# Comparative Analysis of SIH Problem Statements

## Evaluation Criteria

| Criteria | Description | Weight |
|---|---|---|
| Technical Feasibility | How feasible is the implementation with current technology? | 20% |
| Innovation Potential | How much room is there for novel, creative solutions? | 25% |
| Social Impact | What is the potential positive impact on society? | 20% |
| Implementation Complexity | How complex would the implementation be? (Lower is better) | 15% |
| Alignment with Trends | How well does it align with current technological trends? | 10% |
| Scalability | How easily can the solution be scaled across different regions? | 5% |
| Sustainability | How sustainable is the solution in the long term? | 5% |

## Scoring (1-10 scale)

### Problem Statement #2: Smart Tourist Safety Monitoring & Incident Response System

| Criteria | Score | Justification |
|---|---|---|
| Technical Feasibility | 8 | Blockchain, AI, and geo-fencing technologies are mature enough for implementation |
| Innovation Potential | 9 | High potential for novel integration of multiple technologies |

| Criteria | Score | Justification |
|---|---|---|
| Social Impact | 8 | Could significantly improve tourist safety in remote areas |
| Implementation Complexity | 6 | Integration of multiple technologies increases complexity |
| Alignment with Trends | 9 | Aligns with digital identity, blockchain, and safety tech trends |
| Scalability | 8 | Can be adapted to different tourist destinations |
| Sustainability | 7 | Requires ongoing maintenance but provides long-term value |
| **Weighted Score** | **8.05** | |

## Problem Statement #50: Smart Traffic Management System for Urban Congestion

| Criteria | Score | Justification |
|---|---|---|
| Technical Feasibility | 9 | Traffic management technologies are well-established |
| Innovation Potential | 7 | Many existing solutions, but room for India-specific innovations |
| Social Impact | 9 | Could improve daily life for millions in congested cities |
| Implementation Complexity | 7 | Requires integration with existing infrastructure |
| Alignment with Trends | 8 | Aligns with smart city and sustainable transportation trends |
| Scalability | 9 | Can be implemented across multiple cities with adjustments |
| Sustainability | 8 | Addresses a persistent problem with long-term benefits |

| Criteria | Score | Justification |
|---|---|---|
| **Weighted Score** | **8.15** | |

## Problem Statement #95: Accelerating High-Fidelity Road Network Modeling for Indian Traffic Simulations

| Criteria | Score | Justification |
|---|---|---|
| Technical Feasibility | 7 | Requires sophisticated modeling techniques |
| Innovation Potential | 8 | Opportunity to create India-specific traffic models |
| Social Impact | 6 | Indirect impact through improved traffic planning |
| Implementation Complexity | 5 | High complexity due to detailed modeling requirements |
| Alignment with Trends | 7 | Aligns with digital twin and simulation trends |
| Scalability | 7 | Models can be adapted for different regions |
| Sustainability | 8 | Creates foundation for ongoing traffic improvements |
| **Weighted Score** | **6.85** | |

## Problem Statement #97: AI-based Drop-out Prediction and Counseling System

| Criteria | Score | Justification |
|---|---|---|
| Technical Feasibility | 9 | AI prediction models are well-established |
| Innovation Potential | 8 | Room for novel approaches in counseling interventions |
| Social Impact | 10 | Direct impact on education outcomes and life opportunities |
| Implementation Complexity | 8 | Relatively straightforward implementation |

| Criteria | Score | Justification |
|---|---|---|
| Alignment with Trends | 9 | Aligns with AI in education and personalized learning trends |
| Scalability | 9 | Can be implemented across various educational institutions |
| Sustainability | 9 | Addresses a persistent problem with long-term benefits |
| **Weighted Score** | **8.85** | |

# Overall Ranking

1. **Problem Statement #97: AI-based Drop-out Prediction and Counseling System (8.85/10)**
    - Highest social impact
    - Strong technical feasibility
    - Good innovation potential
    - Lower implementation complexity
2. **Problem Statement #50: Smart Traffic Management System for Urban Congestion (8.15/10)**
    - High social impact
    - Strong technical feasibility
    - Good scalability
3. **Problem Statement #2: Smart Tourist Safety Monitoring & Incident Response System (8.05/10)**
    - High innovation potential
    - Good technical feasibility
    - Strong alignment with current trends
4. **Problem Statement #95: Accelerating High-Fidelity Road Network Modeling for Indian Traffic Simulations (6.85/10)**
    - Higher implementation complexity
    - Lower direct social impact
    - Still valuable but more specialized application