

## Figure 57. Sample Cost-Effectiveness Analysis Worksheet

Evaluation No.: \_\_\_\_\_ Project No.: \_\_\_\_\_ Date: \_\_\_\_\_  
 Evaluator: \_\_\_\_\_

1. Initial implementation cost, I: \$ 100,000
2. Annual operating and maintenance costs before project implementation: \$ 100
3. Annual operating and maintenance costs after project implementation: \$ 1,000
4. Net annual operating and maintenance costs, K = #3-#2: \$ 900
5. Annual safety benefits in number of injury accidents prevented, B, from below: 2

Accident Type	Actual	-	Expected	=	Annual Benefit
<u>Injury</u>	<u>4</u>	-	<u>2</u>	=	<u>2</u>
<u>Total</u>					

6. Service life, n: 20 years
8. Interest rate: 10% = 0.10
7. Salvage value, T: \$ 5,000 (Annual compounding interest)

9. EUAC Calculation:  
 Capital recovery factor, CR = 0.1175  
 Sinking fund factor, SF = 0.0175

$$\text{EUAC} = I(\text{CR}) + K - T(\text{SF})$$

$$= 100,000(0.1175) + 900 - 5,000(0.0175) = 12,562$$

10. Annual benefit: B (from #5) = 2 injury accidents

11. C/E = EUAC/B = 12,562 / 2 = \$6,281 / injury accidents prevented

12. PWOC Calculation:  
 Present worth factor, PW = 8.5136  
 Single payment present worth factor, SPW = 0.1486

$$\text{PWOC} = I + K(\text{PW}) - T(\text{SPW})$$

$$= 100,000 + 900(8.5136) - 5,000(0.1486) = 106,919$$

13. Annual benefit  
 n (from #6) = 20 years  
 B (from #5) = 2 accidents prevented per year

14. C/E = PWOC (CR)/B  
 = (106,919)(0.1175) / 2 = \$ 6,281 / injury accidents prevented

*Source: Railroad-Highway Grade Crossing Handbook, Second Edition. Washington, DC: U.S. Department of Transportation, Federal Highway Administration, 1986.*