

SNAPSHOT

Visualization to Propel Ice Hockey Analytics

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**The Sports Analytics Institute**
Achieving Confident Results

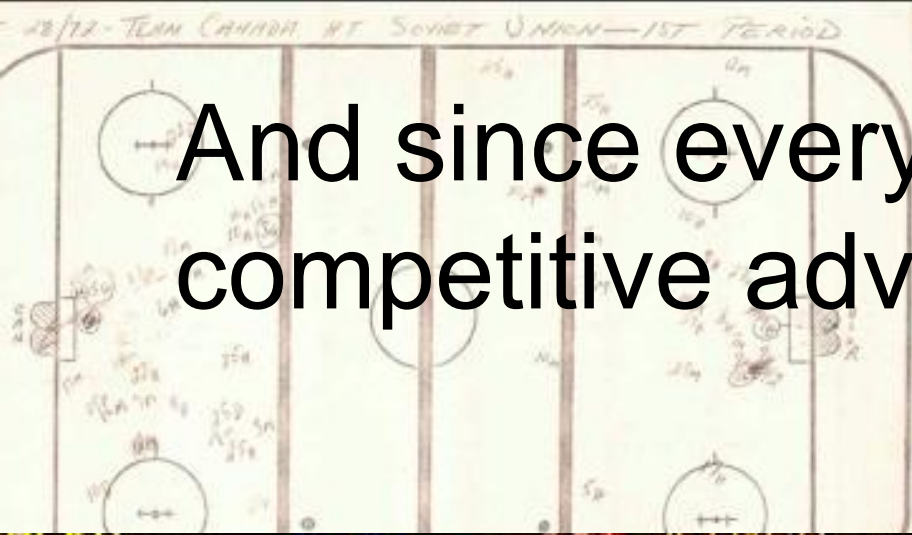


In Sports...
winning is king.

So everyone is seeking a competitive advantage



And since everyone is looking for a competitive advantage...

A basketball scoreboard showing team names and odds. The teams listed are MAVERICKS, SPURS, NETS, 76ERS, MAGIC, CELTICS, and WOLVES. The odds are displayed in a column on the left, ranging from 6/1 to 12/1.

N.	T.	R.	lb.	P.O.	A.	E.	ATHLETIC.	T.	R.	lb.	M.
s.s	6	4	4	1	5	2	Force, s. s...	5	1	2	
2 b.	6	3	3	4	4	3	Eggler, c. f...	5	3	3	
e. lb	6	2	3	9	0	1	Fisler, r. f...	5	0	1	
. 1.	6	1	0	3	1	0	Meyerle, 3db	5	1	2	
d b	6	3	3	3	1	2	Sutton, 1st b.	5	1	2	
c. f	6	0	0	0	0	1	Coons, c....	5	1	0	
	6	0	0	0	0	0	Halley, c...	5	1	3	
	6	2	2	1	2	0	Pollock, 1b.	6	1	2	
p...	5	4	4	1	1	2	Knight, p...	5	2	2	
	53	19	21	27	13	13	Totals...	46	11	17	

It is a good thing there is so much data.

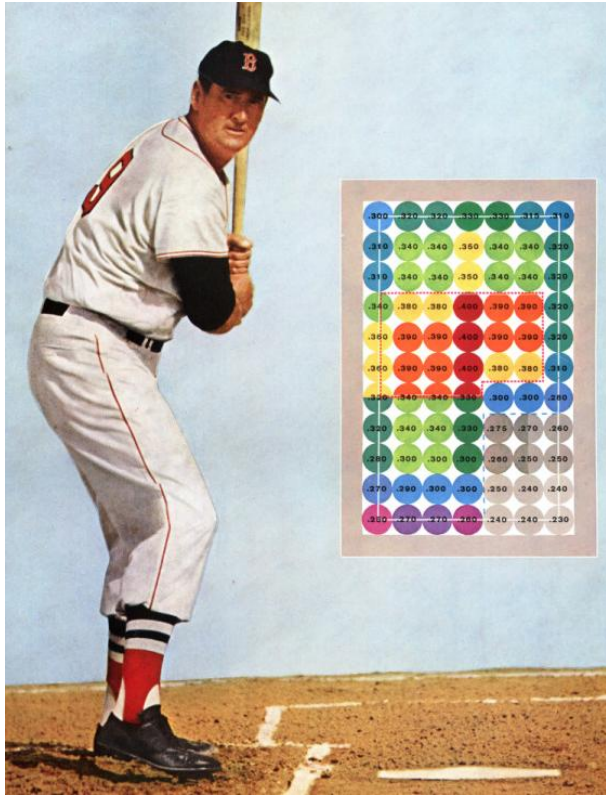
MONEYBALL

JONAH HILL PHILIP SEYMOUR HOFFMAN

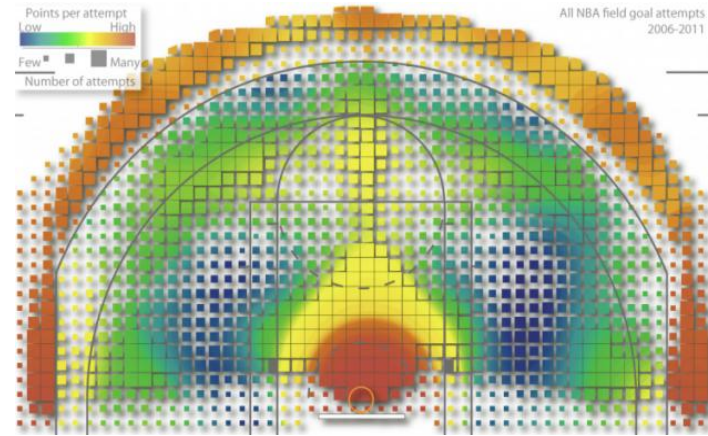
BASED ON A TRUE STORY



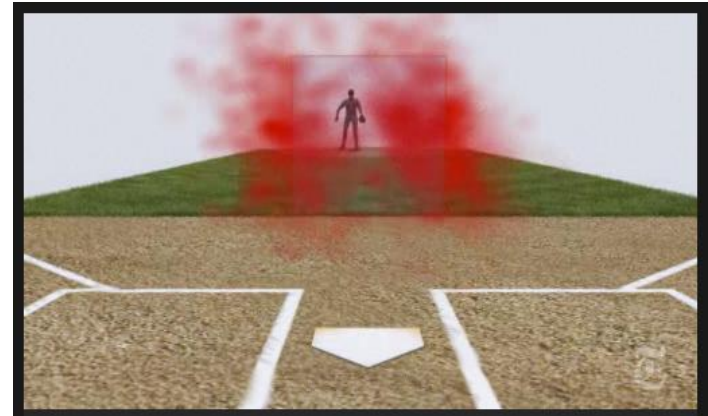
Sports Viz



<http://www.hardballtimes.com/images/uploads/williams.png>



<http://courtvisionanalytics.com/>

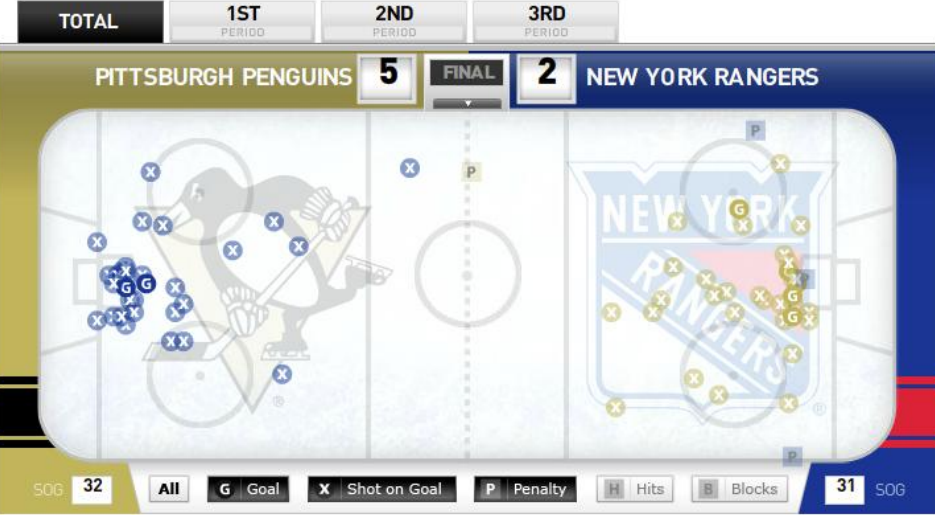


<http://www.nytimes.com/interactive/2010/06/29/magazine/rivera-pitches.html>

The National Hockey League (NHL)



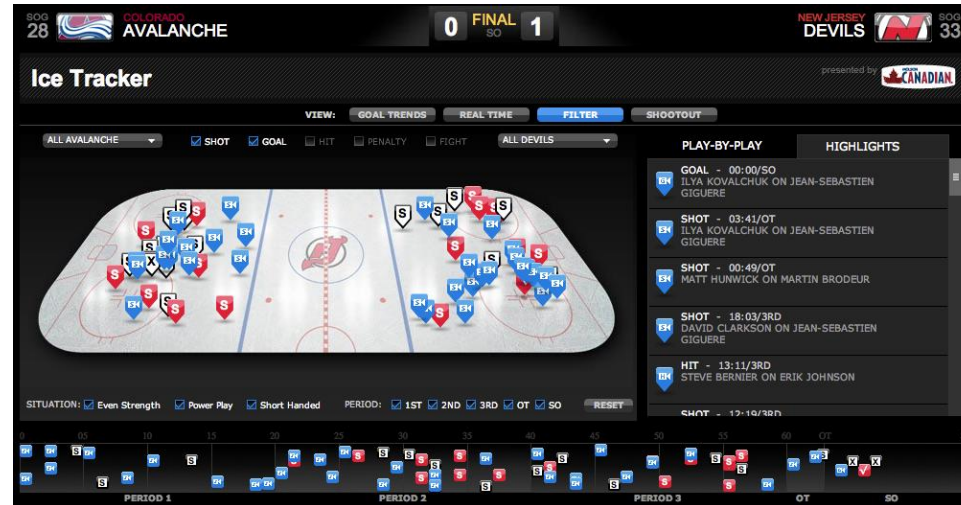
<http://www.youtube.com/watch?v=Fp9Jb550Kng>



<http://scores.espn.go.com/nhl/gamecast?gameId=400047896>

ESPN.com's GameCast system

NHL.com's Ice Tracker system

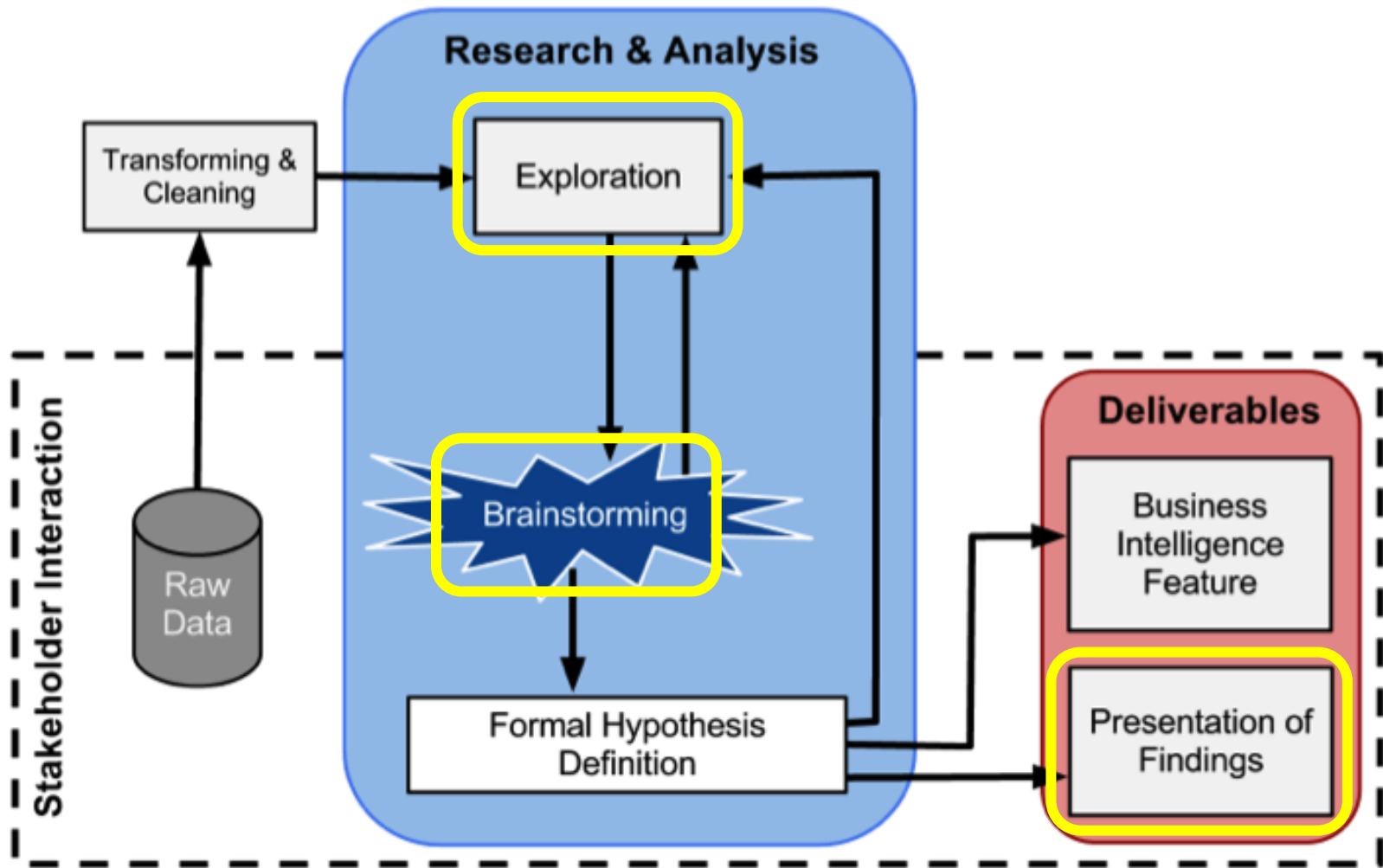


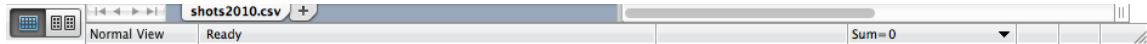
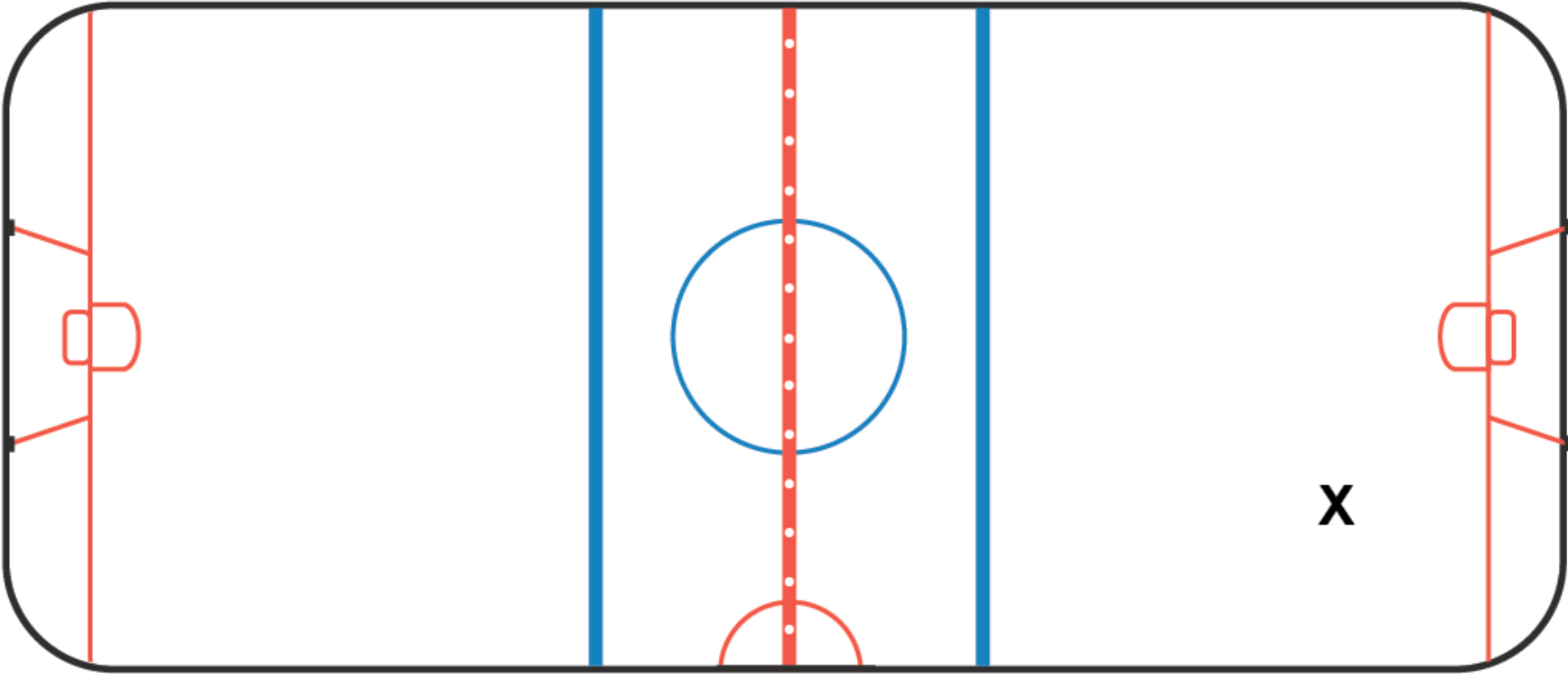
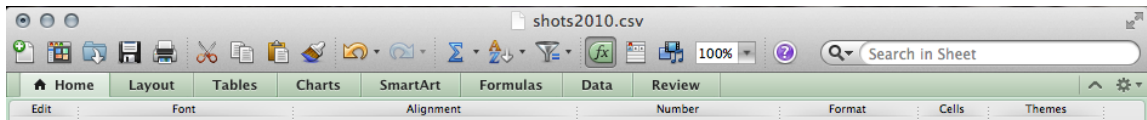
<http://www.nhl.com/ice/icetracker.htm?id=20110206151>

J. Michael (Mike) Boyle



- Professional NHL analyst
 - Consulting for several NHL teams
- Uses lots of data mining, but little visualization
- Emphasized that analysts work both proactively and reactively
 - Reactive work is simple to fulfill with traditional statistics
 - But proactive work could benefit from visualizations





Design Guidelines

- Location and distance are crucial
- Important categorical facets
- Comparisons drive insights
- Record and revisit promising ideas
- Collaboration strengthens hypotheses
- Stakeholders want pictures

SNAPSHOT

SELECT VIEW

SHOT GOAL

SHOT GOAL

Use the Select View dropdown above, the filters to the left, and the setting below to create a view or click on one of the views to the left to see its full-size, interactive version.

Color shots by:

Heatmap Square Size:

Radial Heatmap Band Width:

If you find a view that you would like to revisit later, type a descriptive title into the dialogue box and click the *Snapshot This!* button to save it to a new tab.

All Teams @ All Rinks

Shots Goals

Period 1 00:00 to Period 3 20:00

Reset to Regular Season

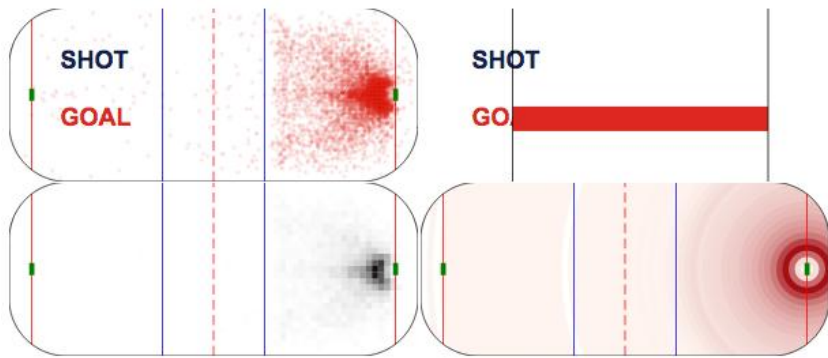
2010-10-07 to 2011-04-10

Even-Strength
Power-Play
Short-Handed

Defensemen
Left Wingers
Right Wingers
Centers

Show All Players

SNAPSHOT



SELECT VIEW

Use the Select View dropdown above, the filters to the left, and the setting below to create a view or click on one of the views to the left to see its full-size, interactive version.

Color shots by:

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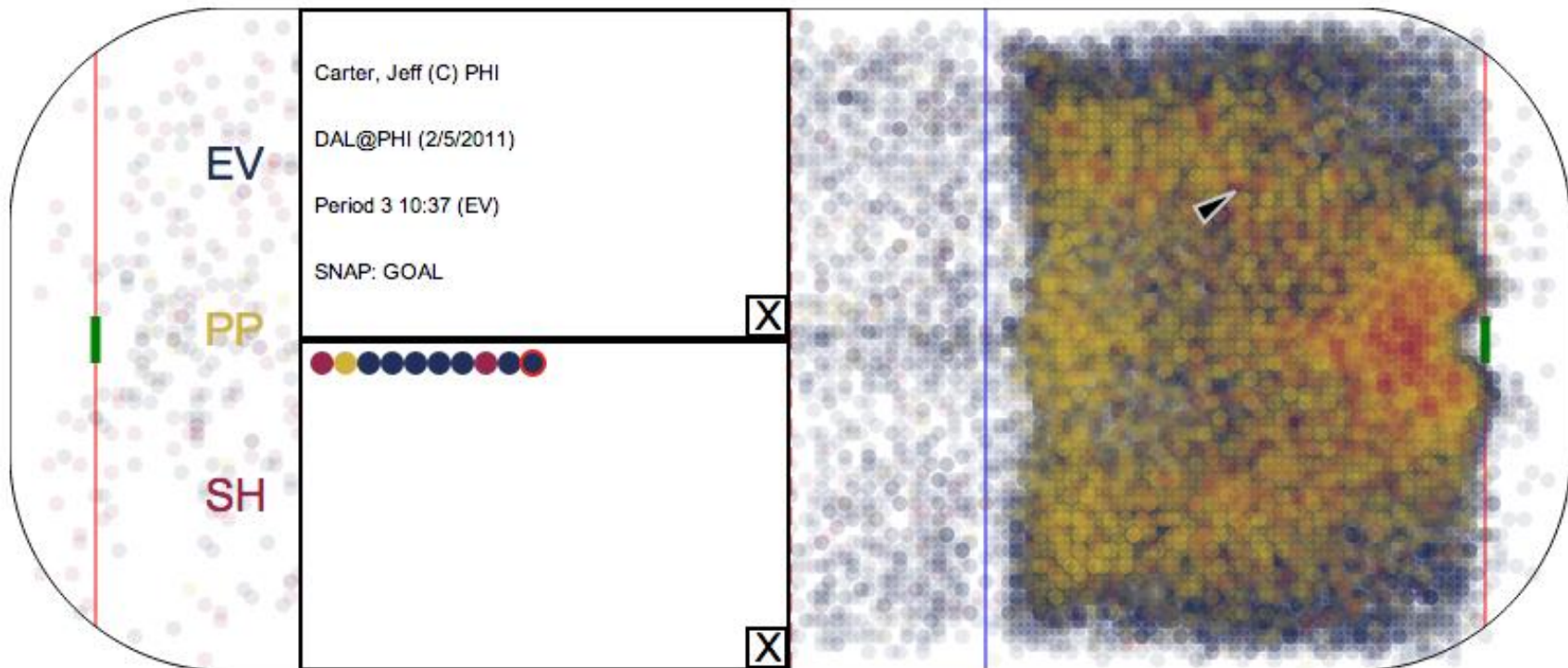
@

Period 1 00:00 to Period 3 20:00

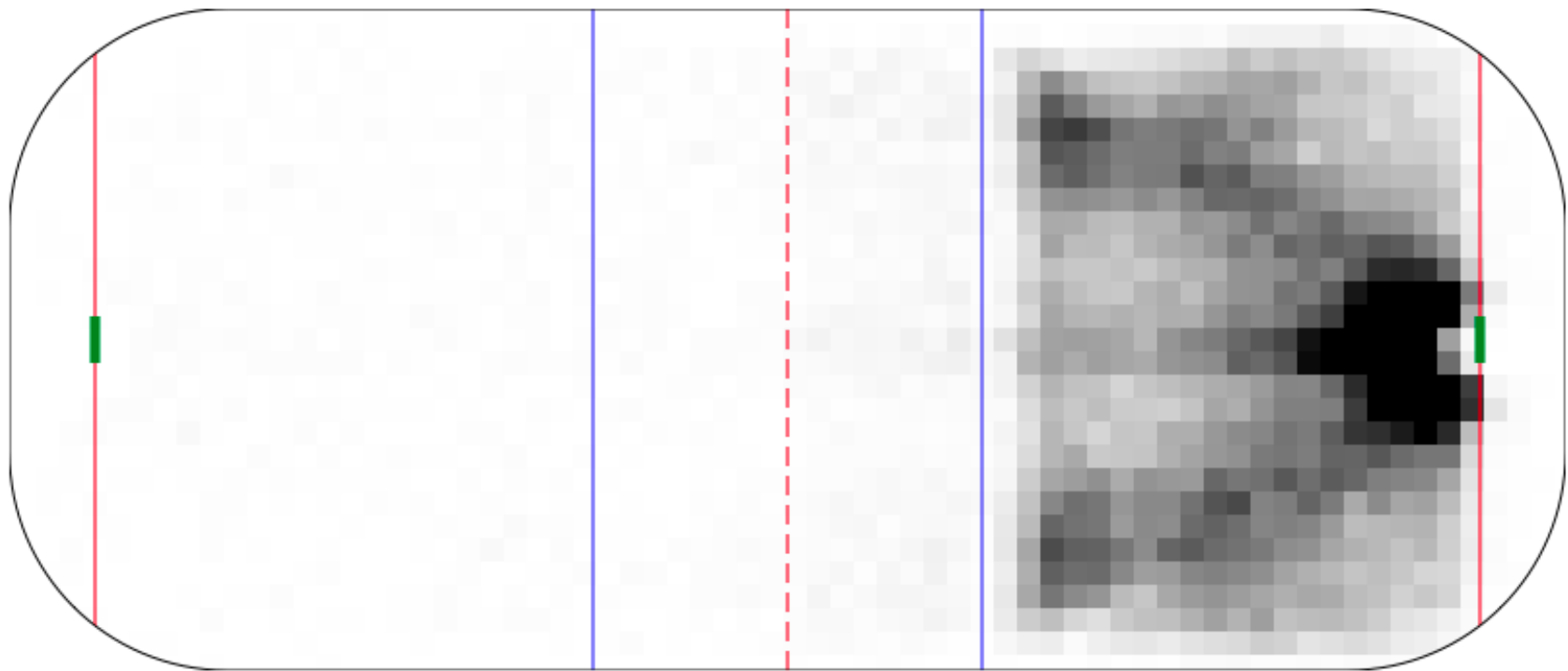
- Even-Strength
- Power-Play
- Short-Handed
- Defensemen
- Left Wingers
- Right Wingers
- Centers

to

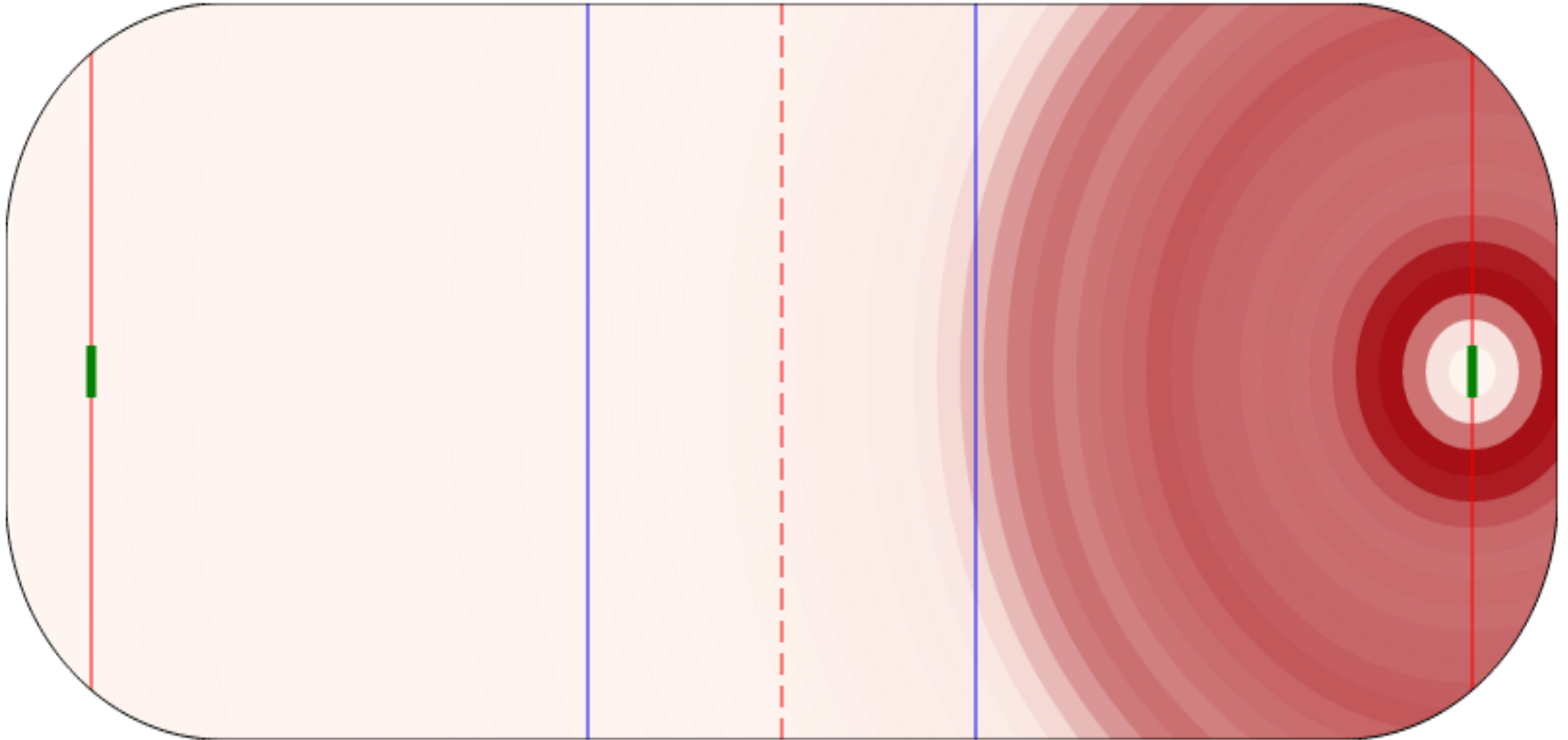
Shotmap View



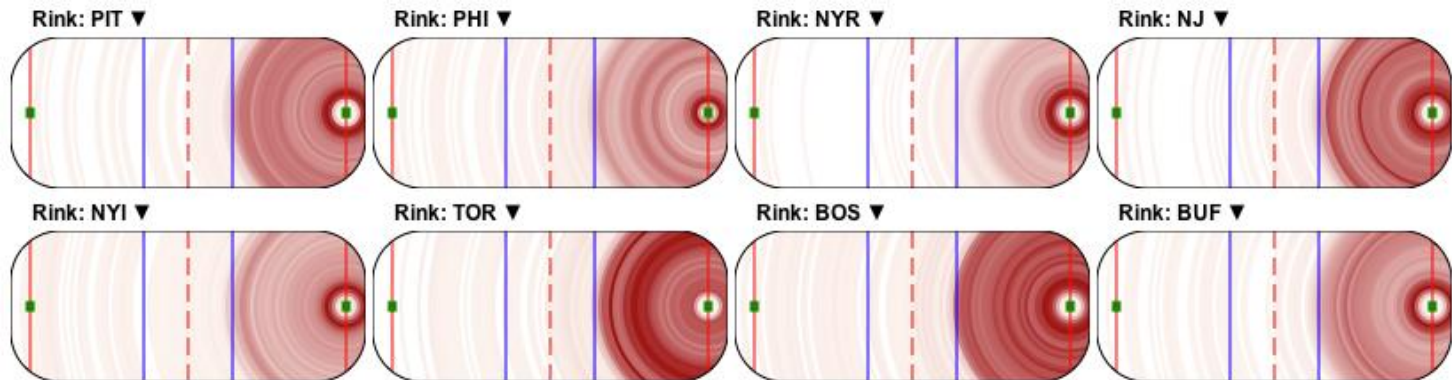
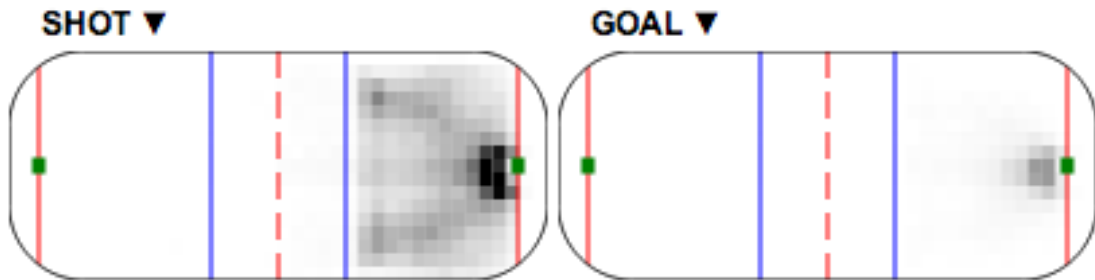
Heat Map View



Radial Heat Map View

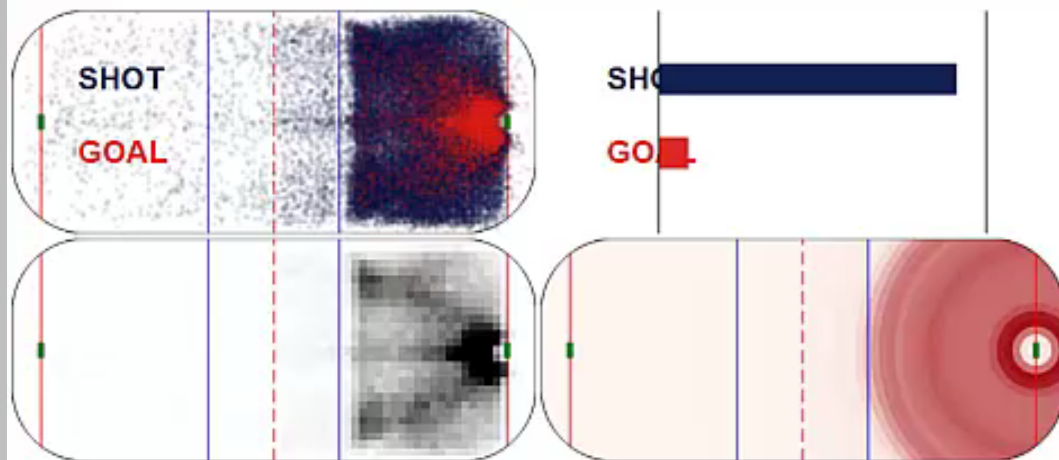


Small Multiples



SNAPSHOT

SELECT VIEW



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Color shots by:

Heatmap Square Size:

Radial Heatmap Band Width:

Apply

If you find a view that you would like to revisit later, type a descriptive title into the dialogue box and click the SnapShot This! button to save it to a new tab.

New Page

SnapShot This!

Apply

All Teams

@

All Rinks

Shots

Goals

Period 1 00:00 to Period 3 20:00

Even-Strength

Power-Play

Short-Handed

Defensemen

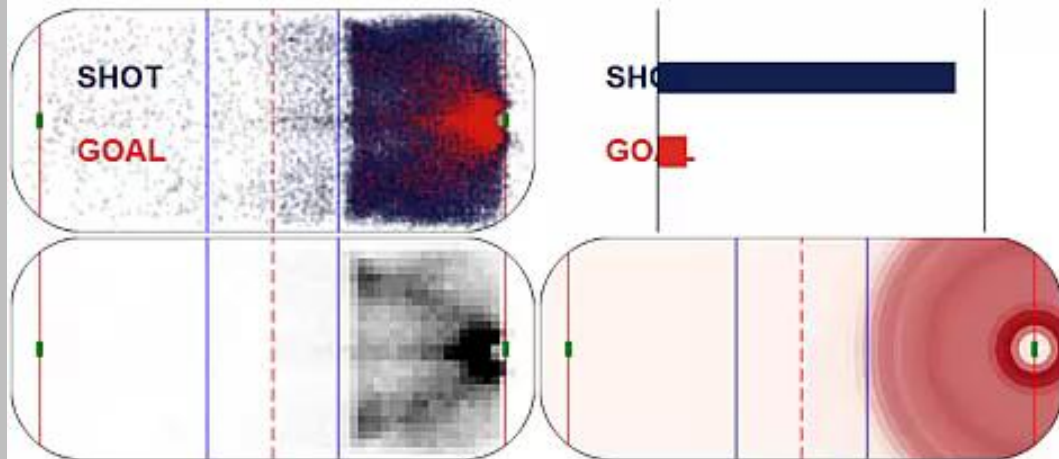
Left Wingers

Right Wingers

Centers

SNAPSHOT

SELECT VIEW



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Color shots by:

Heatmap Square Size:

Radial Heatmap Band Width:

Apply

If you find a view that you would like to revisit later, type a descriptive title into the dialogue box and click the SnapShot This! button to save it to a new tab.

Name This

SnapShot This!

Apply

All Teams

@

All Rinks

Shots

Goals

Period 1 00:00 to Period 3 20:00

Even-Strength

Power-Play

Short-Handed

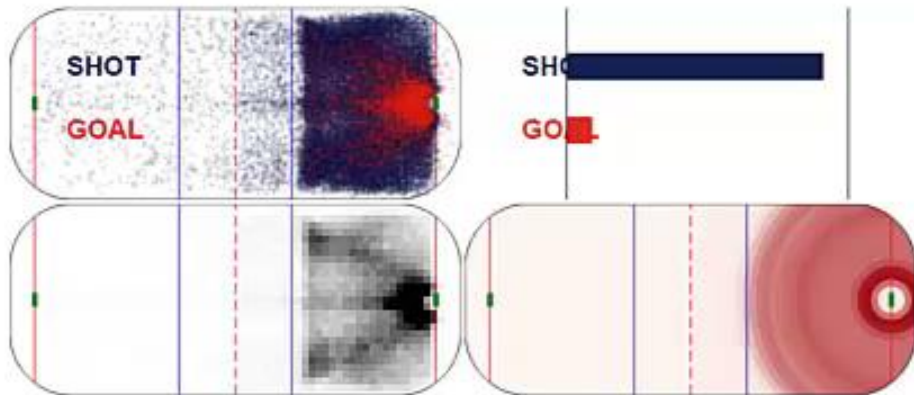
Defensemen

Left Wingers

Right Wingers

SNAPSHOT

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SnapShot This!

Apply

All Teams



All Rinks

Shots

Goals

Period 1 00:00 to Period 3 20:00

Even-Strength
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Reset to Regular Season

2010-10-07

to 2011-04-10

Show All Players

So... what did the analysts think?

- Useful for generating new hypotheses
- Fun to explore their data in a new way

“I like that this allows me to go from abstract thoughts to specific images very quickly. Sometimes I don’t know what it is telling me initially, but I like the possibilities.”

- Big fans of small multiple representations
- Happy to have a “graphic generator”

Future Work

1. Add more rink elements to the display
2. Support more than just one season
3. Explicit comparison tools
4. Study collaborative abilities of the system
5. More customizable analytic integration
6. Optimize performance

Thank you!

Questions?

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@achpea

