Are National Hockey League Players Being Paid According to their Productivity?
Nicholas Marsh
Kalamazoo College Department of Economics

MATERIALS AND METHODS
This project used an Ordinary Least Squares (OLS) regression where players were analyzed separately by position (center, winger, defender, and goalie). A linear functional form was used. Players’ salaries served as the dependent variable, and the various productivity and physical statistics served as the independent variables.

An example of one of the linear regressions used is below:

\[
\text{Salary} = (\text{Height} + \text{Weight} + \text{ShotPercentage} + \text{Age} + \text{GamesPlayed} + \text{Goals} + \text{Assists} + \text{PlusMinus} + \text{PenaltyMinutes} + \text{FaceOffPercentage} + \text{Blocked Shots} - \text{Giveaways} + \text{Takeaways})
\]

This allowed for more specific results when considering players, positions, and the various productivity and physical statistics served as the independent variables.

RESULTS
Due to space only the results for the NHL Centermen 2013-14 season regression are shown here (far bottom table). The hypothesis tests are one-sided tests and they are done at a 5% significance level. For the 2013-14, Age, Gamesplayed, Goals, Assists, Plusminuses, and Takeaways were all significant at the 5% level. This means that these independent variables were very meaningful when determining a player’s salary of this position. For example, one goal scored by a centerman in the 2013-14 season is worth $90,005. An assist is worth $73,342. It was also found that defensive positions are important contributors to salary determination due to the position’s two-way play requirement. This is indicated by the Plusminuses and Takeaways variables. For a centerman in this season, an additional Takeaway leads to a $19,523.9 increase in salary and an additional minus statistic (as indicated by the variable Plusminuses) leads to a decrease of $24,091.9 in salary.

Tables 4 & 5 show the most productive centermen (Table 4) compared to the highest paid centermen (Table 5) during the period studied. Obviously one can see discrepancies between the two tables; the highest paid player is only the fourth most productive. The most productive player is only the seventh highest paid player. Also, observe Tyler Seguin, the eighth most productive centerman in the league. However Seguin doesn’t even appear on the top 10 highest paid centermen list; this is because age and total games played have such a significant impact in the determining of a player’s salary. Seguin is still young and therefore has also played less total games than all the players on Table 5.

CONCLUSIONS
This project has done out what it set out to do, concluded that goals are not the most important factor in determining an NHL player’s salary. Additionally this project created an output statistic, something similar to the WAR (Wins Above Replacement in Baseball), that measures a player’s overall statistical value. This rating system makes general player comparisons easier.

Additionally this is the first known project that used four different production functions for the four different positions in hockey. This allowed for more specific results when considering players, pay, and performance. This study also agrees with much of the other literature in this field, that defensemen are more often underpaid than forwards. It was found that roughly 46.7% of defensemen are underpaid relative to their peers while only 44.3% of forwards are underpaid relative to their peers.

Finally this study found that salary determination in the NHL only partially agrees with standard microeconomic theory. Yes, if you put in greater productivity then salary goes up, but only to an extent. The best way to improve your salary in the NHL is to play more games and get older.

ACKNOWLEDGEMENTS
I would like to thank Dr. Menelik Geremew for his support, enthusiasm, and assistance throughout this entire process. I would like to thank the entire economic department for setting me up for success with great classes and challenging assignments to prepare me for this project.

ABSTRACT
This project seeks to address whether NHL players are being paid based on their productivity. Through analysis of 1,325 hockey players over the 2013-14 and 2014-15 seasons, this study found that a player’s salary is determined almost as much by physical characteristics as it is productivity on the ice.

INTRODUCTION
Hockey is one of the “big four” sports in the US. Some players are paid less money than others even when they produce a higher output than others. Many analysts say that players are paid less money than others even when they produce a higher output than others. Many analysts say that players are not the only statistics that contributes to salary determination is to produce a higher output than others. Many analysts say that players are paid less money than others even when they produce a higher output than others. Many analysts say that players are not the only statistics that contributes to salary determination.

CONCLUSIONS
This project has done out what it set out to do, concluded that goals are not the most important factor in determining an NHL player’s salary. Additionally this project created an output statistic, something similar to the WAR (Wins Above Replacement in Baseball), that measures a player’s overall statistical value. This rating system makes general player comparisons easier.

Additionally this is the first known project that used four different production functions for the four different positions in hockey. This allowed for more specific results when considering players, pay, and performance. This study also agrees with much of the other literature in this field, that defensemen are more often underpaid than forwards. It was found that roughly 46.7% of defensemen are underpaid relative to their peers while only 44.3% of forwards are underpaid relative to their peers.

Finally this study found that salary determination in the NHL only partially agrees with standard microeconomic theory. Yes, if you put in greater productivity then salary goes up, but only to an extent. The best way to improve your salary in the NHL is to play more games and get older.

ACKNOWLEDGEMENTS
I would like to thank Dr. Menelik Geremew for his support, enthusiasm, and assistance throughout this entire process. I would like to thank the entire economic department for setting me up for success with great classes and challenging assignments to prepare me for this project.