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DATA 6560 – Sports Analytics

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## Analysis Memo #2

### The Value of 3pt Shooting as Players Age

In analysis memo #1, I found a method to determine the monetary value of the 3pt shot for players as they age. This finding is what I was hoping to be able to determine, however, the result is not what I had hoped for. After finding that the 3pt shot is most valuable for players in their prime, followed by aging players, and lastly new players, I decided that I should find the value of the 3pt shot relative to the value of the rest of a players game.

The regression model tells us the value of a 3pt shot while holding all other variables constant. However, I would like to find the value of the 3pt shot relative to the value of rest of the attributes. For example, even though the 3pt shot is more valuable when players are in their prime, is the 3pt shot the highest contributor to win shares by percentage?

Based on the variables that were examined, each was assigned a monetary value based on the win shares that were contributed by such variable.

For ages 19-22:

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%		
Intercept	-0.6317824	0.21084636	-2.9964113	0.00344489	-1.0500956	-0.2134692	-1.0500956	-0.2134692	Weight of WS	Value per additional attribute
3P/Game	-0.3302009	0.17956943	-1.8388483	0.06890508	-0.6864616	0.0260597	-0.6864616	0.0260597	21%	\$ (1,997,048.15)
2PT	0.53402984	0.20367051	2.62202833	0.0101065	0.12995335	0.93810632	0.12995335	0.93810632	34%	\$ 3,229,800.96
FT	-0.2097529	0.23034806	-0.910591	0.36470065	-0.6667568	0.24725112	-0.6667568	0.24725112	13%	\$ (1,268,580.77)
TRB	0.46851739	0.08757681	5.34978829	5.5964E-07	0.29476749	0.64226728	0.29476749	0.64226728	30%	\$ 2,833,583.07
AST	-0.0391561	0.10804568	-0.3624035	0.71781531	-0.2535157	0.17520341	-0.2535157	0.17520341	2%	\$ (236,815.43)

For ages 23-29:

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%		
Intercept	-0.6887161	0.20908052	-3.2940233	0.00113673	-1.1005833	-0.2768489	-1.1005833	-0.2768489	Weight of WS	Value per additional attribute
3P/Game	0.85908366	0.14784095	5.81086422	1.9664E-08	0.56785213	1.15031519	0.56785213	1.15031519	41%	\$ 5,195,719.49
2PT	0.54429956	0.14892765	3.65479188	0.00031617	0.25092734	0.83767178	0.25092734	0.83767178	26%	\$ 3,291,911.99
FT	-0.3082461	0.17984701	-1.713935	0.08783178	-0.6625263	0.04603412	-0.6625263	0.04603412	15%	\$ (1,864,265.58)
TRB	0.37769294	0.06851361	5.51267045	9.1076E-08	0.24272815	0.51265773	0.24272815	0.51265773	18%	\$ 2,284,278.77
AST	0.01913371	0.09171475	0.208622	0.83492028	-0.161535	0.19980238	-0.161535	0.19980238	1%	

For ages 30+:

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%		
Intercept	-0.800508	0.38290109	-2.0906392	0.03880262	-1.5591041	-0.0419119	-1.5591041	-0.0419119	Weight of WS	Value per additional attribute
3P/Game	0.5839184	0.20037115	2.91418394	0.00430007	0.18694701	0.9808898	0.18694701	0.9808898	38%	\$ 3,531,525.91
2PT	0.09416223	0.17512113	0.53769773	0.59184313	-0.2527843	0.44110877	-0.2527843	0.44110877	6%	\$ 569,491.15
FT	0.14807536	0.19191827	0.77155425	0.44198895	-0.2321494	0.52830007	-0.2321494	0.52830007	10%	\$ 895,556.58
TRB	0.35701137	0.10661805	3.34850783	0.00110449	0.14578179	0.56824096	0.14578179	0.56824096	23%	\$ 2,159,197.10
AST	0.3461176	0.12338325	2.8052235	0.00592173	0.10167312	0.59056208	0.10167312	0.59056208	23%	

From this examination, relative to our other variables, we can see that the 3pt shot accounts for 21% of win shares for ages 19-22, 41% of win shares for ages 23-29, and 38% of win shares for ages 30+.

While breaking the regression further and studying the value of the 3pt shot relative to the value of the other attributes did bring the value closer between aging players and players in their prime, the results are still not exactly where I want them. Before checkpoint 8, I will re-run the regression amongst different intervals of age to see if breaking the data up by different age ranges supports my claim better. I will also re-run the regression and omit variables that are statistically insignificant (greater than .05 P value) such as Assists and Free throws. I will also calculate the value of the 3pt shot relative to the other x attributes while omitting the statistically insignificant variables.