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Safety Management Information Statistics (SAMIS) 1992 Annual Report

U.S. Department of Transportation
Research and Special Programs Administration
John A. Volpe National Transportation Systems Center
Cambridge MA 02142

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The Safety Management Information Statistics 1992 Annual Report is a compilation and analysis of mass transit accident and casualty statistics reported by transit systems in the United States during 1992, reported under the Federal Transit Administration's Section 15 reporting system.

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PREFACE

The Safety Management Information Statistics (SAMIS) 1992 Annual Report is a compilation and analysis of mass transit accident and casualty statistics reported by transit systems in the United States during 1992, reported under the Federal Transit Administration's Section 15 reporting system.

This report was prepared under the sponsorship of the Federal Transit Administration, Office of Safety. The authors wish to thank Franz Gimmler, Deputy Associate Administrator for Safety, for his direction and guidance during the preparation of this report; and Rhonda Crawley, Transportation Management Specialist, Carole Ferguson, Transit Safety Specialist, Roy Field, Transit Safety and Security Specialist, and Judy Meade, Transit Safety and Security Specialist, for their untiring guidance and valuable review and comments.

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INTRODUCTION

Now in its third year of publication, the Safety Management Information Statistics (SAMIS) report continues to provide uniformly collected comprehensive safety data from approximately 600 transit agencies throughout the country. In addition, this year SAMIS presents trend analyses summarizing the three years of SAMIS as well as the series of graphs and tables summarizing the safety performance of the transit industry in 1992. Several additional improvements have been made to the format of this year's annual report. Graph narratives are now presented alongside each graph, rather than in a separate section. Most of the graphs have been renamed with easy to understand descriptions. For comparison to previous years' data, the old names will be referenced on each graph.

Every transit system in the nation receiving federal funds must report transit safety statistics as part of the Federal Transit Administration's (FTA's) Section 15 reporting system. The safety data presented in this report is collected via Form 405 of that system. To facilitate the reader's understanding of the information presented in this report, Form 405 is illustrated on the following page. This safety information is collected separately for each transit mode an agency operates (e.g., an agency which operates bus and light rail will submit two Forms 405).

Transit safety data are collected in four basic categories: collisions, derailments/left roadway, personal casualties, and fires. Each of these categories are further delineated in order to gather detailed information on the exact nature of the incident. For each incident that occurs, any associated injuries or fatalities must be noted as well. SAMIS reports these safety statistics for the following transit modes: motorbus, automated guideway, commuter rail, heavy rail, light rail, demand response, and van pool.

As with previous years' SAMIS reports, caution should be used when making comparisons. This note of caution applies both to making comparisons across different modes of transportation, and to making comparisons against data from other transportation reporting systems. When comparing modes of transportation, keep in mind their differences. For example, some run on exclusive rights-of-way while others mix with general traffic on surface roads. When making comparisons with data from other transit reporting systems, consider that the reporting thresholds, assumptions, and definitions may be very different. For example, SAMIS reports property damage when the damage exceeds \$1000, while other systems use thresholds that may be lower or much higher than this.

GLOSSARY OF TERMS

Accident

An incident involving a moving vehicle. Includes collisions with a vehicle, object, or person (except suicides) and derailment/left roadway.

Collision with Vehicle

An incident in which a transit vehicle strikes or is struck by another vehicle. Reports are made if the accident results in death, injury, or property damage over \$1,000.

Collision with Object

An incident in which a transit vehicle strikes an obstacle other than a vehicle or person (e.g., building, utility pole). Reports are made if the accident results in a death, injury, or property damage over \$1,000.

Collision with People

An incident in which a transit vehicle strikes a person. Except where specifically indicated, collisions with people do not include suicide attempts. Reports are made if the incident results in death, injury, or property damage over \$1,000.

Derailment/Left Roadway

A non-collision incident in which a transit vehicle leaves the rails or road on which it travels. This also includes roll-overs. Reports are made for all occurrences.

Fatality

A transit caused death confirmed within 30 days of a transit incident.

Fire

Uncontrolled combustion made evident by flame and/or smoke which requires suppression by equipment or personnel. There are no thresholds; all fires are reported.

Personal Casualty Associated with Escalator

An incident in which a person is hurt while using an escalator in a transit facility. Any incident in this category is included in Personal Casualty in Stations/Bus Stops.

Suicide

A person ending his or her own life intentionally. These are not included in Collision with People statistics except where specifically indicated.

Transit Property

All facilities which are directly controlled by a transit agency or provided to a transit agency for its use. This includes stations, rights-of-way, bus stops, and maintenance facilities.

Transit Property Damage

The dollar amount required to repair or replace transit property damaged during an incident.

Vehicle Miles

The total number of miles traveled by transit vehicles. Commuter rail, heavy rail, and light rail report individual car miles rather than train miles for vehicle miles.

Motorbus (MB)

Rubber tired passenger vehicles that operate on roadways. Motorbus service implies fixed routes and schedules. The SAMIS graphs descriptions LMB (large motorbus), MMB (medium motorbus), and SMB (small motorbus) describe the size of the transit agency which operates the bus, not the size of the buses (i.e., if the number of buses an agency operates is greater than 500, then the vehicles are called LMB, if the agency operates less than 100 buses, they are called SMB, and anything in between is known as MMB).

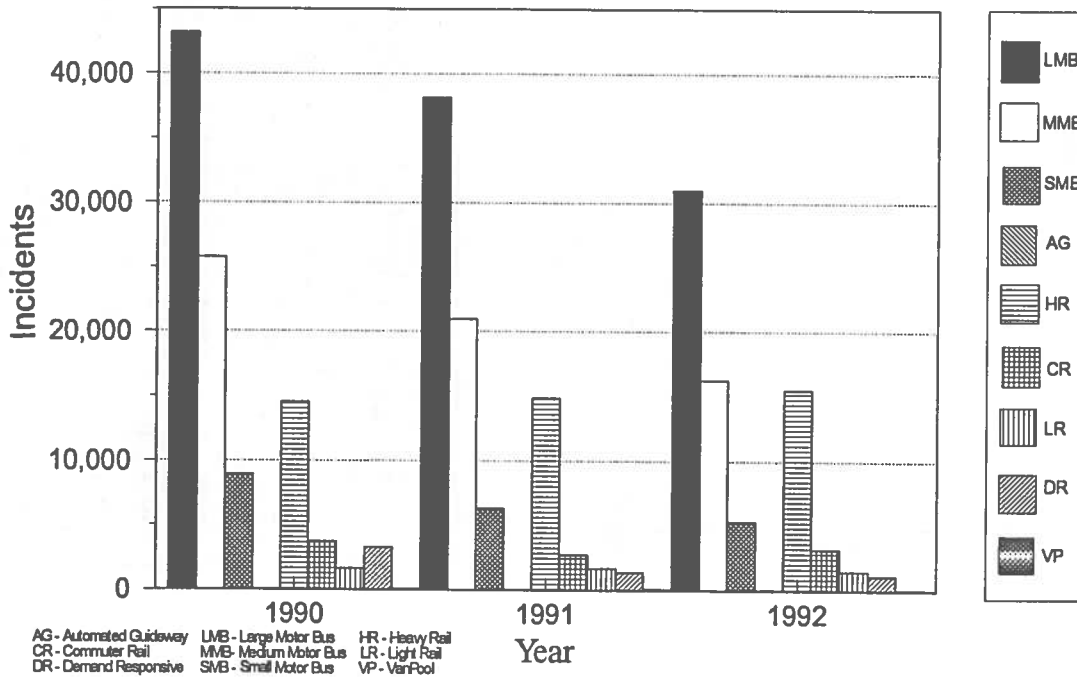
Vanpool (VP)

Public sponsored commuter service operating under pre-arranged schedules for pre-formed groups of riders in 8- to 18-seat vehicles. Drivers are also commuters who receive little or no compensation besides free transportation and use of the vehicle during off hours.

A look at SAMIS data from 1990 through 1992.

TRENDS

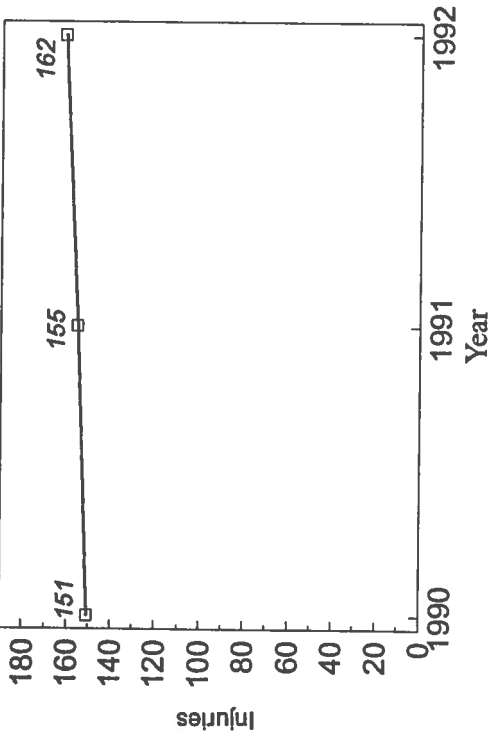
Total of Mass Transit Incidents by Mode and Year



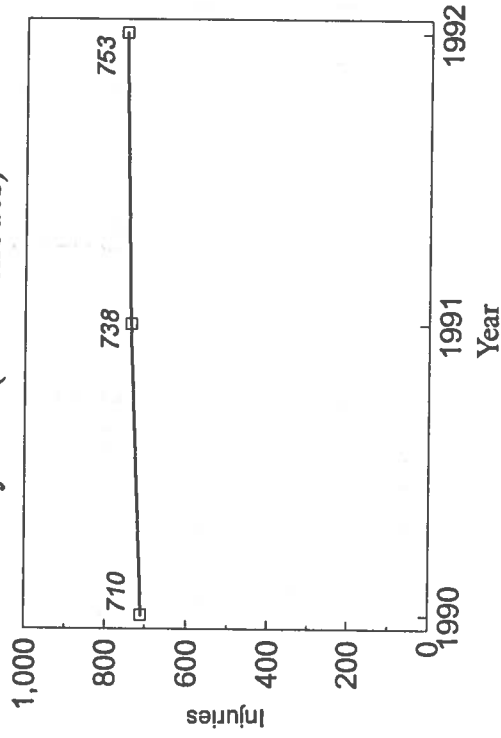
Total of all modes by year

	1990	1991	1992
Incidents	100,941	86,090	73,831
Injuries	54,566	55,064	55,089
Fatalities	339	300	273

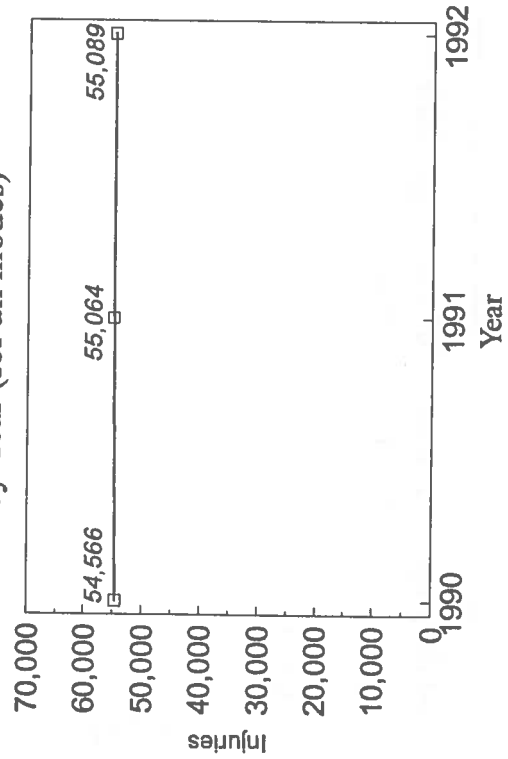
**Injuries per 100,000 Passenger Miles
by Year (for all modes)**



**Injuries per 100,000,000 Passengers
by Year (for all modes)**



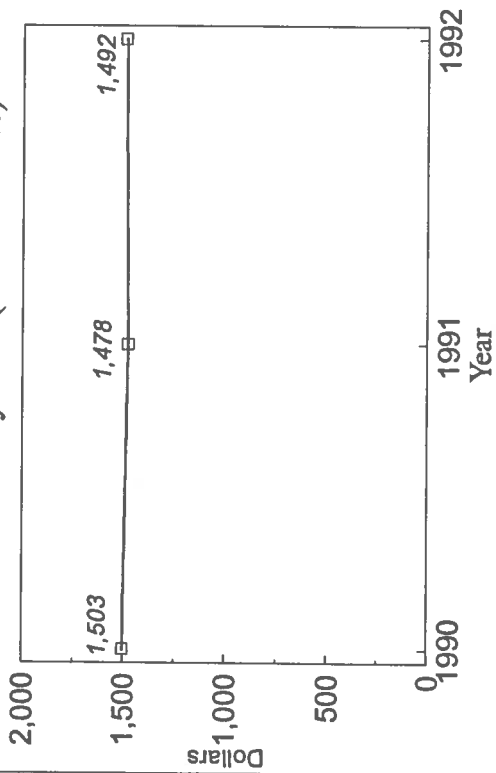
**Total Injuries
by Year (for all modes)**



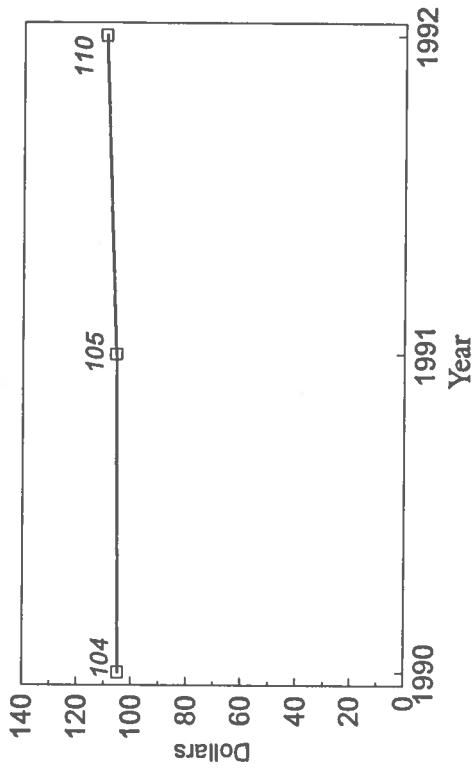
Total Injuries by Mode

	1990	1991	1992
LMB	21,891	23,109	23,654
MMB	13,696	13,273	12,090
SMB	4,418	4,205	4,346
AG	3	0	7
CR	2,438	2,310	2,546
HR	10,036	10,006	10,446
LR	1,244	1,369	1,268
DR	819	752	713
VP	21	40	19
Total	54,566	55,064	55,089

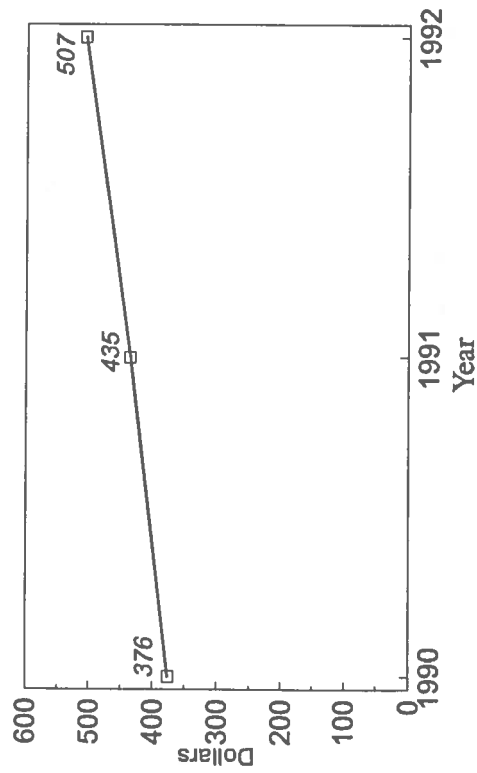
**Property Damage per 100,000
Vehicle Miles by Year (for all modes)**



**Property Damage per 100,000
Passenger Miles by Year (for all modes)**



**Property Damage per Total Incidents
by Year (for all modes)**



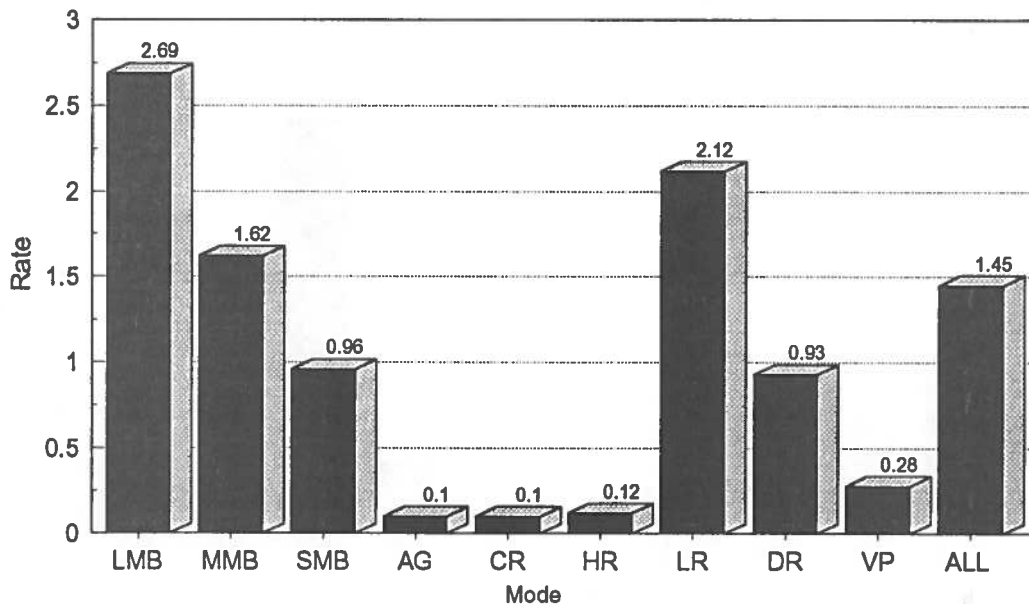
Total Property Damage by Mode (in \$)

	1990	1991	1992
LMB	14,760,209	12,050,771	13,105,639
MMB	9,306,400	11,238,640	8,900,792
SMB	3,301,762	3,543,247	2,807,956
AG	0	3,517	11,286
CR	861,513	1,370,729	2,986,769
HR	7,929,642	6,525,828	7,333,790
LR	1,144,000	1,008,107	1,184,825
DR	609,484	1,492,942	1,053,526
VP	68,549	243,711	70,367
Total	37,981,559	37,477,492	37,454,950

The 1992 SAMIS data presented as

GRAPHS

Number of Vehicle Incidents for every 100,000 Vehicle Miles



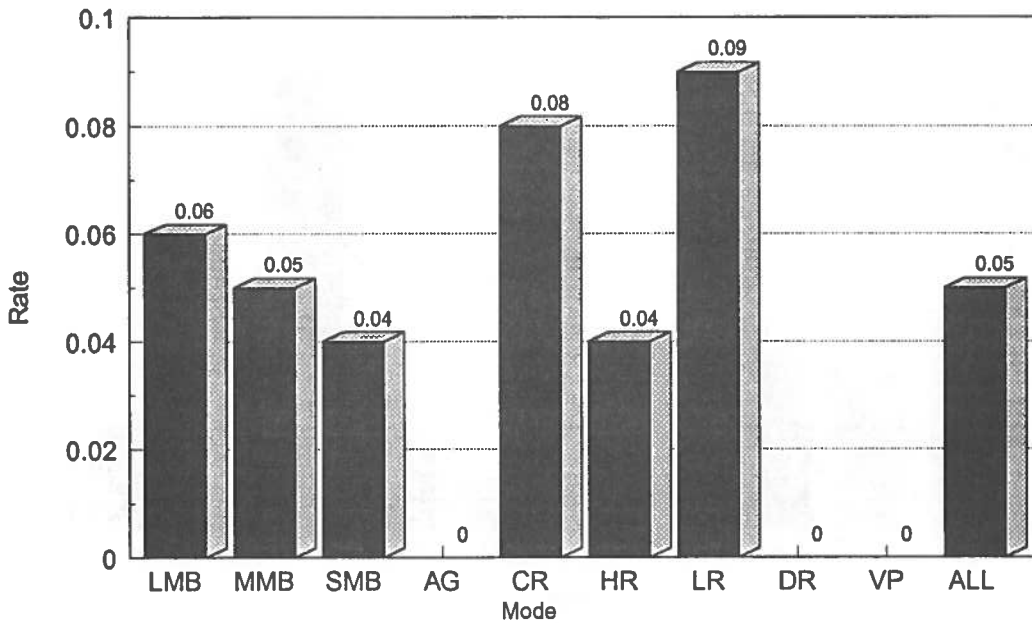
AG - Automated Guideway LMB - Large Motor Bus HR - Heavy Rail
 CR - Commuter Rail MMB - Medium Motor Bus LR - Light Rail
 DR - Demand Responsive SMB - Small Motor Bus VP - VanPool

1992

This graph shows the incident rate which is based on the number of vehicle incidents. These include all vehicle *incidents* resulting from **Collisions** [with other vehicles, objects, people (not suicides)] and **Derailments** (vehicle derailed/left roadway). The number of vehicle miles includes both revenue and non-revenue miles since there are risks present during both types of operation. The three rail modes (commuter rail, heavy rail, and light rail) report car rather than train miles for vehicle miles.

Previously - *Accidents per 100,000 Vehicle Miles by Transit Mode*

Number of Passenger Fatalities for every 10,000,000 Passenger Miles



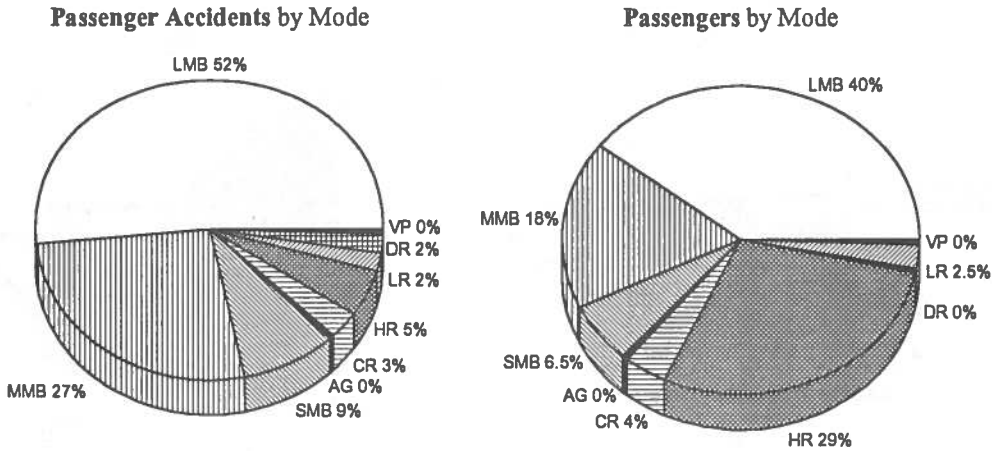
AG - Automated Guideway LMB - Large Motor Bus HR - Heavy Rail
 CR - Commuter Rail MMB - Medium Motor Bus LR - Light Rail
 DR - Demand Responsive SMB - Small Motor Bus VP - VanPool

1992

These statistics represent passenger-on-vehicle fatalities. They are *fatalities* resulting from **Collisions** [with vehicles, objects, people (not suicides)], **Derailments** (vehicle derailed/left roadway), and **Personal Casualties** (on the vehicle and entering/exiting the vehicle).

Previously - *Passenger Accident Fatality and Injury Rates by Passenger Miles (2 graphs in one)*

Passenger Accidents and Passenger Distribution by Transit Mode



AG - Automated Guideway LMB - Large Motor Bus HR - Heavy Rail
 CR - Commuter Rail MMB - Medium Motor Bus LR - Light Rail
 DR - Demand Responsive SMB - Small Motor Bus VP - VanPool

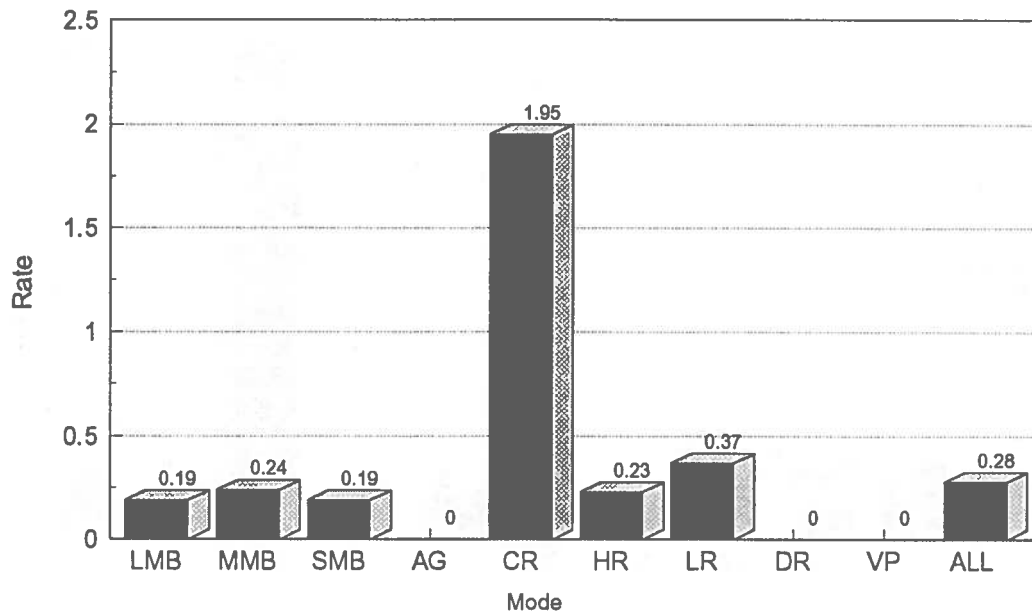
1992

The pie *chart on the left* shows the percentage of passenger accidents (or incidents) reported by each mode. The Passenger Incidents include **Collisions**, **Derailments** (vehicle derailed/left roadway), and **Personal Casualties** categories. Viewed individually, they put the raw numbers reported on page 20 into context by illustrating their relationship to the total. When compared, these pie charts give another view of accident rates. If all transit modes were equally safe, the numbers for a given transit mode would be the same in both pie charts.

 The pie *chart on the right* gives the percent of total transit ridership share held by each transit mode.

In both charts, the percentages given as 0% are rounded and actually mean less than 0.5%.

Number of Passenger Fatalities for every 10,000,000 Passengers



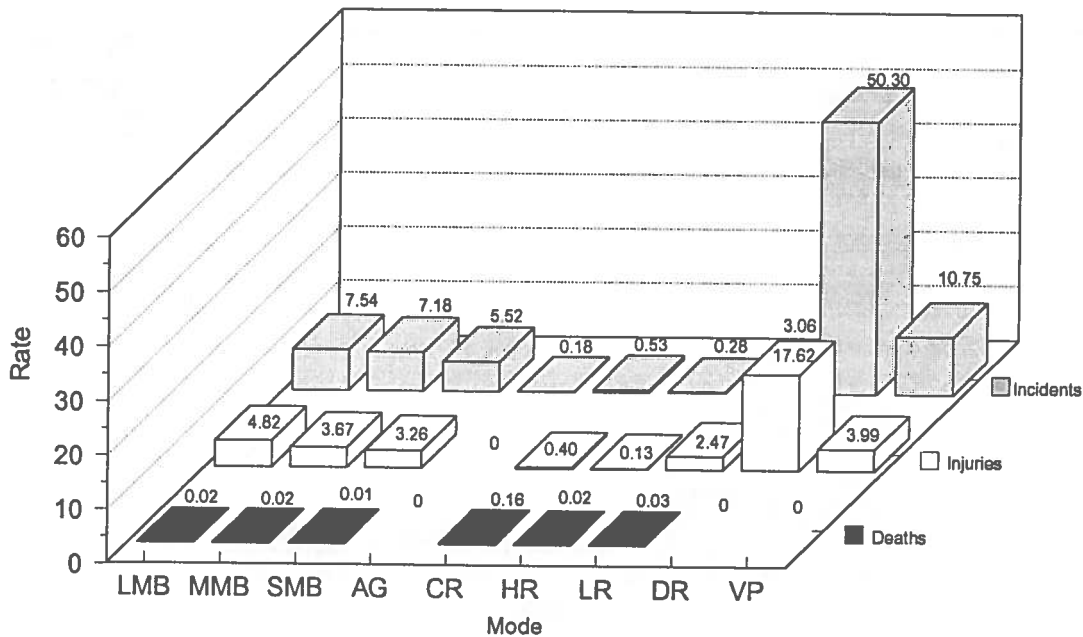
AG - Automated Guideway LMB - Large Motor Bus HR - Heavy Rail
 CR - Commuter Rail MMB - Medium Motor Bus LR - Light Rail
 DR - Demand Responsive SMB - Small Motor Bus VP - VanPool

1992

This graph depicts the passenger *fatality* rate, from all causes (except suicides), i.e., **Collisions, Derailments** (vehicle derailed/left roadway), **Personal Casualties**, and **Fires** Categories.

Previously - *Mishap Fatality and Injury Rates per 10,000,000 & 100,000 Passengers (2 graphs in one)*

Collisions Rates for every 1,000,000 Passengers



AG - Automated Guideway
 CR - Commuter Rail
 DR - Demand Responsive
 LMB - Large Motor Bus
 MMB - Medium Motor Bus
 SMB - Small Motor Bus
 HR - Heavy Rail
 LR - Light Rail
 VP - VanPool

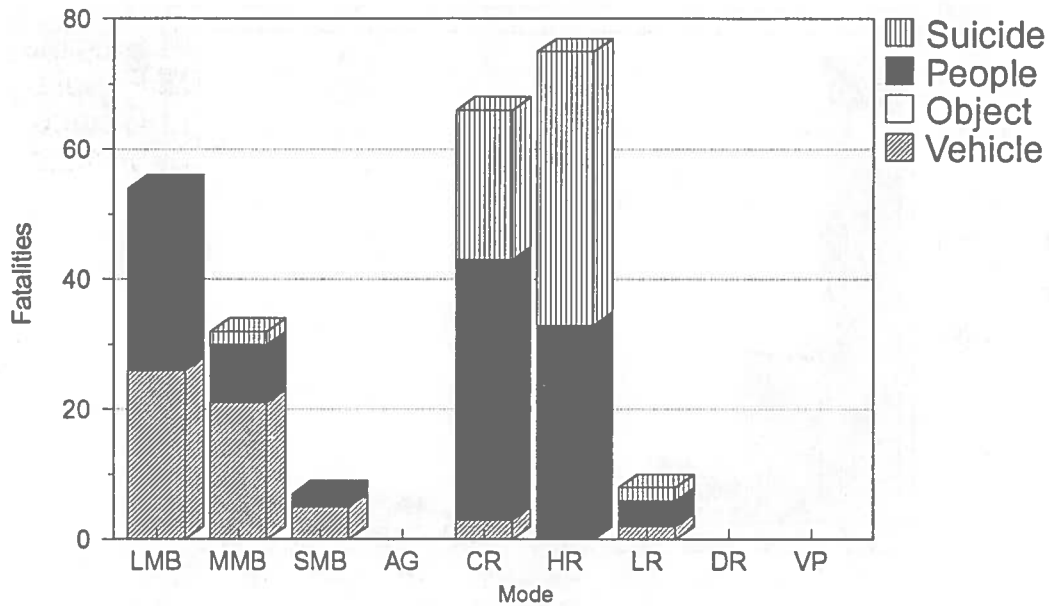
1992

This graph shows the rates of *incidents*, *injuries*, and *fatalities* (except suicides) for the **Collisions** category of Form 405.

The rates show how often incidents, deaths, and injuries occur, based on passenger exposure to risk. These rates should be kept in mind when looking at the next three figures which give only raw numbers. The raw numbers alone do not give a full idea about relative safety without data on exposure which is provided here.

Previously - *Collision Rates per 1,000,000 Passengers*

Fatalities Resulting from Collisions



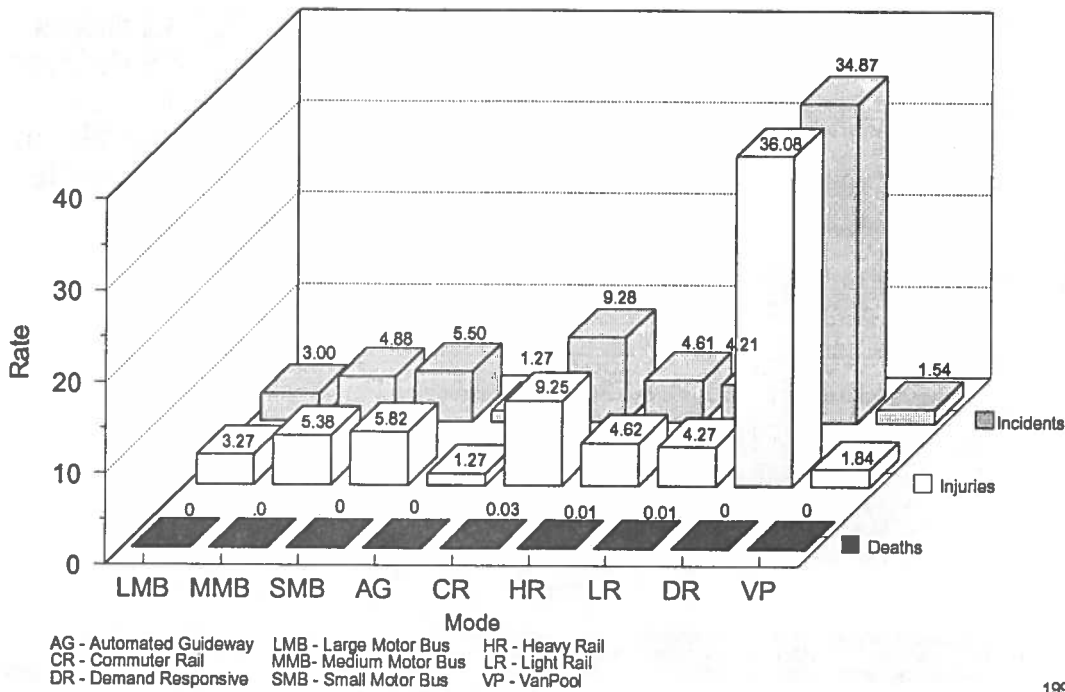
AG - Automated Guideway
 CR - Commuter Rail
 DR - Demand Responsive
 LMB - Large Motor Bus
 MMB - Medium Motor Bus
 SMB - Small Motor Bus
 HR - Heavy Rail
 LR - Light Rail
 VP - VanPool

1992

This graph breaks down by type the *fatalities* resulting from **Collisions** (with other vehicles, with objects, with a person, and attempted suicides).

Previously - *Collision Incidents by Collision Type and Mode*

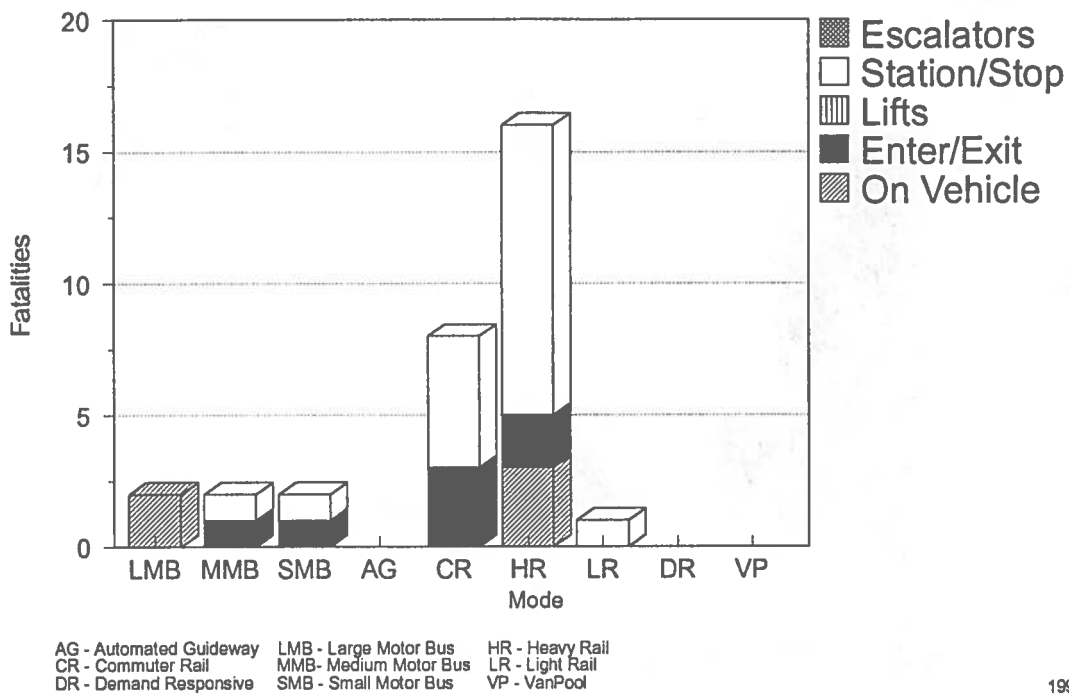
Personal Casualties Rates for every 1,000,000 Passengers



This graph provides the rates by transit mode for *incidents*, *fatalities*, and *injuries* classified under the **Personal Casualties** category of Form 405. Keep in mind that **Personal Casualties** is a transit mishap *category* (in Form 405) where people are hurt but not as a result of **Collisions**, **Derailments**, or **Fires**. The rates show how often incidents, deaths, and injuries occur, based on passenger exposure to risk. These rates should be kept in mind when looking at the next three figures which give only raw numbers. The raw numbers alone do not give a full idea about relative safety without data on exposure which is provided here.

Previously - *Personal Casualty Rates per 1,000,000 Passengers*

Fatalities Resulting from Personal Casualties



This graph breaks down by type the *fatalities* that are classified under the **Personal Casualties** category of Form 405 (on vehicle, entering/exiting, lifts, station/stop, escalators).

Although at first the title of the graph may seem awkward, keep in mind that **Personal Casualties** is a transit mishap *category* (in Form 405) where people are hurt but not as a result of **Collisions, Derailments, or Fires**.

Previously - *Personal Casualty Fatalities by Type and Mode*

1992 SAMIS data in

TABLES

COLLISIONS

by Mode

INCIDENTS

Mode	Vehicle	Object	People*	Suicide
LMB	19,535	1,705	756	2
MMB	8,073	1,207	302	6
SMB	2,108	457	69	0
AG	0	1	0	0
CR	51	12	99	23
HR	447	68	135	65
LR	474	31	70	2
DR	510	145	10	0
VP	32	3	0	0
ALL	31,230	3,629	1,441	98

DEATHS

Mode	Vehicle	Object	People*	Suicide
LMB	26	0	28	0
MMB	21	0	11	2
SMB	5	0	2	0
AG	0	0	0	0
CR	3	0	63	23
HR	0	0	75	42
LR	2	0	6	2
DR	0	0	0	0
VP	0	0	0	0
ALL	57	0	185	69

INJURIES

Mode	Vehicle	Object	People*	Suicide
LMB	13,028	374	666	2
MMB	4,406	232	261	1
SMB	1,430	65	62	0
AG	0	0	0	0
CR	62	3	41	0
HR	126	14	161	29
LR	398	3	62	0
DR	212	13	8	0
VP	13	0	0	0
ALL	19,675	704	1,261	32

* People figures include suicides.

FIRES

by Mode

INCIDENTS

Mode	Vehicle	Station	R-O-W/Road
LMB	158	5	5
MMB	96	2	0
SMB	28	0	3
AG	0	0	0
CR	52	166	309
HR	522	2,243	2,303
LR	11	23	67
DR	7	0	1
VP	0	0	0
ALL	874	2,439	2,688

DEATHS

Mode	Vehicle	Station	R-O-W/Road
LMB	0	0	0
MMB	0	0	0
SMB	0	0	0
AG	0	0	0
CR	0	0	0
HR	0	0	0
LR	0	0	0
DR	0	0	0
VP	0	0	0
ALL	0	0	0

INJURIES

Mode	Vehicle	Station	R-O-W/Road
LMB	20	1	0
MMB	7	0	0
SMB	4	0	2
AG	0	0	0
CR	12	0	1
HR	75	94	196
LR	0	0	0
DR	2	0	1
VP	0	0	0
ALL	120	95	200

