The Economics of Road Safety Interventions
The Scale of the Problem

- Nearly 1.3 million people die in road crashes each year, on average 3,287 deaths a day.
- That costs economies USD $518 billion globally
- Equates to 1-2% GDP on average
- Over 90% of all road fatalities occur in low and middle-income countries, which have less than half of the world's vehicles
Why do we need to do economic analysis of road safety improvement schemes?

• Information can be collated on economic performance and we can report on this

• Allows engineers to make informed decisions to form programmes of work

• We begin to understand what works and what doesn’t!!

• Most importantly, we can begin to talk about casualty savings in monetary terms

• We can justify our spending and bid for more money to save more money!
How do we calculate economic savings of road safety schemes?

• We need crash data – before and after scheme completion
• We need to know the scheme costs
• We need to know the cost of an injury crash – average
• In UK around £80,000 average cost - 2014 figures
Case Study from Kazakhstan

- Rehabilitation scheme Cat I Highway
- Improvements included surface improvements and most importantly **adding central median barrier**
- ADB Economics Report Kazakhstan provided cost per injury crash
- We were provided with the scheme costs
- Crash data for 3 years before and after implementation was provided
- We have all the data we need to carry out a simple economic appraisal of the scheme
The types of collisions/crashes before the scheme was implemented

• Excessive speed was a major factor
• Cross over type crashes!
• These involve high impact speeds
• Always high severity
Calculating the First Year Rate of Return

\[
\frac{\text{Cost of Injury Accidents} \times \text{Accident Saving in 1}\text{st Year}}{\text{Construction Costs}} \times 100\% 
\]
The results of the Economic Appraisal

- In the **First Year 10%** of the scheme costs were saved
- This might not seem a high return but this was not a road safety improvement scheme
- The key safety improvement was the **central median barrier**
- Large reduction in cross over type collisions
- For implementing only median barrier, the savings would be far greater
- In UK this type of barrier improvements would deliver **500% FYRR!**
How can we use these statistics?

• We can identify what provides the best crash savings and return on our investment – increases our knowledge
• We can also identify schemes that have not performed
• We can produce reports to demonstrate the overall savings
• This can increase budgets for future road safety programmes
<table>
<thead>
<tr>
<th>Project no.</th>
<th>Location</th>
<th>No. collisions</th>
<th>No. casualties</th>
<th>Project proposal</th>
<th>Estimated project cost</th>
<th>FYRR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Charminster Road, Alma Road Junction</td>
<td>18</td>
<td>18</td>
<td>Change phasing of the traffic signals</td>
<td>£4,000</td>
<td>1578</td>
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<tr>
<td>2</td>
<td>Bear Cross Roundabout</td>
<td>15</td>
<td>21</td>
<td>Narrow lane on roundabout. Lining and signing improvements</td>
<td>£5,000</td>
<td>1263</td>
</tr>
<tr>
<td>3</td>
<td>Alma Road, Waterloo Road Junction</td>
<td>8</td>
<td>8</td>
<td>Cut back hedge to improve visibility</td>
<td>£2,000</td>
<td>789</td>
</tr>
<tr>
<td>4</td>
<td>St Michael’s Roundabout</td>
<td>15</td>
<td>17</td>
<td>Lining and signing improvements</td>
<td>£10,000</td>
<td>631</td>
</tr>
<tr>
<td>5</td>
<td>Lansdowne Road, Cavendish Road, Beechey Road Junction</td>
<td>12</td>
<td>14</td>
<td>Install a central island to prevent traffic movements</td>
<td>£10,000</td>
<td>631</td>
</tr>
<tr>
<td>6</td>
<td>Merge onto Wessex Way (Eastbound) from Richmond Hill Roundabout</td>
<td>11</td>
<td>17</td>
<td>Move hatching from left to right on the slip road</td>
<td>£5,000</td>
<td>631</td>
</tr>
</tbody>
</table>
THANK YOU FOR LISTENING