

### **Revenues, Payrolls, and Winning in the NHL**

The 2004-2005 season was lost when the 30 team owners decided to lockout its players. The two sides eventually agreed on a hard salary cap linked to league revenue. The mass media focused on the league's financial concerns leading up to, during, and following the lockout.

The NHL CBA News website compiled quotes from a variety of industry analysts during the lockout. One Marquette University professor calculated 18 correlations on the payrolls of the four major professional leagues in the United States. He wrote, "there's a 54.5 percent chance that a National Hockey League team will finish in the top fourth of the league if it starts in the top fourth in payroll" ("What industry analysts are saying"). He believed higher payrolls helped teams competitively compared to those teams with low payrolls in the NHL, MLB, and even the NBA. The NFL had a greater level of parity and thus salary was not as accurate of a predictor for a team's competitive play.

Others argued that the correlation between payroll and winning wasn't as high as the league would like you to think. In the playoffs of the four seasons leading up to the lockout, "14 different clubs have appeared in the 16 slots in the conference finals" (Farber). Low payroll teams reached the conference finals in each of those years. In 2003, Minnesota made it to the Western Conference finals on a \$20 million payroll. In 2004, Tampa Bay won the Stanley Cup with a \$33 million payroll. That same season, two teams had payrolls at almost \$80 million (New York Rangers and Detroit Red Wings). That's why the small-market teams liked the new salary cap implemented after the lockout. "Now even if we spend \$40 million, we will be within 20% of the higher-spending teams. That's not much of a disparity," Tampa Bay president Ron Campbell said (Allen).

Economist Brandie Glasnapp examined the relationship between team payroll and team performance in the NHL. She came to the conclusion that an NHL team doesn't have to have a high payroll in order to be successful. "The teams with the highest payrolls did not go far in the playoffs, nor did they do well financially last season" (35). The 2001-2002 Detroit Red Wings team was one of the exceptions. The team had a \$64.4 million payroll, finished the season with 116 points, and went on to win the Stanley Cup. She found a moderate positive relationship between total points and team payroll, but that cannot be used to determine causality. Glasnapp also performed a Granger Causality test and noted that "there is no evidence that relative team payroll precedes team points" (32). The Granger test did show that team performance does cause "relative" team payroll.

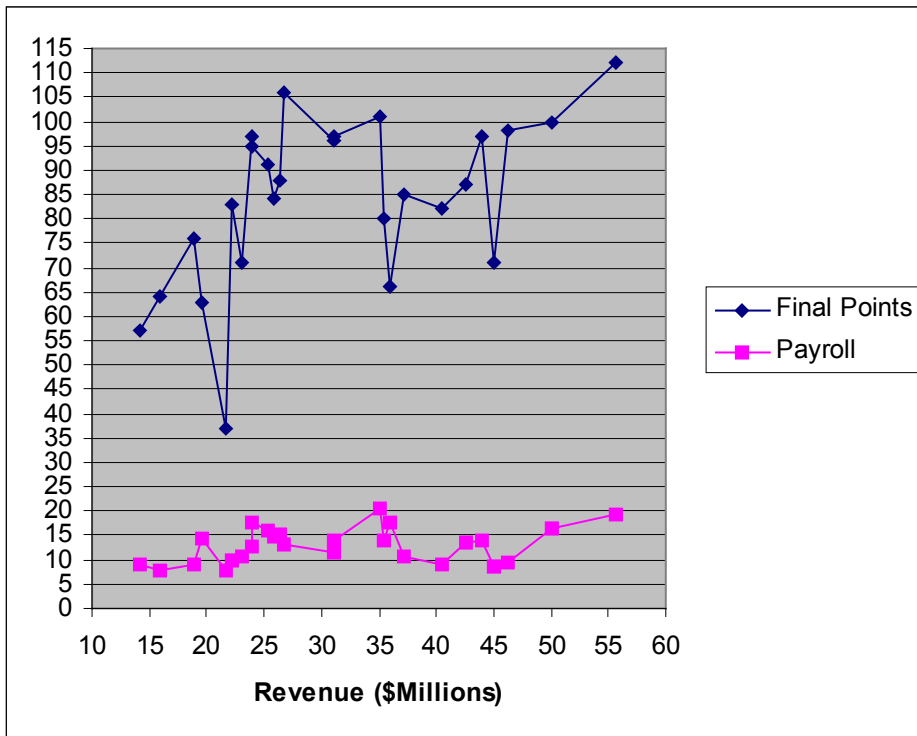
Sports economist Andrew S. Zimbalist wrote in May the Best Team Win that there are significant correlations between payroll and team performance despite the outlier that is the NY Rangers, who had the highest payroll in the league of \$67.3 million in 2001-2002. However, the team only finished the season with 80 points and a 0.439 win percentage. He did note that one should look at midseason payroll numbers rather than the beginning payrolls because winning percentages are more closely correlated to the midseason payroll. "This result suggests that causality runs in both directions between pay and performance. Higher pay creates better teams, but better teams create higher pay" (37). He mentioned nothing of revenue and its relationship with payroll and winning.

Our textbook Sports Economics argues in Chapter 6 that "revenue disparity drives competitive imbalance in all leagues" (166). It should come as no surprise then that three of the four teams in the bottom of the NHL in terms of revenue in 1993-1994 moved to different markets by 1997. These same teams also struggled with winning and were some of the worst teams in the league that year in terms of final points at the end

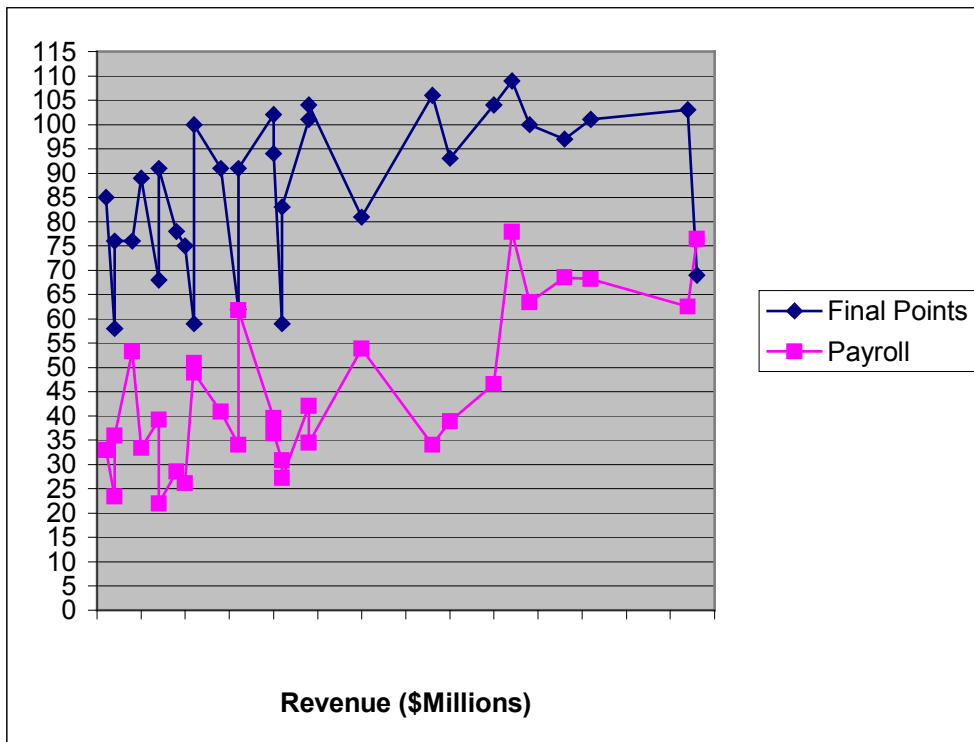
of the season. The Quebec Nordiques, Hartford Whalers, and Winnipeg Jets did not make it to the playoffs that season. The textbook also mentions that owners, who are looking to maximize their profits, make decisions on which athletes to sign based on their revenue potential (170). Fort argues that the different market areas “generate different amounts of revenue for different quality teams” and that “drives both competitive imbalance and payroll imbalance” (170). As our textbook pointed out, members of the media tend to ignore the relationship between revenue and payroll while focusing on how payroll imbalance leads to a competitive imbalance and consequently ignoring revenue. I found this to be evident in the articles I read regarding revenues, payrolls, and winning in the NHL.

According to the two-team diagram, the revenue potential for each market determines the payroll each team can afford assuming each team has a profit-maximizing owner. For example in the MLB, the New York Yankees have higher payrolls because their fans demand that they win more. In the two-team diagram, there are different revenue functions across different teams (and market areas) in the league and that’s the cause of the imbalance. This theory argues that higher revenue teams sign the athletes accordingly. We see these higher revenue teams “pretty much perform up to expectations” (179). Essentially, higher revenue teams tend to have both greater payrolls and winning percentages. However, the two-team diagram does not suggest that higher payrolls lead to more winning. Higher revenues may lead to higher payrolls and may also lead to a higher winning percentage, but it does not show that high payrolls cause the high winning percentage. Since the 1950s, the correlation between revenue and winning may be slightly lower than the correlation between payroll and winning overall in the MLB. However, the correlation between revenue and payrolls is so strong that it’s hard to argue the important relationship between revenue and payroll.

#### **Graph A (1993-1994)**



**Graph B (2003-2004)**



**Table 1**

	<i>Payroll</i>	<i>Final Points</i>
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<i>Revenue</i>	0.34	0.52
<i>Payroll</i>	X	0.55

**Table 2**

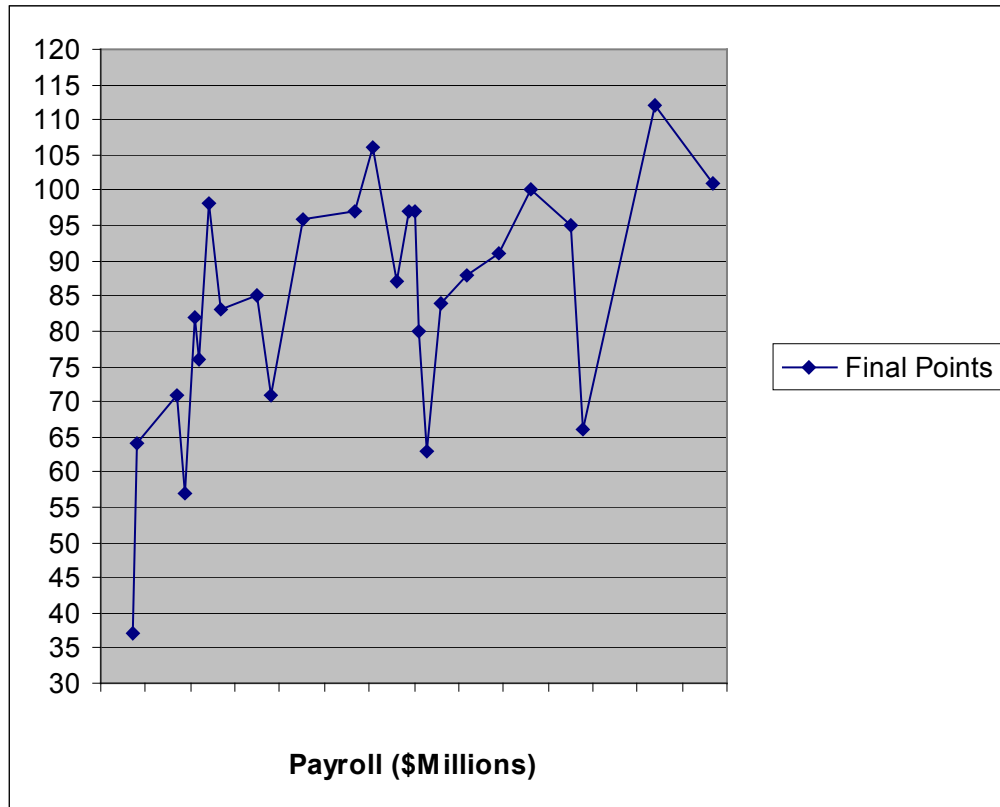
	<i>Payroll</i>	<i>Final Points</i>
<i>Revenue</i>	0.72	0.46
<i>Payroll</i>	X	0.29

After examining the two graphs shown above (Graph A and Graph B), the relationship between revenue and payroll significantly grew between the 1993-1994 and 2003-2004 seasons. In Graph A, one can see that revenue did not always influence payroll as some higher revenue teams had payrolls equivalent to that of the lower revenue teams. The lowest revenue team, the Winnipeg Jets, did not have the lowest payroll, but the highest revenue team, the New York Rangers, did have the highest payroll. Ten years later, the relationship between revenue and payroll was more significant as seen in the positive relationship shown in Graph B. Simple correlation statistics help identify exactly how large the change in the relationship between revenue and payroll was over a span of ten years as seen in Tables 1 and 2. The correlation in 1993-1994 between payroll and revenue was fairly weak at only 0.34. Ten years later, that correlation figure grew to 0.72, a much stronger relationship. The correlation increased by just over two times its strength in 1993-1994.

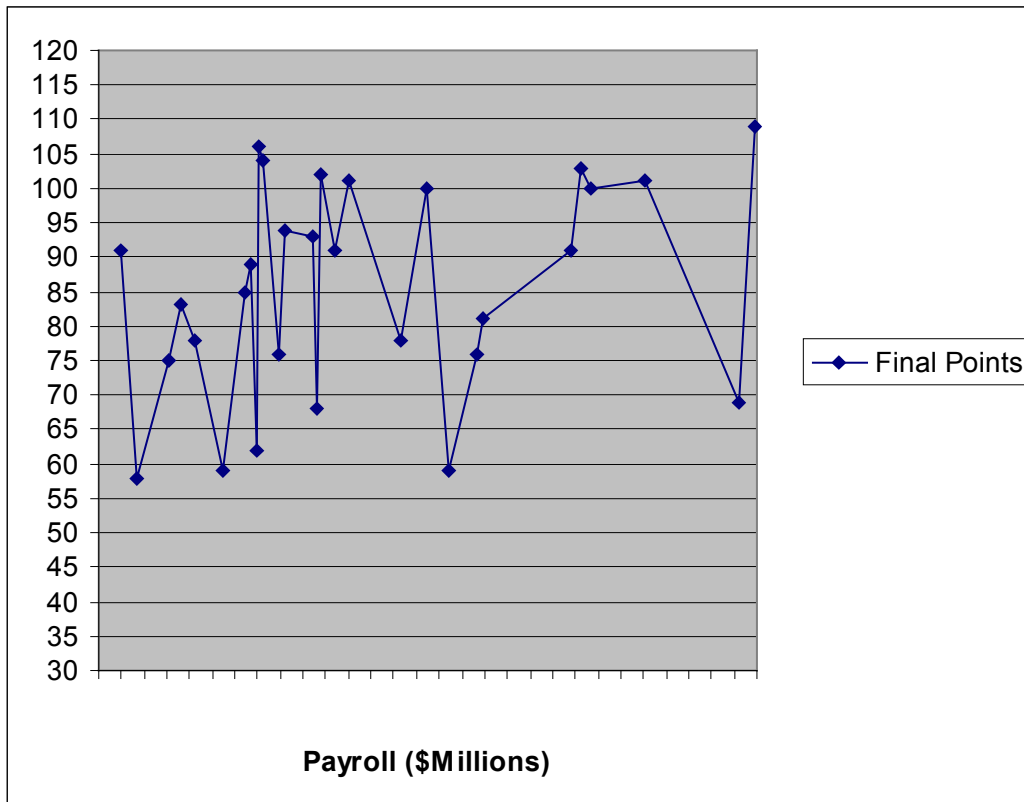
The strength of the correlation between revenue and winning in 1993-1994 and 2003-2004 remained pretty close, slightly dropping from 0.52 to 0.46. In both years across a ten-year span, the relationship between winning and revenue in the NHL was a moderate one. By examining the graphs, one can see a positive relationship between revenue and winning in both Graph A and Graph B. However, the positive relationship

does not appear to be as strong in Graph B as it does in Graph A, when there was a greater disparity between the highest revenue and lowest revenue team in terms of final points in a season. The simple correlation statistics seen in Tables 1 and 2 help to define exactly how strong or weak the relationship between the two concepts were and merely confirmed the conclusion that could be drawn from both graphs.

**Graph C (1993-1994)**



**Graph D (2003-2004)**



Without even looking at the simple correlation statistics, it's easy to see the strong relationship between payroll and winning in 1993-1994 (Graph C). The relationship is considerably weaker in Graph D, which represents the 2003-2004 season, and is much more equal competitively speaking despite the large differences in payroll. The correlation statistics do help one note the exact difference in strength between the two seasons. In 1993-1994 according to Table 1, there was a correlation of 0.55 between payroll and winning. This correlation statistic decreases to 0.29 by 2003-2004 as seen in Table 2. The strength of the relationship between winning and payroll had decreased by almost half in a ten-year span.

The correlation was typically higher between revenue and payroll as well as revenue and final points than the correlation of payroll and winning because it is the potential revenue in a market that determines the payroll and consequently the winning percentage of a team. While there may be a positive relationship between winning and payroll, the correlation will be greater with revenue and both winning and payroll

because the level of revenue is the determining factor in what kind of talent is purchased by the team's management. The level of talent on a team tends to result in a team's winning percentage or final points in the season. This conclusion based on the correlation statistics and graphs were supported in the explanation of the two-team diagram.

The evidence is stronger in the 2003-2004 season for the conclusion because the correlation between revenue and final points was 0.46 while the correlation between payroll and final points in the season was merely 0.29. As seen in Table 1, the correlation between revenue and final points (0.52) and payroll and final points (0.55) were quite close in the 1993-1994 season. I was initially surprised by this, but then thought about the state of the NHL in the 2003-2004 season in comparison to that of the 1993-1994 season. In the last season before the lockout, the disparity in payrolls was incredibly high (Detroit's \$77.86 million payroll to Nashville's \$21.93 million payroll). Ten years earlier, the payroll disparity wasn't quite so great (Pittsburgh's \$20.7 million payroll to Ottawa's \$7.7 million payroll). Detroit's payroll was 3.55 times greater than Nashville's; Pittsburgh's payroll was 2.69 times greater than Ottawa's. In the early 1990s, players were more likely to be paid close to how they would produce on the ice. There were overall much lower salaries so no single player made a lot more outside the market norms. The player would be worth his contract. However, spending had gotten out of control by 2003-2004 with teams signing bad contracts and making poor personnel decisions. According to the Detroit Red Wings' team capologist Ryan Martin, teams were just trying to "keep up with the Joneses" as teams got into bidding wars over players resulting in grossly inflated salaries.

After analyzing the data, I believe the two-team diagram theory appropriately applies to the NHL over the ten-year span from 1993-1994 through 2003-2004. After completing this project, I was able to interview the Wings' capologist and ask him if he

believed that higher payrolls led to more winning in the NHL. He said, "Generally speaking no...The New York Rangers have the revenue to pay the big payroll." Last year, which was just two seasons after the lockout, the top four teams in terms of payroll under the salary cap were the New Jersey Devils, Boston Bruins, Philadelphia Flyers, and the Detroit Red Wings (Martin). Only two of those four teams, the Red Wings and Devils, made the playoffs that season. Detroit was the only team of the four to make it to their respective conference finals. As Martin suggested, these teams are able to have the big payroll under the salary cap because their market generates the revenue enabling them to do so, which is supported by the two-team diagram.

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