Assignment 4: Impact Analysis (Seattle Mariners, 2005)

The Seattle Mariners have an economic impact on Seattle, the Puget Sound region, and Washington State as a whole. An impact analysis was performed in 1993 by Dick Conway (Conway and Associates) and Prof. William Beyers (University of Washington Geography Department). Using regional input-output models, they were able to estimate the economic impact on the State. This report updates their figures with estimates of the 2005 economic impact, but uses the same input-output model to estimate economic impact.

The major problem in attempting to forecast an economic impact assessment is in teasing out the factors that may have a future effect. One way of forecasting is taking a simplistic look at past performance, regardless of the overall local or regional effects that drive performance. In the case of the Mariners, it would be possible to construct a complex model based on a number of parameters. In our estimation, the major drivers to economic impact are the number of fans that attend games and the salaries paid to players.

Some of the economic impacts are due to players’ local expenditures (which is in turn dependent on player salary and residence location). Purchases and investments by other support staff (e.g., team, officials, Safeco field employees, off-duty police officers) and visitors (fans and teams) will also have an effect on the local economy. By and large, the support staff impacts will be
constant throughout the season (unless the Mariner’s have an exceptionally good or bad year, which will either increase or reduce some support staffing levels). In general, however, staffing levels will not vary as widely as attendance. Visiting team expenditures will vary less than visiting fans (team visits are scheduled in advance, but the number of visiting fans will vary).

The one factor that will have a direct and temporally inconstant impact is attendance. Before attempting to assess the economic impact of the Mariners, it is necessary to estimate attendance. Each fan who attends a home game will spend a certain amount of money before, during, and after the game on items such as transportation, food and beverages, souvenirs, and other entertainment. An increase or decrease in attendance will have a ripple effect through the local economy.

Attendance has varied since the Mariners have been competing in Safeco Field. Overall, attendance has risen since the team’s inception (Figure 1). For estimating economic impacts it probably only makes sense to understand attendance patterns since the team moved to Safeco Field in 1999 (dashed vertical line in Figure 1). Mean attendance between 1999 and 2004 was 3.22 million, with a minimum of 2.91 million in 1999 and a maximum of 3.54 million in 2002. The trend since 2002 has been decreasing attendance. There were several years in the 1990s when attendance either spiked or dipped, so there are probably too few years of recent history on which to forecast attendance in 2005, based on attendance values alone; in any case year-to-year variation in attendance is high and appears unpredictable.
The single most important factor driving attendance is the success of the team, which can be quantified in terms of percent of winning games (wins / games played * 100%, shown in Figure 2). Fans want to see the team win, and become ambivalent as the number of losses increases. The percent of wins has steadily increased since the mid 1970s (regression line in Figure 2), but with substantial variation over the interval, and extremely high variation since 1999, when the team moved to Safeco Field, including their strongest year (2001, win = 72%), and one of their worst years (2004, win = 29%).
As both wins and attendance have been increasing over time, it is not surprising that there is also a positive relationship between wins and attendance; as the percentage of wins increases, so does the attendance, albeit with substantial variation (Figure 3).

Figure 2: Percent Wins, 1977-2004
Figure 3: Attendance vs. Win Percent, 1977-2004

Given the overall increase in attendance over the lifetime of the team, as well as the popularity of some of the team’s players, we should expect an increase in total fan spending proportional to the increase in attendance. Without any better data or models, the simple least squares linear regression equation for attendance over time is

\[ \text{ATTENDANCE} = -209316473 + 106071 \times \text{SEASON} \]  

The predicted value of attendance for 2005 is 3.36 million, still below the capacity of Safeco Field. (Season capacity of 81 home games in 2005, with a capacity of 47,116 seats per game, sums to 3.82 million fans for the season; sources:

http://seattle.mariners.mlb.com/sea/downloads/sea_shedule_05.csv;

http://seattle.mariners.mlb.com/NASApp/mlb/sea/ballpark/index.jsp.) Under this simple linear model, the predicted value of attendance for 2004 is 3.25 million. This gives a growth rate of 17.4% ([3816396 – 3249811] / 3249811). This rate of growth is unsustainable over the long...
term, because Safeco Field has a limited seating capacity. But for the interval from 2004 to 2005 would not be unreasonable given historical growth patterns.

The other major economic effect comes from expenditures by players. Generally support staffers do not obtain the kinds of raises in salary that players do, so we can assume the same short-term growth rate for expenditures by support staff as for the 2004-05 interval. However, professional baseball players have received increasing salaries over the last few decades. The 2003 mean salary for a professional sports player according to the US Department of Labor/Bureau of Labor and Statistics, is $102,640 (http://www.bls.gov/bls/blswage.htm), but many professional baseball players make substantially more than this amount. According to a database maintained by USA Today, the Mariners’ payroll is $87.8 million in 2005 (Figure 4), most of which probably represents player salaries.

![Figure 4: Seattle Mariners' Salary and Payroll, 1988-2005](http://asp.usatoday.com/sports/baseball/salaries/teamresults.aspx?team=11)
We will assume that 15% of payroll feeds back into the local economy (even though many players live outside the region, they still have local expenditures; in furthermore most, if not all, of the support staff live in the region). The labor income value is 15% of $87.8 million, a total of $13.2 million. According to Forbes Magazine, the 2004 Mariners’ revenue was $173 million (http://www.forbes.com/finance/lists/33/2005/LIR.jhtml?passListId=33&passYear=2005&passListType=Misc&uniqueId=331202&datatype=Misc). Applying the same 17.4% attendance growth factor, 2005 revenue would be $203 million. Direct jobs are estimated at 1,100, up from the value of 936 from the 1993 survey (the new stadium has expanded services compared to the Kingdome).

Using Conway’s 1997 Input/Output model, output, employment, and labor income are estimated and summarized in Table 1. The total addition to the Washington State economy in 2005 is estimated at $392.7 million in output, with employment of 3,978 workers, and a labor income of $78.2 million.

Table 1: Mariners' Economic Impact Summary, Estimated for 2005

<table>
<thead>
<tr>
<th></th>
<th>Output ($ millions)</th>
<th>Employment</th>
<th>Labor Income ($ millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>392.689</td>
<td>3978</td>
<td>78.187</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>19.807</td>
<td>77</td>
<td>2.979</td>
</tr>
<tr>
<td>Non-Manufacturing</td>
<td>372.883</td>
<td>3901</td>
<td>75.208</td>
</tr>
<tr>
<td>Retail &amp; Wholesale Trade</td>
<td>76.124</td>
<td>1674</td>
<td>27.496</td>
</tr>
<tr>
<td>Services</td>
<td>271.334</td>
<td>2075</td>
<td>40.940</td>
</tr>
<tr>
<td>Other Industries</td>
<td>25.424</td>
<td>152</td>
<td>6.771</td>
</tr>
</tbody>
</table>

These values are based on several estimated quantities for 2005 (e.g., revenue, employment, attendance, local spending), so the actual values will be either higher or lower if the quantities are changed. Nevertheless, the input to Washington State’s economy from the Mariners is substantial.