Is Carmelo Anthony helping the Knicks?

How to evaluate one player's value to a basketball team?

Mengqi Zong


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Carmelo Anthony: Good stats but no wins?

Background

Feb. 6th: Knicks vs. Utah Jazz (99 - 88)

Jeremy Lin's first game as a starter.

Anthony got injured in the game and only played for 5 minutes.

From Feb. 6th to Feb. 19th: Knicks (W/L: 7-1)

Feb. 20th: Knicks vs. New Jersey (80 - 92)

Carmelo Anthony's first game after the injury.

From Feb. 20th to Mar. 12th (W/L: 2-8)

On Mar. 14th, Knicks Fired its coach D'Anthony

Game Results

Feb 6th - Feb 19th (W/L: 7-1)	Feb. 20nd – Mar. 12th (W/L: 2-8)
Feb. 6th (H) vs. Utah 99-88 W	Feb. 20th (H) vs. New Jersey 92-100 L
Feb. 8th (A) vs. Washington 107-93 W	Feb. 22nd (H) vs. Atlanta 99-82 W
Feb. 10th (H) vs. LAL 92-85 W	Feb. 23rd (A) vs. Miami 88-102 L
Feb. 11th (A) vs. Minnesota 100-98 W	Feb. 29th (H) vs. Cleveland 120-103 W
Feb. 14th (A) vs. Toronto 90-87 W	Mar. 4th (A) vs. Boston 111-115 L
Feb. 15th (H) vs. Sacramento 100-85 W	Mar. 6th (A) vs. Dallas 85-95 L
Feb. 17th (H) vs. New Orleans 85-89 L	Mar. 7th (A) vs. San Antonio 105-118 L
Feb. 19th (H) vs. Dallas 104-97 W	Mar. 9th (A) vs. Milwaukee 114-119 L
	Mar. 11th (H) vs. Philadelphia 94-106 L
	Mar. 12th (A) vs. Chicago 99-104 L

Keidel: Carmelo Cures Knicks' Linsanity

March 12, 2012 12:14 PM

(credit: Chris Trotman/Getty Images)

By Jason Keidel

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We all have mindless pleasures. One of mine is watching "The Walking Dead" on Sunday nights. Little did I know that if you look closely enough you'll find the undead ghouls limping down the road are really wearing Knicks jerseys.

The New York Knickerbockers have lost five straight, wandering like zombies on their rancid road trip. Owners of the longest current losing streak in the NBA, the Knicks are 18-23 and you'll find the masses are muted over any world title talk. Now they play the Chicago Bulls, the team with the best record in the league.

Filed Under

Knicks, Radio.com - Sports, Sports, Syndicated Sports, WFAN Blogs

Question

Is that Carmelo Anthony's fault?

A yes-no question. [Main focus]

Value = performance + influence on morale

Is Carmelo Anthony lowering Knicks' morale (teammates' performance)?

How to measure it? (a how-much question)

Part one

Is Carmelo Anthony helping the Knicks?

Model 1

	Win	Lose
Anthony is absent	7	1
Anthony is available	2	8

Using Fisher's Exact Test, we get p-value = 0.01522.

Does this imply that Carmelo Anthony is not helping Knicks?

Opponents
Home Court Advantage
Teammates' performance ("their fault")
…

Observation

Feb 6th - Feb 19th (W/L: 7-1)	Feb. 20th – Mar. 12th (W/L: 2-8)
Feb. 6th (H) vs. Utah 99-88 W	Feb. 20th (H) vs. New Jersey 92-100 L
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It's not fair to say that it's purely Carmelo Anthony's fault. We also have to consider factors like opponents and home court advantage.

How to model the opponents?

Feb 6th - Feb 19th (W/L: 7-1)	Feb. 20th – Mar. 12th (W/L: 2-8)
Feb. 6th (H) Utah (15-16) 0.48 W	Feb. 20th (H) New Jersey(17-36) 0.32L
Feb. 8th (A) Washington (9-32) 0.22 W	Feb. 22nd (H) Atlanta (29-23) 0.55 W
Feb. 10th (H) LAL (19-22) 0.46 W	Feb. 23rd (A) Miami (42-9) 0.82 L
Feb. 11th (A) Minnesota (20-25) 0.44 W	Feb. 29th (H) Cleveland (18-30) 0.38 W
Feb. 14th (A) Toronto (13-30) 0.30 W	Mar. 4th (A) Boston (33-25) 0.57 L
Feb. 15th (H) Sacramento (13-33) 0.28 W	Mar. 6th (A) Dallas (38-24) 0.61 L
Feb. 17th (H) New Orleans (11-32) 0.26 L	Mar. 7th (A) San Antonio (41-15) 0.73 L
Feb. 19th (H) vs. Dallas (28-19) 0.60 W	Mar. 9th (A) Milwaukee (26-33) 0.44 L
	Mar. 11th (H) Philadelphia (42-31) 0.58 L
	Mar. 12th (A) Chicago (36-12) 0.75 L

Model 11 Logistic Regression

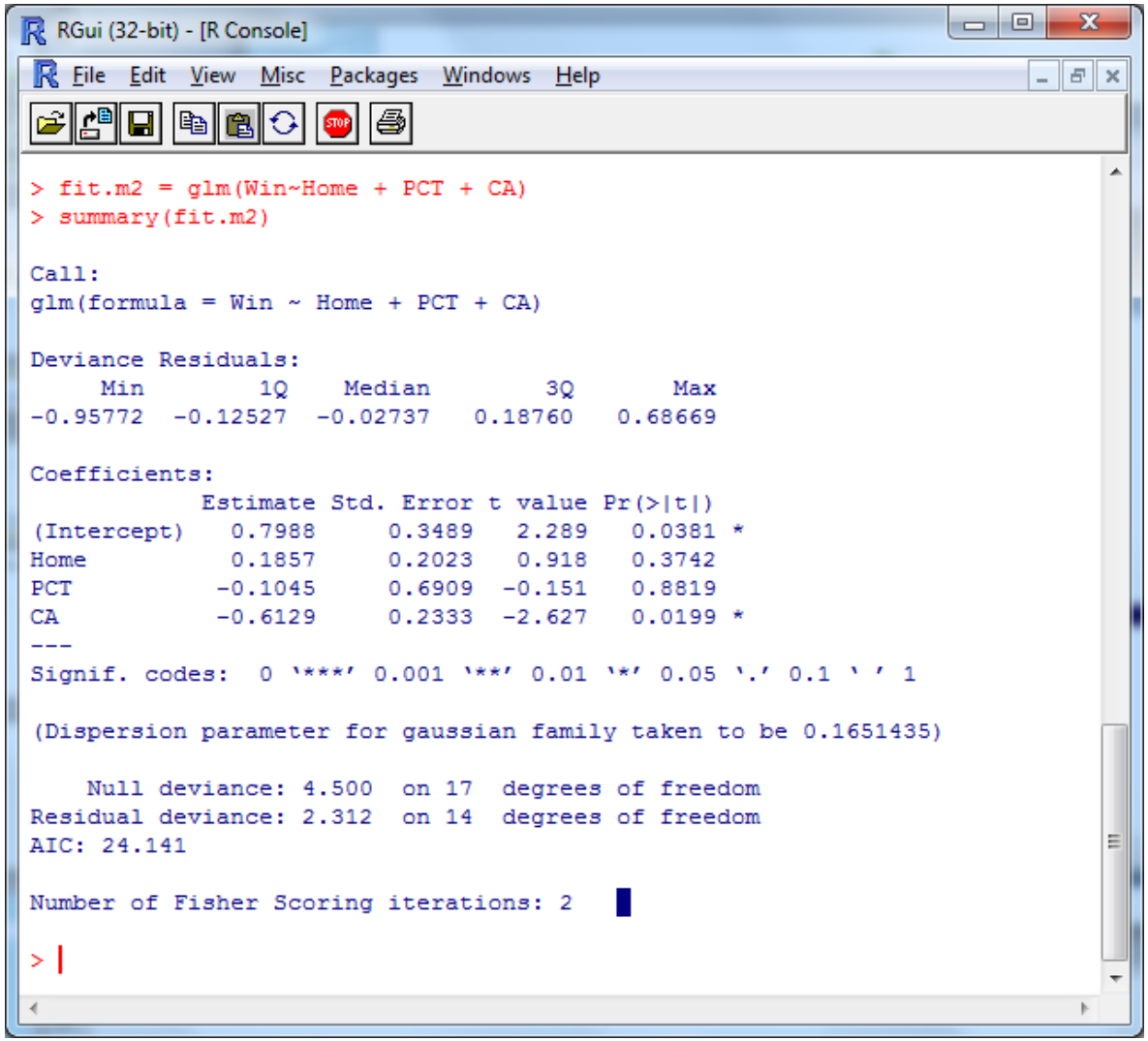
$$\text{logit}(\pi) = \boldsymbol{\beta}_0 + \boldsymbol{\beta}_1 PCT + \boldsymbol{\beta}_2 Home + \boldsymbol{\beta}_3 CA$$

PCT is opponent's winning precentage;

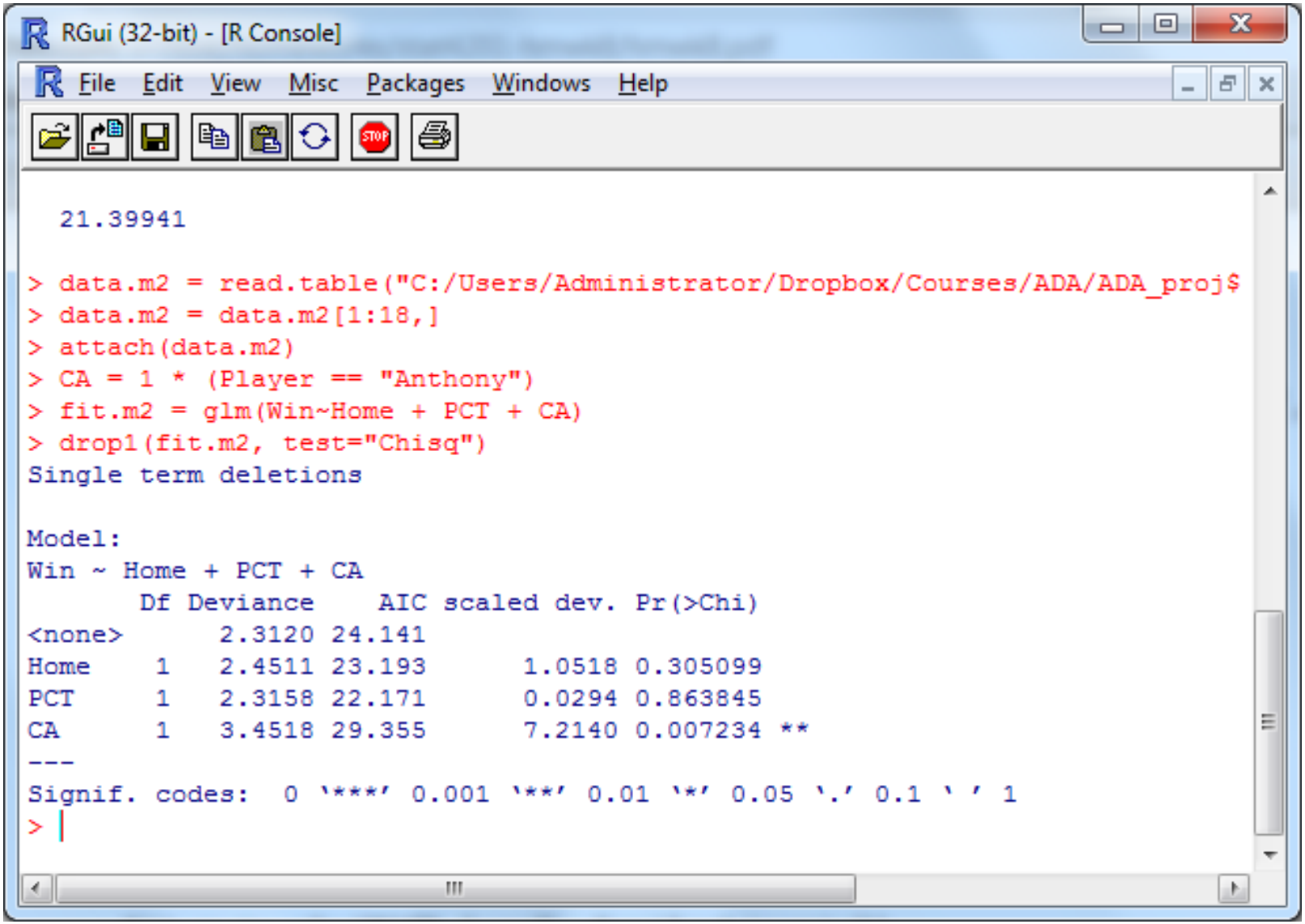
Home is a indicator variable representing if this is Knicks' home court;

CA is a indicator variable if Carmelo Anthony is available.

Model 11 Logistic Regression



Drop-in-Deviance Test



Should I worry about the sample size?

- Rule of Thumb: 1 variable needs 10 sample units.
- There are 3 variables in the logistic regression model but I only have 18 sample units.

But there are tons of information out there remain unused.

We may build a better model based on more information.

How?

Part One Ends

The yes-no question:

Is Carmelo Anthony helping the Knicks?

Part Two:

The how-much question:

How to quantitatively measure a player's value to a basketball team?

How to quantitatively measure Anthony's value to the Knicks?

Value = performance + influence on morale

If value < 0, the player has a negative effect on the team (means he is NOT helping).

If value > 0, the player has a positive effect on the team (means he is helping).

If we can do this…

- Then the team managers can know if the money they spent on the player worth it or not.

VS = value / salary

This can help the managers to decide which player to choose. (From experience to quantitative approach).

How to measure Anthony's Performance?

- Use his own stats.

Player Performance Variables

Statistics	Notation	Positive / Negative
Points	PT	Positive
Assists	AST	Positive
Rebound	RB	Positive
Steal	STL	Positive
Block shot	BLK	Positive
Turnover	TO	Negative
Personal Foul	PF	Negative
Field goal attempt	FGA	Negative
Time	TIME	N/A
Assist-turnover ratio	ASTO	Positive
Offensive Rebound	RBO	Positive
Defensive Rebound	RBD	Positive

How to measure Anthony's Performance?

- Points Made

It is OK since Anthony's a lead scorer.

- Efficiency

((Points + Rebounds + Assists + Steals + Blocks) - ((Field Goals Att. - Field Goals Made) + (Free Throws Att. - Free Throws Made) + Turnovers)

How to measure Anthony's Influence on the team's morale?

- Use team's stats
- Anthony's Influence on the team's morale = The total change of his teammates' performance (stats) when he's available.

- How?

A simple model

- Performance: Anthony's points made
- Influence on morale: The average points from his teammates (when he is available) – The average points from his teammates (when he is not absent).
- * When he is absent, the new starter will make more points (due to more time).
- * Play style may change.
- * Points is not everything. For example, the average points lost per game.

Anthony's influence is NOT the only factor that affects other player's performance (stats).

- Player itself
- Opponents
- Home court advantage
- Anthony's performance (stats)
- Other teammates' influence to this player
- …
- Anthony's influence is a trivial factor here

* similar to the e-book pricing problem

Performance and Influence on morale

- Anthony's performance will also affect the morale (other player's stats).
- Assist: an assist is attributed to a player who passes the ball to a teammate in a way that leads to a score by field goal.

  1assist = a teammate's 2 or 3 points
- If the total number of filed goal attempts is fixed, then Anthony shoots more mean someone has to shoot less.

Thanks!