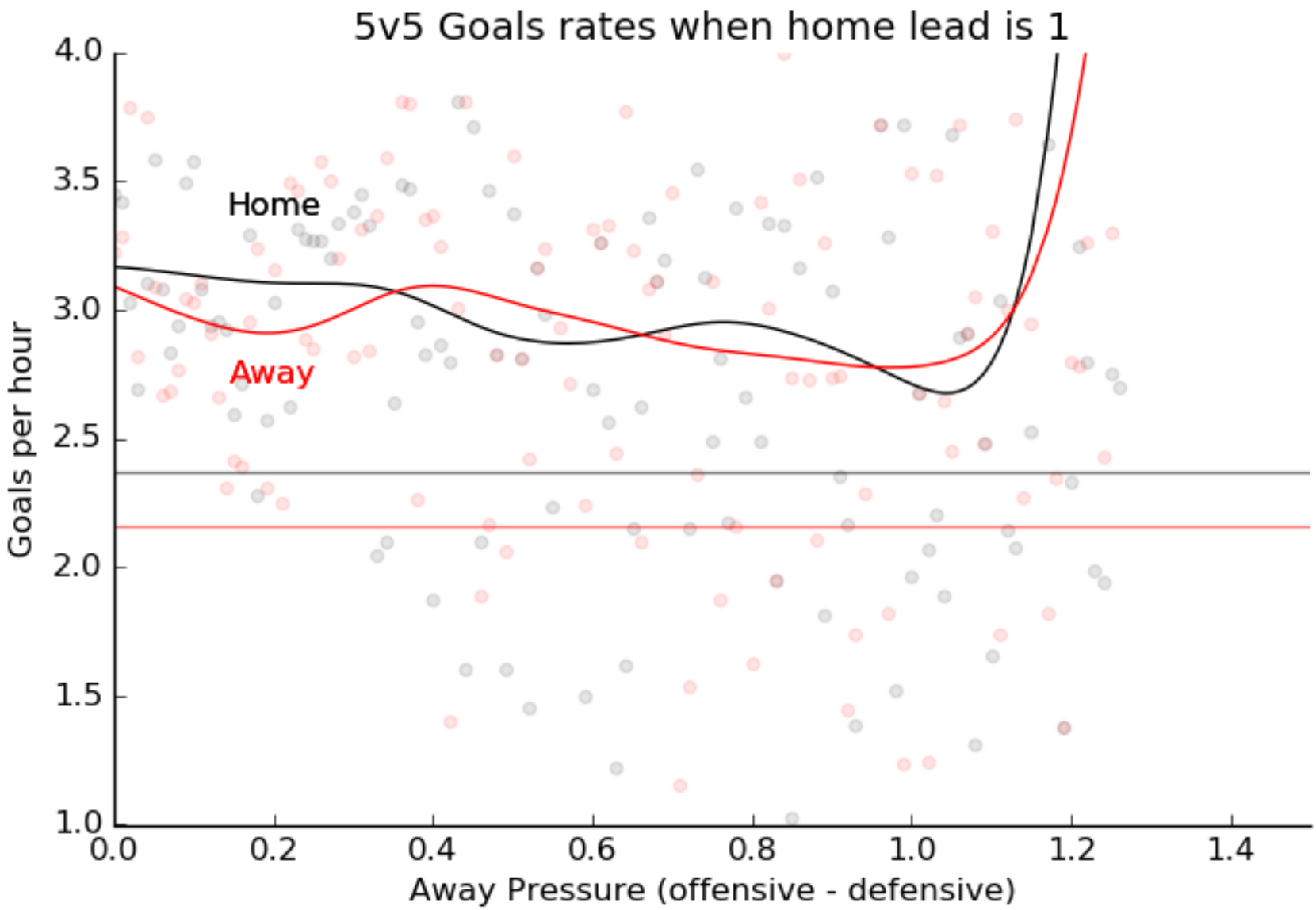
Ties


5v5 Shots rates when home lead is 0
Shots per hour
80
70
60
50
40
30
Home
Away
0.0
−0.2
−0.4
−0.6
−0.8
−1.0
Home Pressure (offensive - defensive)

Home team down a goal



Away team down a goal



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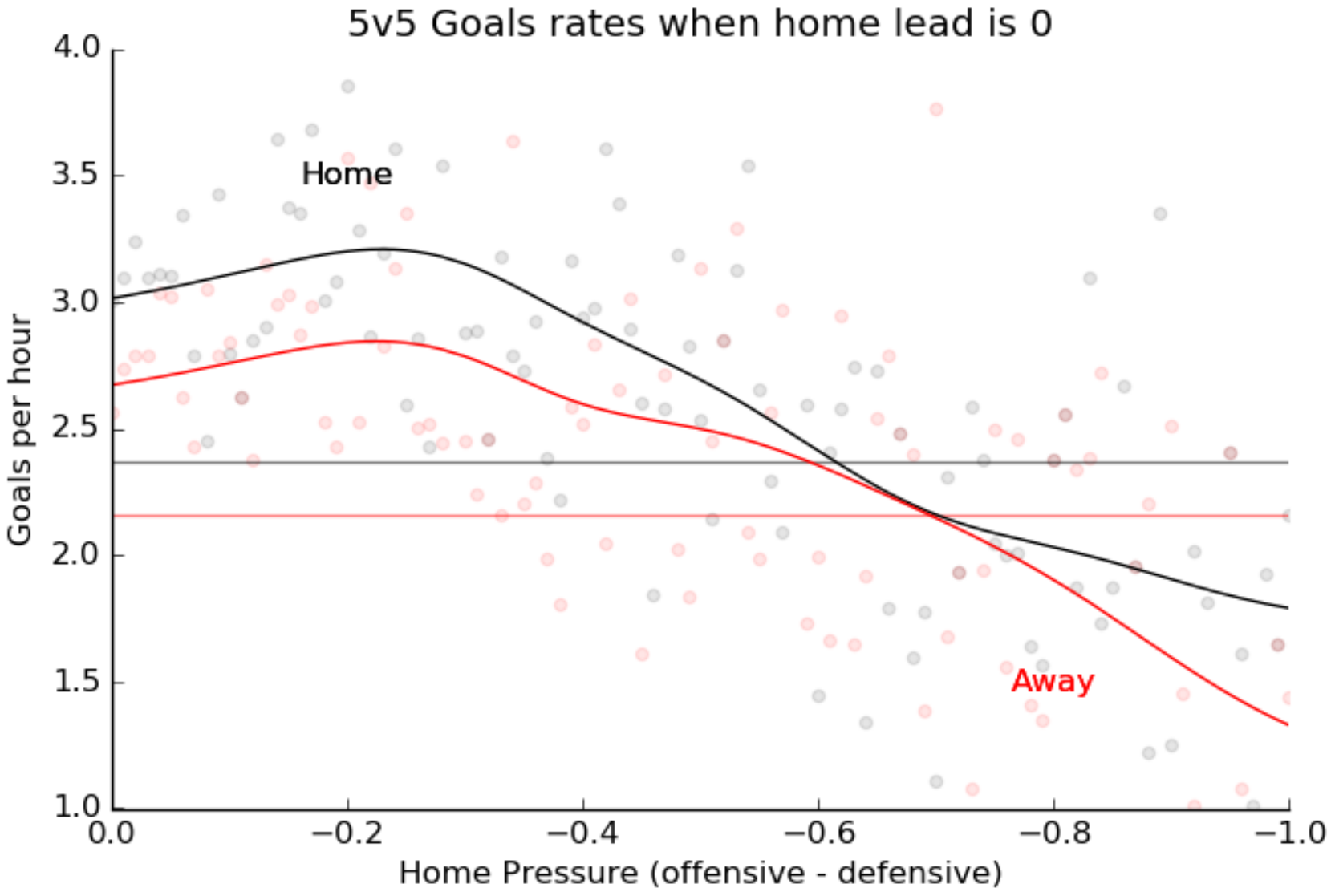
5v5 Goals rates when home lead is 0
Home
Away
Goals per hour
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.0
−0.2
−0.4
−0.6
−0.8
−1.0
Home Pressure (offensive - defensive)

Sources of Variation

How do shot and goal rates change when the score difference is one, compared to average?

Shots	Leading	Trailing
Home	-10	+8
Away	-10	+2

Goals	Leading	Trailing
Home	+0.6	+0.9
Away	+0.2	+0.8

Correlations

Is it better to adjust for pressure?

Correlations

Is it better to adjust at all?

	Raw	Score and Home Adjusted
Auto-correlation	0.66	0.72
To winning (in-sample)	0.28	0.43
To winning (in the future)	0.34	0.39

Definitely better.

Correlations

Is it better to adjust for pressure?

	Raw	Score and Home Adjusted	Also Pressure Adjusted
Auto-correlation	0.66	0.72	0.72
To winning (in-sample)	0.28	0.43	0.44
To winning (in the future)	0.34	0.39	0.39

Two two adjustments are the same.

Next

- Publicize adjustments to make them more descriptive.
- Rework predictive models to see what shifts.
- Examine specific teams in specific score states to make diagnoses.

Thanks!