Beyond Corsi and Fenwick: Statistical Models for Rating NHL Players

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Why Is Corsi Bad?

dodges tomatoes

Why Is Corsi Bad?

Doesn't control for quality of teammates

Doesn't control for quality of opponents

Doesn't control for zone starts

Doesn't control for score situation

Doesn't account for uncertainty

How Can We Fix It?

Use statistical models!

Why Use Statistical Models?

Statistical models (e.g. regression) have all of the properties we want when evaluating players:

- Automatically **control for quality of teammates / opponents, zone starts, score situation**, etc
- Calculate **marginal effects** that each player has on game outcomes
- **Separate offensive and defensive** player abilities
- **Account for uncertainty** in player ability estimates

...except computational efficiency

Regression-Based Player Ability Metrics

Metrics calculated using statistical models:

1. Macdonald (2012a): Linear regression

   Which players are responsible for creating shot attempts, for and against?

2. Thomas, Ventura, Jensen, Ma (2013): Hazard models

   How much does each player affect goal-scoring rates, for and against?

3. Shuckers (2013): THoR

   Total Hockey Rating; models probability of goal given that an event occurred.

4. Gramacy, Taddy, Jensen (2013): Logistic regression

   Which players are responsible for creating goals / shot attempts, for and against (ignoring non-goal-scoring events)?

Regression-Based Player Ability Metrics

Common themes:

- **Statistical models** used to estimate player ratings
- Regularization used to **account for uncertainty**
- Public RTSS data used, so **results are reproducible**
- **Control** for quality of teammates, opponents, etc
- **Separate** offensive, defensive, 5-on-5, PP/PK ratings
- Best defensive players: Datsyuk, Bergeron, Chara, Lidstrom

Questions?

We'll post these papers to our blog

We'll write some summary blog posts (with main results!)//of each of these approaches

We'll (eventually) put these metrics on www.war-on-ice.com