Ambulance Fleet Economics

- Fleet Costs
- Accident Costs
- Driver Training

Canadian Ambu-Moose

TRB TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES

Factors in Fleet Costs

- Capital Investment
- Maintenance & Repair
- Usable Life

Last Superior Ambulance Built

TRB TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES

Ambulance Types

Type 1

Type 3

Sprinter

Type 2

Medium Duty

TRB TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES

Specialty Ambulance

TRB TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES

Cost of an Ambulance

Sprinter PD

• Type I	• $98,000-$190,000
• Type II	• $55,000-$79,000
• Sprinter	• $85,000-$110,000
• Type III	• $95,500-$185,000
• Medium Duty	• $160,000-$210,000
• Specialty	• The sky is the limit!

TRB TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES

Vehicle Maintenance

Preventive Maintenance
One way or another –
you pay!

TRB TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES

Vehicle Maintenance

	2005	2006	2007	2008
% of annual operating budget for vehicle maintenance	8%	7%	5%	5%

As reported in the benchmark data program of the North Central EMS Institute

TRB TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES

Ambulance Maintenance Cost per Mile

- Type I - $0.61
- Type II - $0.78
- Sprinter - Too new for data
- Type III - $0.59
- MD - $1.03

TRB TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES

Average Life at Retirement

- 2005 – 183,333 miles
- 2006 – 187,237
- 2007 – 202,367
- 2008 – 169,000

OR

- 6 years

As reported in the benchmark data program of the North Central EMS Institute

TRB TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES

Estimated Total Cost for Life

- Type I - $256,850
- Type II - $211,300
- Type III - $249,400
- Med. Duty - $375,550

Based on life expectancy of 185,000 miles average

TRB TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES

Ambulance Collision Costs

TRB TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES

Accident Rate per 1M Miles

2005	2006	2007	2008 (Incomplete Data)
22.87	30.19	27.66	18.39

As reported in the benchmark data program of the North Central EMS Institute

TRB TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES

Ambulance Damage Costs

- Average Claim = $17,600
- Average Intersection Claim = XXXXXX
- 2007 Pennsylvania Study – Vehicle Damage

<$1000	36%
$1000-5000	37%
$5000-10,000	12%
$10,000-25,000	7%
>$25,000	8%

TRB TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES

PA Ambulance Crash Statistics

- 46% Intersection Crashes
- 60% Daylight
- 52% Clear Weather
- 62% Dry roads
- 37% Non-drivable after crash
- 53% of injured were EMS
- Injuries
  - Minor = 75%
  - Moderate = 23%
  - Severe = 1%
  - Fatal = 1%

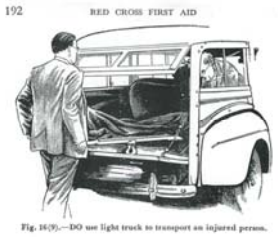
TRB TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES

Estimates on Loss

- Est. 5,000 Ambulance accidents annually in USA (Est. 50,000 ambulances in use)
- $17,600 Average Ambulance Claim
- $88,000,000 just in Vehicle Damage

TRB TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES

Driver Training



ARC – First Aid Textbook, 1945

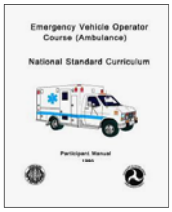
TRB TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES

Types of Specialized Driver Training

- Emergency Vehicle Operator Course (EVOC)
- Coaching the Emergency Vehicle Operator (CEVO)
- Intersection Accident Prevention Course (Interact)
- In-house Driver Training Programs
- Simulation Training

TRB TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES

EVOC



- Based on 1995 National Standard Curriculum (NHTSA)
- 3 Eight-Hour Sections
  - Classroom
  - Low Speed Confidence Course
  - On the Road Field Training
- Primary EMS Insurance carriers include in premium
- Can be downloaded for free from NHTSA
- No guarantee on instructor's abilities
- Curriculum 14 years old

TRB TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES

Topics Covered

- Legal Aspects
- Communication and Reporting
- Ambulance Types and Operation
- Inspection, Maintenance, and Repair
- Navigation and Route Planning
- Basic Maneuvers and Normal Operating
- Emergency Mode and Unusual Situations
- Safety; Special Considerations
- The Run
- Demonstration and Practice
- On the Road Internship

TRB TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES

CEVO

- Proprietary Course – 3rd Revision (2008)
- 6 Hours of Classroom (DVD Based)
- Classroom Materials $295 to $402
- Participant Workbook $8.50 to $12.50
- Situational Based Discussions
  No guarantee on instructor's abilities
- Final Written Test Mailed to Vendor

TRB TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES

CEVO Curriculum

- Cushion of safety
- Scanning
- Apparatus Positioning / Parking Procedure
- Blind Spots
- Safe Backing
- Types of Road Surfaces
- Apparatus Inspection
- Apparatus Handling / Design Characteristics
- Driving with and without Sirens

TRB TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES

Interact (Intersections)

- Proprietary Course (ESIP)
- Self Taught – About 1 Hour
- Aim is to Reduce Emergency Vehicles Becoming Involved in Intersection Accidents.

TRB TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES

In-House Training

- No Set Standards
- No guarantee on instructor's abilities
- Usually Seasoned Drivers Relying on Their Personal Experience
- Ranges from 100 Hour to **"There are the keys, try not to hit anything"**

TRB TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES

Simulator Units

TRB TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES

Simulation Training

- Mostly computer generated
- Units Cost $20,000 to $1,200,000
- Time determined based on performance
- Real costs are high in training & management
- Remain substantive human factors issues with many of the available devices
- Valid outcomes and effectiveness data is not yet available. Anecdotal reports need scientific analysis and validation to be conducted

TRB TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES

Considerations of Simulator Training

- Effect on Training Costs +/-
- Most do not require vehicle to be taken Out-of-Service
- Do require personnel to be out of service
- Standardized Training – Scenario Based
- Mistakes Don't Cost Real Money
- No scientific validation as has been conducted as for real –time driver feedback devices

TRB TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES

Summary

- **What we know**
  - Ambulances are expensive to purchase and maintain
  - Collisions occur at rates exceeding other industries
  - Training, Monitoring and Policy can reduce accidents and reduce morbidity and mortality
  - Training, Monitoring and Policy can reduce financial Loss

TRB TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES

Summary

- **What we don't know**
  - What the return on investment is for specific training
  - Is there an optimum fleet makeup for specific EMS applications

TRB TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES

Questions??

- Please raise your hand or type in the message box
- Be safe out there and thank you for your participation!

TRB TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES