Introduction
Head and neck cancer (HNC) and its treatments can have ongoing implications for individuals in terms of speech, eating and appearance. Although all of these can effect performance in the workplace there have been few studies of the return to work patterns and productivity losses associated with HNC.

The aims of this research were to a) examine the patterns of return to work following a diagnosis of HNC, and b) estimate the productivity losses (defined as temporary time off work, permanent time off work, reduced hours at work and premature mortality) of individuals working at the time of HNC diagnosis.

Methods
The SUN-study was a survey of HNC patients in Ireland including questions about type and quantity of work pre- and post-diagnosis. Average wage rates and weekly hours worked in Ireland (by gender and occupation) were obtained from the Central Statistics Office. Premature mortality rates were estimated using National Cancer Registry data.

Descriptive analyses of the variables relating to patterns of return to work and demographics were undertaken in the sub-sample of individuals who were employed at the time of HNC diagnosis.

Productivity losses were calculated for those of working age (<65 years) using the Human Capital Approach, which assumes that when an individual leaves the workforce the value of their workforce participation (estimated as their income) is lost to society. For this analysis, productivity losses were accrued until assumed retirement at 65 years of age. Wage growth was forecasted at 1.7% per year and the discount rate was assumed to be 4% per year.

Results
Survey respondents
583 survey responses were received (59% response rate), with 285 respondents in paid work at the time of diagnosis (analysis group). Table 1 shows the demographics of the analysis group. Figures 1 & 2 present patterns of return to work following HNC diagnosis.

Productivity losses
Using the Human Capital Approach, average total productivity losses for HNC were estimated to be €165,000 per HNC survivor of working age and working at the time of diagnosis. The productivity loss associated with each component of productivity are shown in Figure 3.

Table 1: Demographics of analysis group

<table>
<thead>
<tr>
<th>Gender</th>
<th>Location</th>
<th>Employment</th>
<th>Time since diagnosis</th>
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<tbody>
<tr>
<td>Male</td>
<td>70% City or town</td>
<td>66% Employed</td>
<td>53 Median years</td>
</tr>
<tr>
<td>Female</td>
<td>30% Rural</td>
<td>34% Self-employed</td>
<td></td>
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</tbody>
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Conclusions
The majority of individuals take time off work following a diagnosis of HNC, and the average time taken is 9 months. Total productivity loss is estimated at €165,000 per HNC survivor working at the time of diagnosis.

Productivity loss is one element of burden of illness. These findings demonstrate the significant impact HNC can have on workforce participation, and the need for return to work to be considered within patient care.

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