Single Vehicle Collisions

• Extracts from the RISER project (DG-TREN Growth Project 2003-2005)
  – Database with National Statistics
    • Subset of data with explicit coding the damaged portion of the vehicle (70837 cases from 4 countries)
  – Detailed Reconstruction Database
    • Impact Speed and Speed Change for different objects
National Statistics

• Extracted Damage to vehicle front most common type of impact (40%) of collected impacts
  – Impact severity (EES, $\Delta V$) not reported
• Only 4% of all fatalities associated with this impact type
Single Vehicle Accidents 1999-2003

N=70837

Impact Severity

Percent of all Accidents

All Impacts: 40%
Fatal: 5%
Serious Injury: 15%
Light Injury: 25%
Detailed Database

• Most detailed reconstructions involved more severe collisions
  – 211 cases in database, 55 reconstructed with collision severity
Frontal Impacts With Trees

All Fatals $\Delta V > 90$ km/h
Serious Injuries $\Delta V > 60$ km/h
Frontal Impacts with Safety Barriers

- No Fatal accidents
- Due to impact angle, longitudinal component of impact speed lower than plotted impact speed
  $\Delta V < 50 \text{ km/h}$
Summary

• National statistics for single vehicle accidents report 40% are frontal impacts which account for 4% of SVA fatalities

• Few pure frontal impacts found in detailed database
  – tree impacts tended to be violent with severe injuries starting with $\Delta V > 40-50$ km/h