Shift Start Location Adjustment

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The Idea

How can we account quantitatively for the fact that players don't start their shifts in the same places?

Punchline: It doesn't really matter.

Existing Ideas

- Deleting a bunch of data.
  - Basically kicking puppies.
- Doing arithmetic with faceoff numbers.
  - Not enough faceoffs.
  - Too many faceoffs.

Shift start locations

Shift Start Location	Overall	Forwards	Defenders
OZ	12%	13%	11%
NZ	18%	18%	17%
DZ	11%	11%	11%
On-the-fly	59%	58%	61%

Not enough faceoffs: they only cover 40% of the shifts and around 50% of the 5v5 hockey.
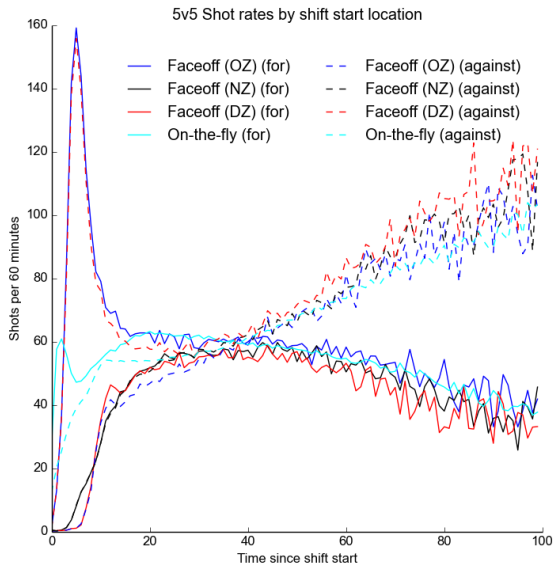
Shift Lengths

Shift Length Histogram, 2014-2015
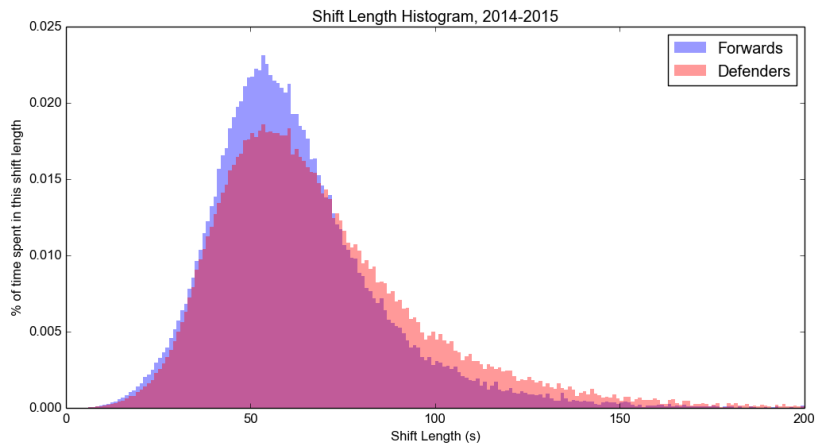
Too many faceoffs: not every faceoff starts a shift.

Shots around On-the-fly Changes

Shot rates for on-the-fly shifts by previous/next event zone
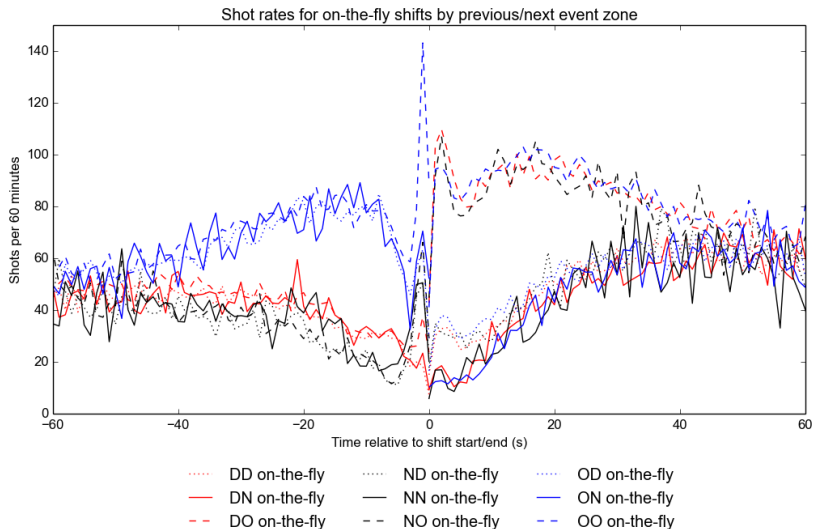
Shots for and against by shift start

5v5 Shot rates by shift start location

Adjustment Coefficients

Shift Start Location	Shot For	Shot Against	
OZ	0.80	1.23	
NZ	1.28	1.18	*strange*
DZ	1.33	0.78	
On-the-fly	0.95	0.98	

Coefficient for a 5v5 event is the average of the 10 skater values.
Rare is expensive, common is cheap.

Most Extreme Adjustments

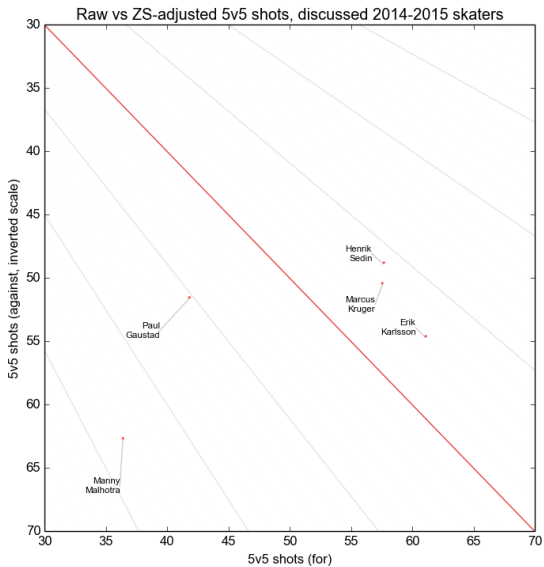

Raw vs ZS-adjusted 5v5 shots, extreme 2014-2015 skaters
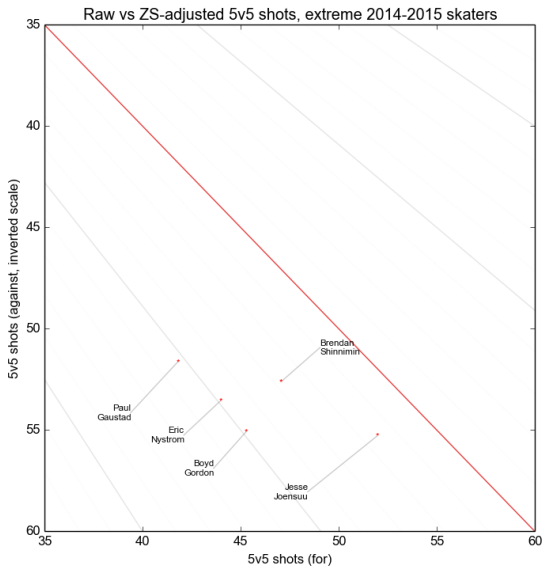
Shift start locations for extreme players

Joensuu: 193 minutes at 5v5 in 20 games for Edmonton.
Shinnimin: 128 minutes at 5v5 in 12 games for Arizona.

Shift Start Location	Overall	Joensuu	Shinniman
OZ	12%	6%	17%
NZ	18%	14%	16%
DZ	11%	33%	6%
On-the-fly	59%	47%	61%

Adjustments for oft-cited players

Raw vs ZS-adjusted 5v5 shots, discussed 2014-2015 skaters

Adjustments for season

Raw vs ZS-adjusted 5v5 shots, all skaters
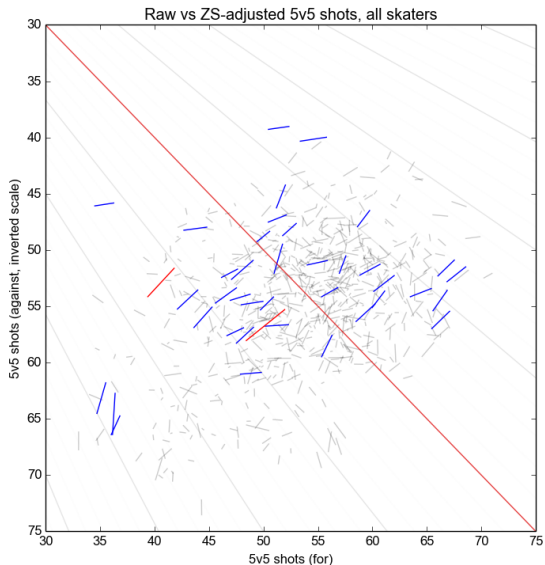
5% of players with 100 minutes move more than 1% in shot share.

Future Work

- Time-varying Adjustments
- Shadows: shift-end location patterns
- Combined adjustments

Thanks!