

Epidemiology and Prevention of Falls among Children and Adults

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INJURY UPDATE: 0-24

Average Age-Standardized Mortality Rates per 100 000 by External Cause of Injury

Categories of External Cause of Injury	Total Number of Deaths: Males	Rank of Injury Cause: Males	Total Number of Deaths: Females	Rank of Injury Cause: Females	Total Number of Deaths: Total	Rank of Injury Cause: Total
Motor Vehicle	1278 (21.37)	1	447 (7.81)	1	1725 (14.73)	1
Poisoning	111 (1.85)	3	53 (0.92)	2	164 (1.40)	3
Falls	85 (1.42)	4	16 (0.28)		101 (0.86)	5
Drowning	199 (3.34)	2	45 (3.34)	4	244 (2.09)	2
Fire, Flames or Hot Substance	72 (1.21)	5	49 (1.21)	3	121 (1.04)	4

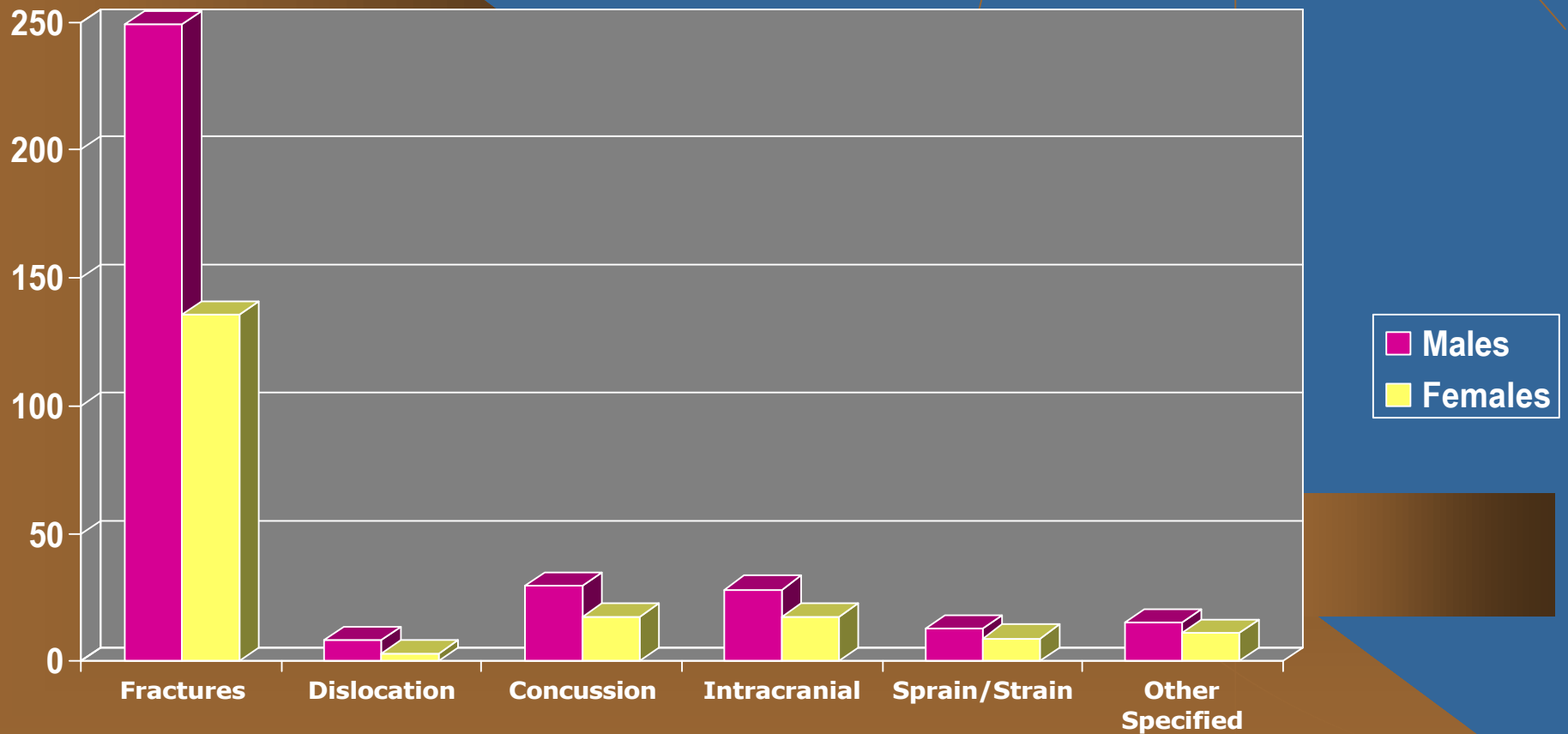
Leading Causes of Mortality & Hospitalization for Unintentional Injury, 1987-1996, BC, Ages 0–24

Rank of Activities	Mortality	Hospitalization	ER/CHIRPP (activity leading to injury)
1	Motor Vehicle Accident	Falls	Leisure / Recreation
2	Drowning	Motor Vehicle Accident	Other Events (walking, running, shopping)
3	Poisoning	Post – op Complications	Sport / Recreation
4	Fire, Flames, Hot Substances	Struck by Object	Transportation
5	Falls	Adverse Effects	Personal Activities

Priorities for Injury Prevention 0-24

	Children	Young Males
Sports & Leisure	X	X
Falls	X	
Poisoning	X	
Burns & Scalds	X	
Transport/Cycling		X
Self Harm		X
Violence	X	X

Hospitalization Rates for Falls 0-24 years, by Nature of Injury, Gender, 1987-1996



CHIRPP: Falls from Windows (1994-99), by Age Group

Age Group

BC
(n=73)

< 1 year

1.4%

1-4

82.2%

5-9

9.6%

10-14

5.5%

15-19

1.4%

CHIRPP: Falls from Windows (1994-99) by Activity

Activity	BC (n=73)
Playing	47.9%
Sit/Stand	13.7%
Not Specified	16.4%
Other	22.0%

CHIRPP: Falls from Windows (1994-99) by Nature of Injury

Nature of Injury	BC (n=73)
Fracture	31.5%
Minor Head/Concussion	27.4%
Superficial	16.4%
Other	24.7%

CHIRPP: Falls from Windows (1994-99) by Body Part Injured

Body Part Injured

BC
(n=73)

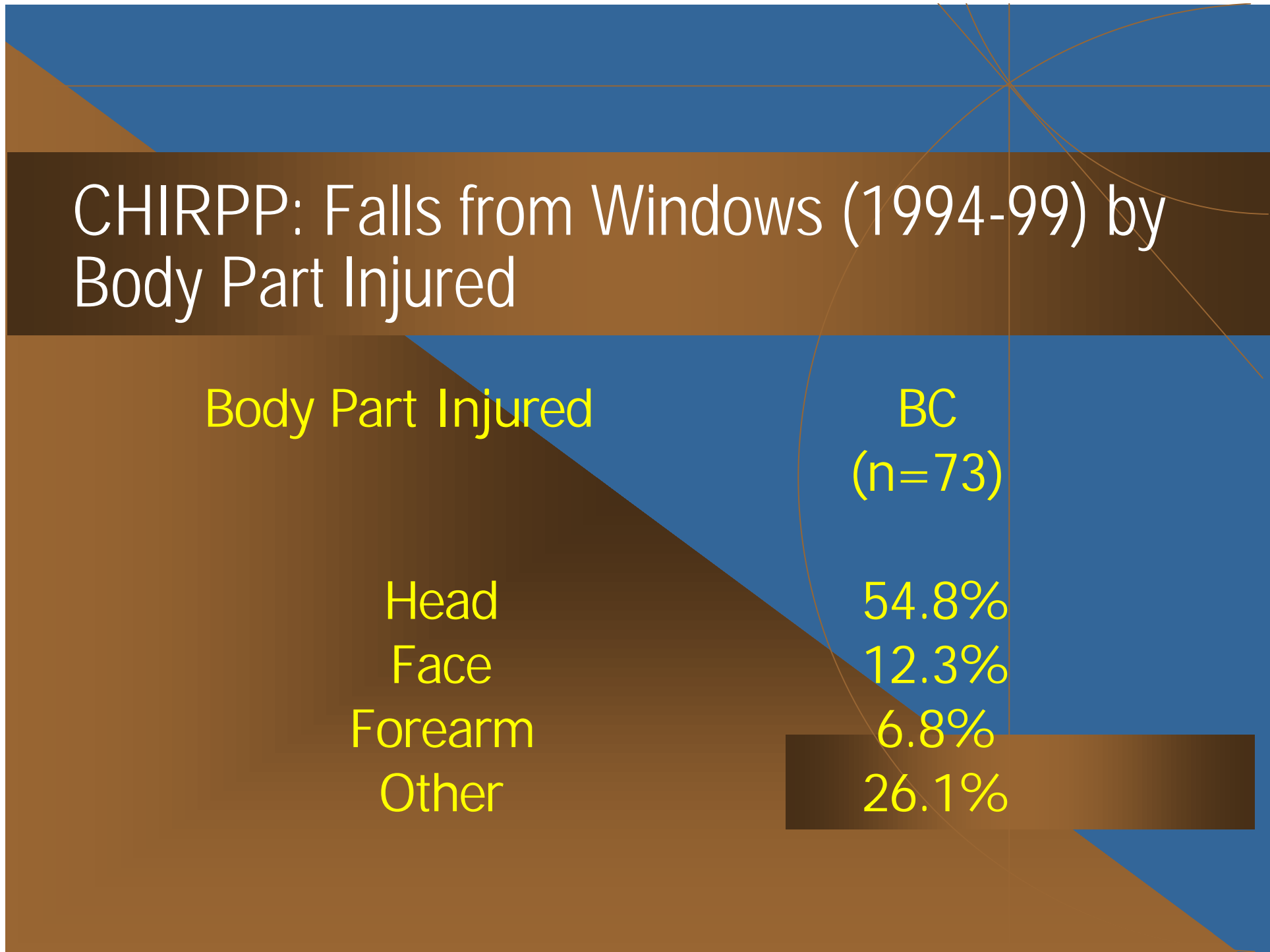
Head
Face
Forearm
Other

54.8%

12.3%

6.8%

26.1%



CHIRPP: Falls from Windows (1994-99), Narrative Descriptions

- ◆ Playing, leaned on window screen, fell out window (2nd storey)
- ◆ Climbed up onto sofa (near window) & fell out 2nd floor window
- ◆ Mother threw baby out a 3 storey window 30 ft into bushes

Where do Falls Happen?

- ◆ Infants: Home
- ◆ Young children: Home
- ◆ Older children: Schools, Sports, Roads
- ◆ Teens: Roads



INJURY UPDATE: 25+

Average Annual Mortality Rates per 100,000, by age group and sex

	Motor-vehicle		Falls	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
25-34	21.44	6.91	2.18	0.45
35-44	14.20	5.10	2.60	0.63
45-64	12.75	6.16	4.10	1.58
65-74	11.83	9.32	14.88	7.76
75-79	18.76	12.54	41.81	29.31
80+	31.77	13.78	181.72	168.75

BCIRPU, 2001

Average Annual Hospitalizations Rates per 100,000, by age group and sex

Age Group	Motor-vehicle		Falls	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
25-34	248.03	118.72	222.43	115.59
35-44	168.58	86.66	240.06	147.54
45-64	125.94	92.25	320.09	323.48
65-74	130.17	125.49	622.77	927.00
75-79	177.41	156.01	1,159.00	1,955.51
80+	199.33	137.30	2,769.91	4,526.74

BCIRPU, 2001

Where do Falls Happen?

- ◆ Young adults: recreation, Roads
- ◆ Young seniors: Home, public buildings, street/highway, place for recreation
- ◆ Older Seniors: Home, residential institutions

Leading Causes of Mortality & Hospitalization for Unintentional Injury, 1994-1998, BC, Ages 25–64

Rank of Activities	Mortality	Hospitalization
1	Poisonings	Post – Op Complications
2	Motor Vehicle Accidents	Falls
3	Falls	Adverse Effects
4	Drowning	Motor Vehicle Accidents
5	Suffocation	Struck by Object

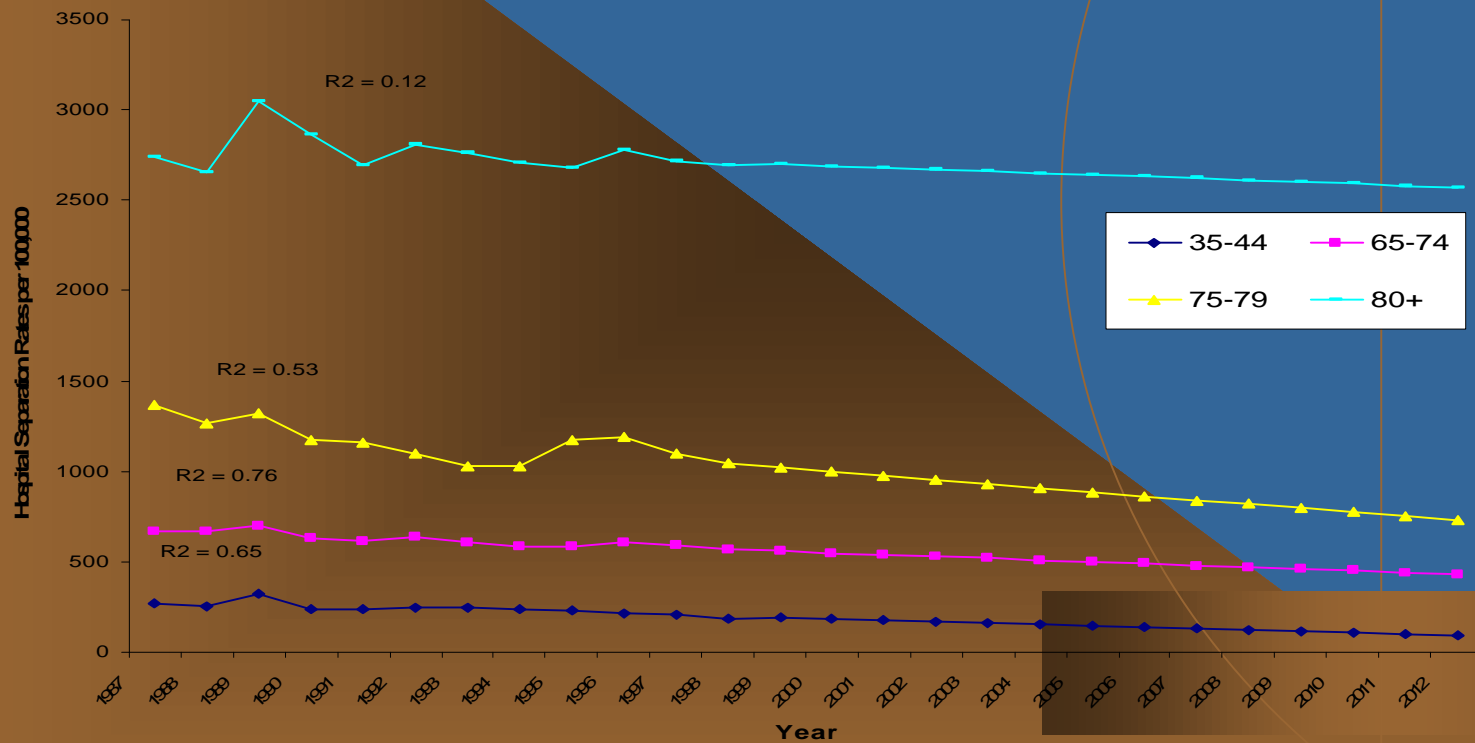
Leading Causes of Mortality & Hospitalization for Unintentional Injury, 1994-1998, BC, Ages 65-74

Rank of Activities	Mortality	Hospitalization
1	Falls	Post – Op Complications
2	Motor Vehicle Accidents	Falls
3	Poisonings	Adverse Effects
4	Post – Op Complications	Motor Vehicle Accidents
5	Fire, Flames, Hot Substances	Misadventure

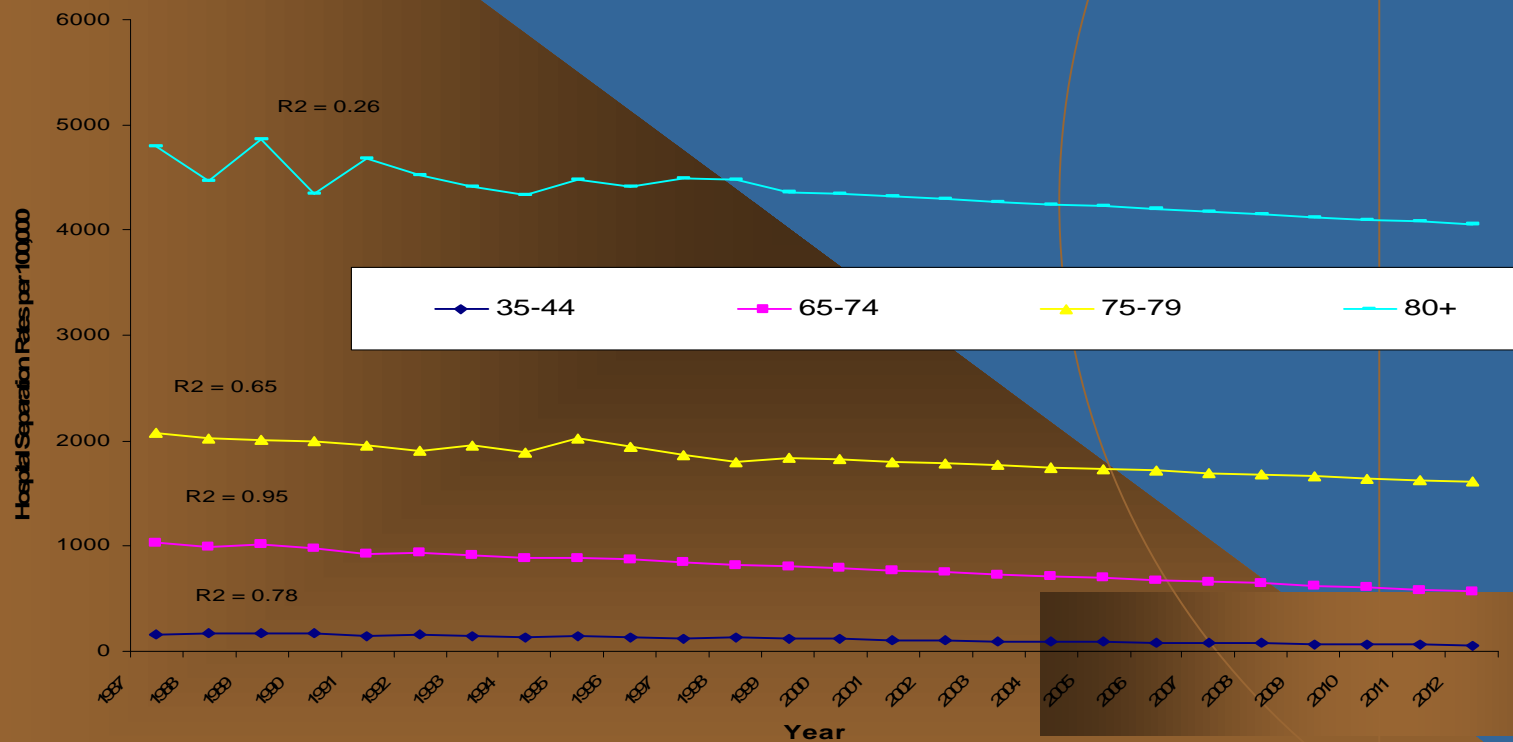
Leading Causes of Mortality & Hospitalization for Unintentional Injury, 1994-1998, BC, Ages 75+

Rank of Activities	Mortality	Hospitalization
1	Falls	Falls
2	Motor Vehicle Accidents	Post – Op Complications
3	Post – Op Complications	Adverse Effects
4	Suffocation	Motor Vehicle Accidents
5	Adverse Effects	Misadventure

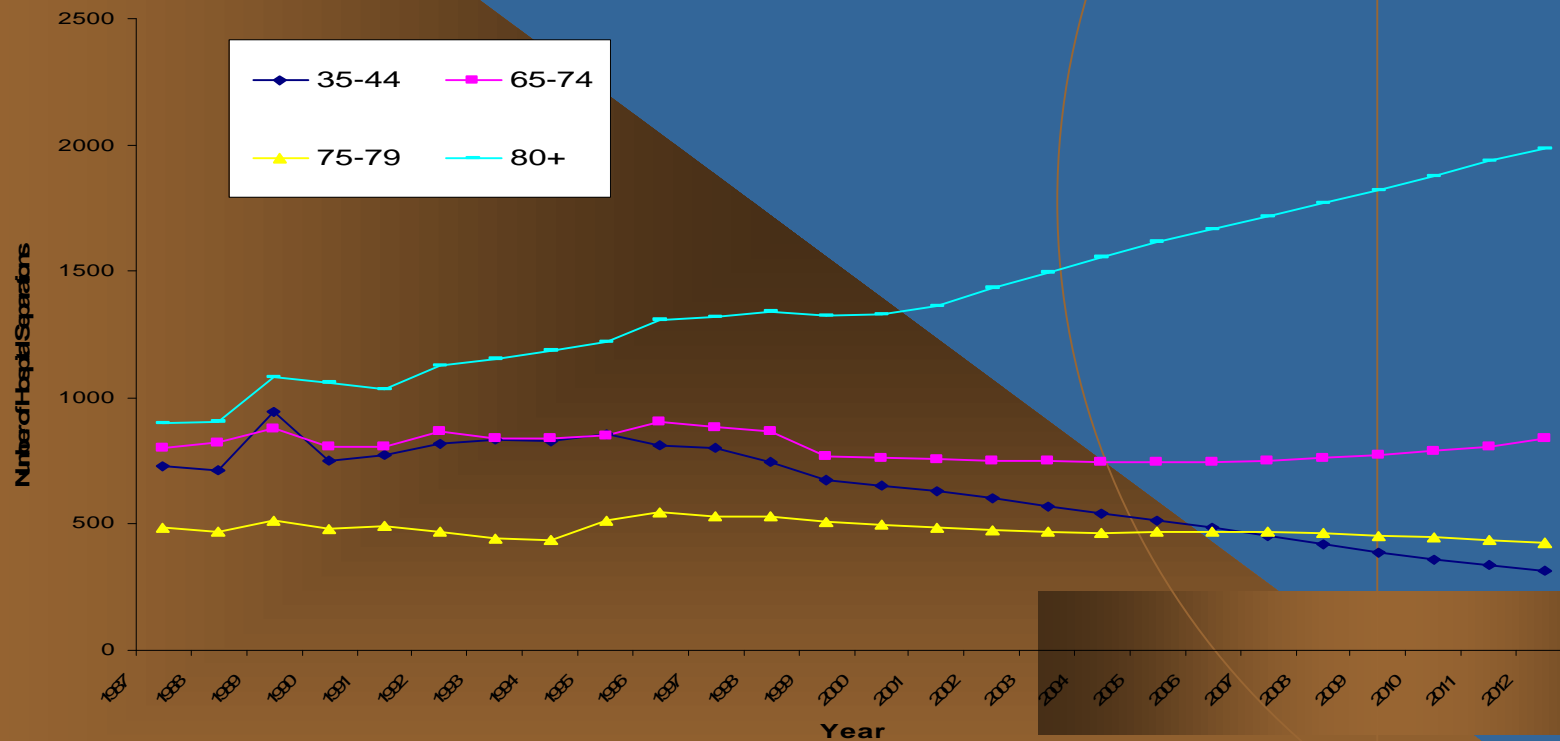
Hospital Separation Rates per 100,000, BC, Males



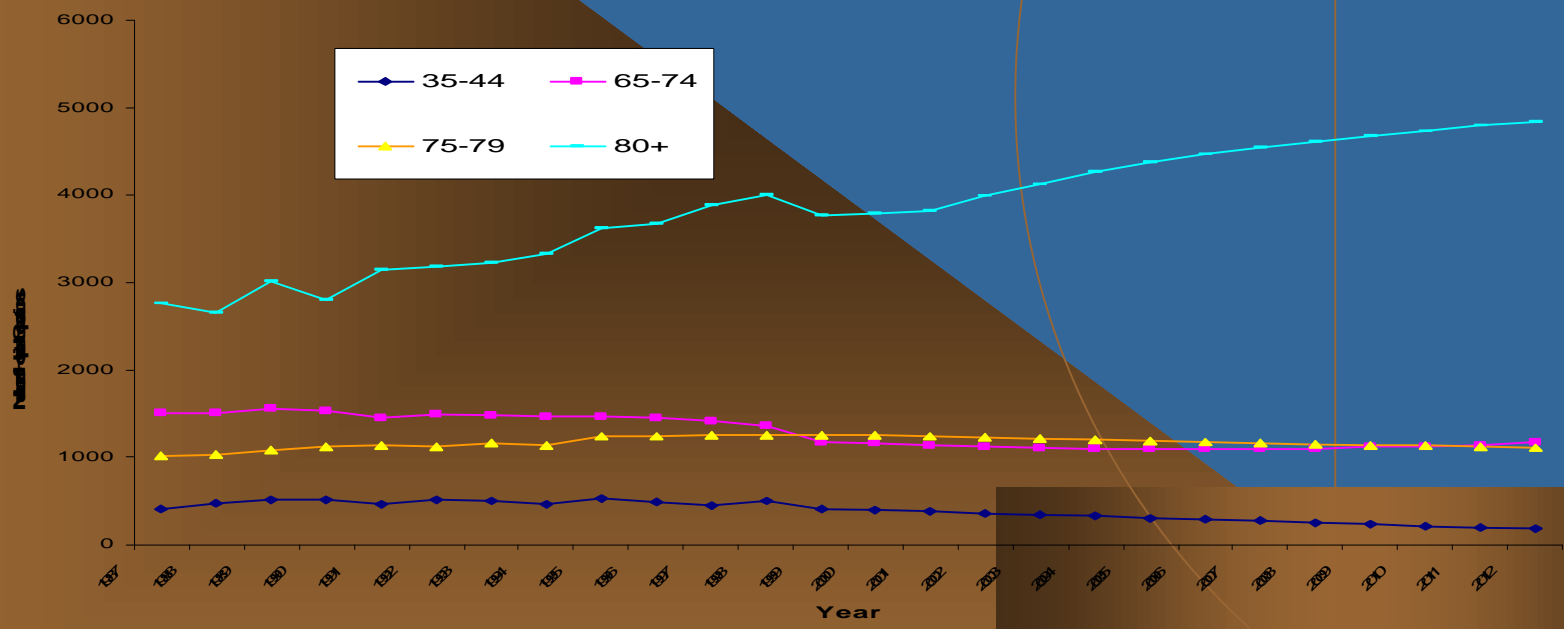
Hospital Separation Rates per 100,000, BC, Females



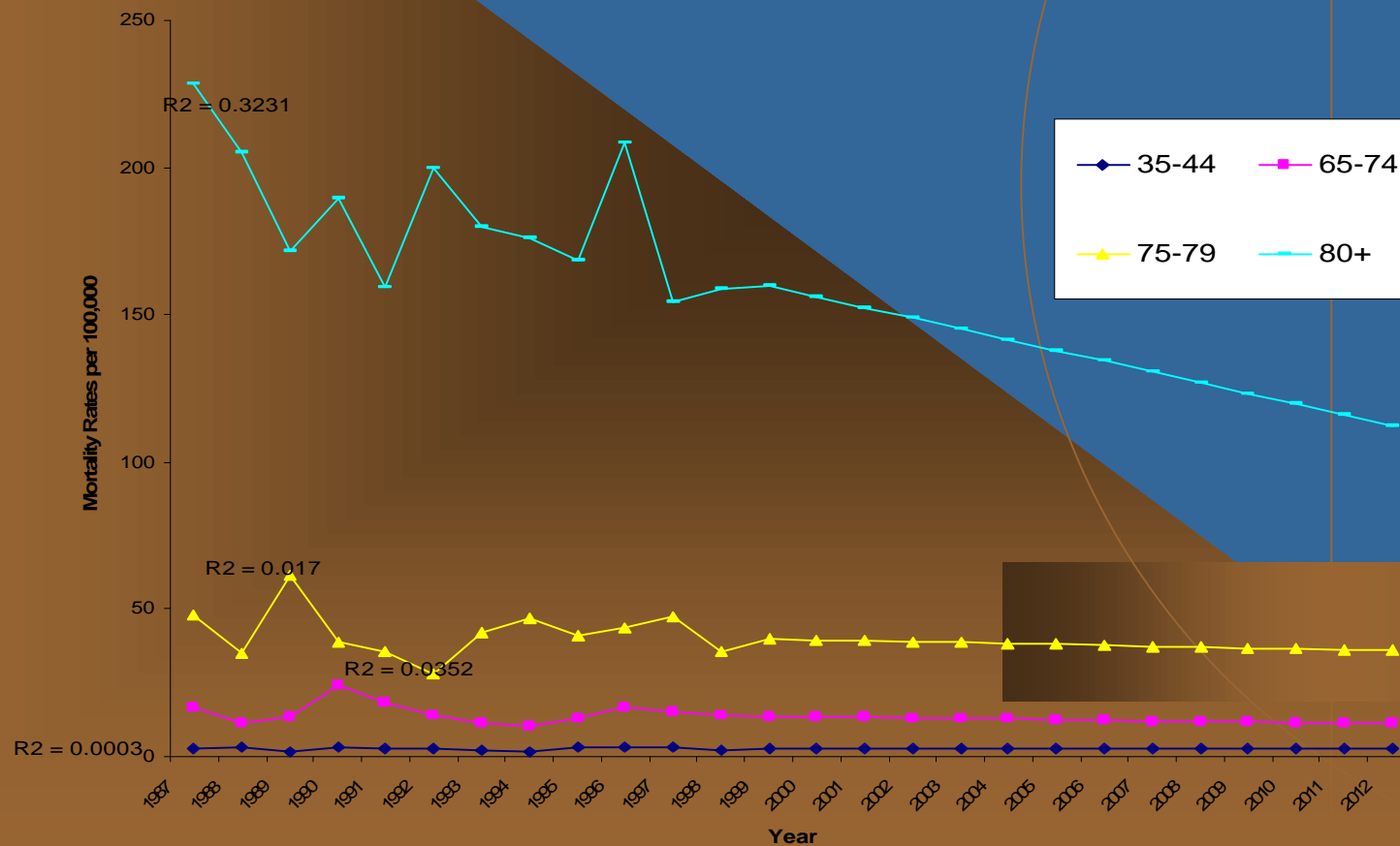
Number of Hospital Separations due to Falls, BC, Males



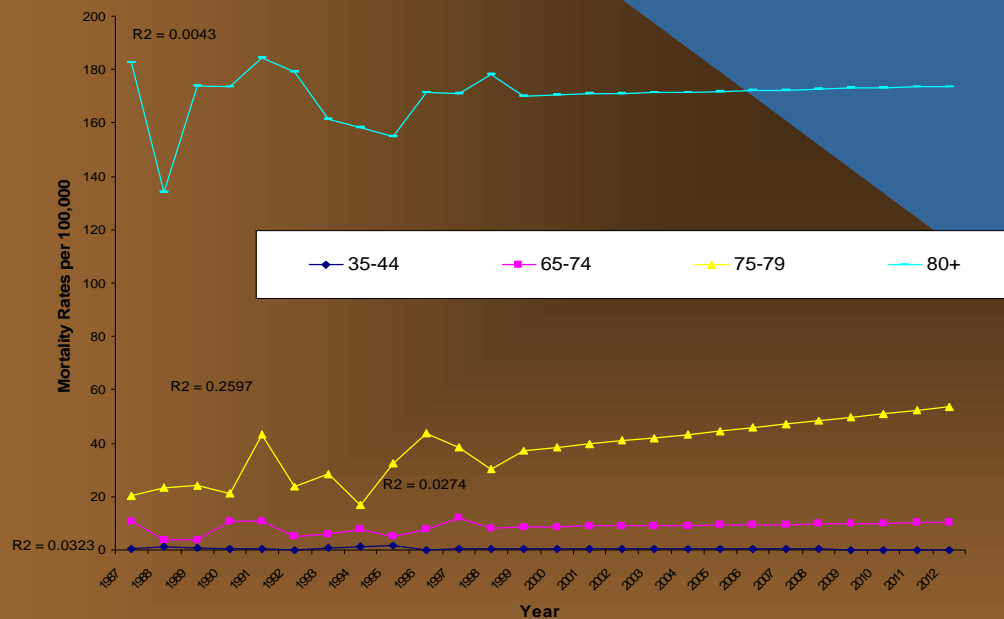
Number of Hospital Separations due to Falls, BC, Females



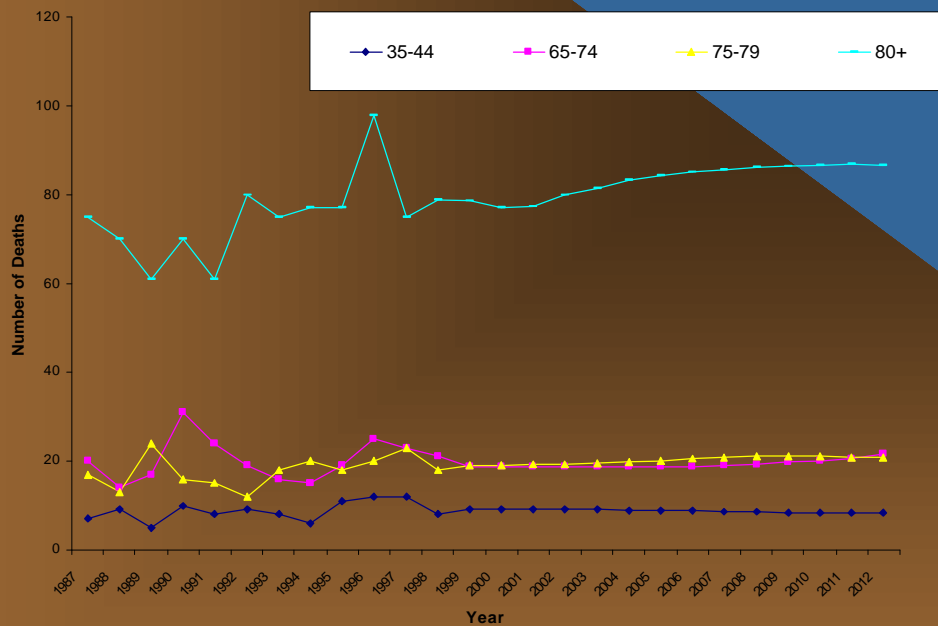
Mortality Rates due to Falls per 100,000, BC, Males



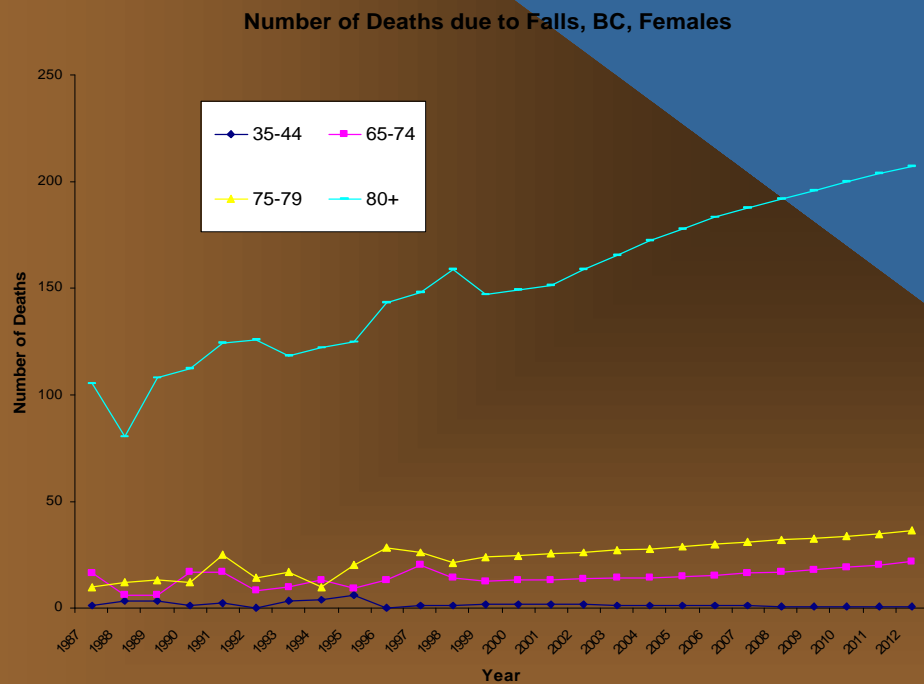
Mortality Rates per 100,000 due to Falls, BC, Females



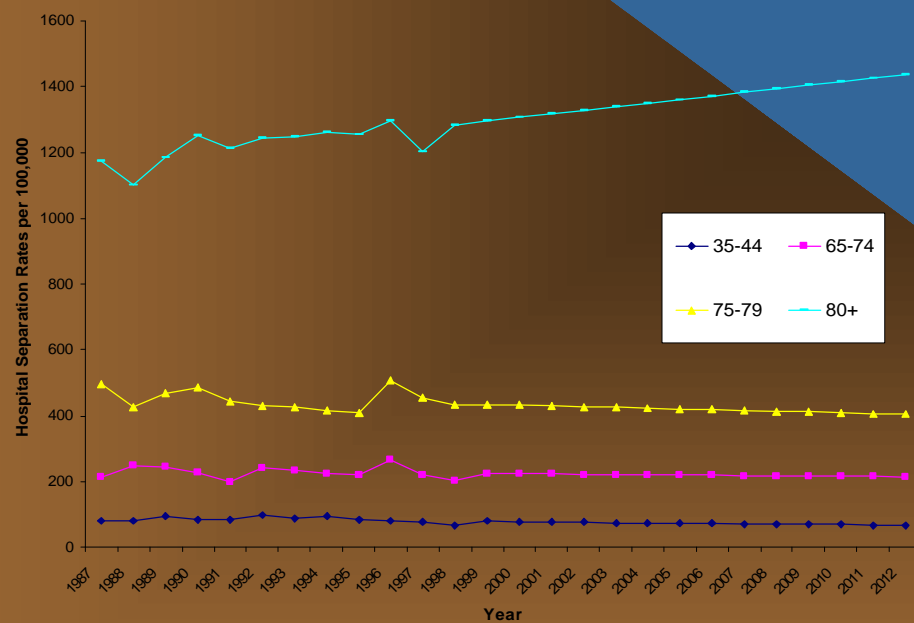
Number of Deaths due to Falls, BC, Males



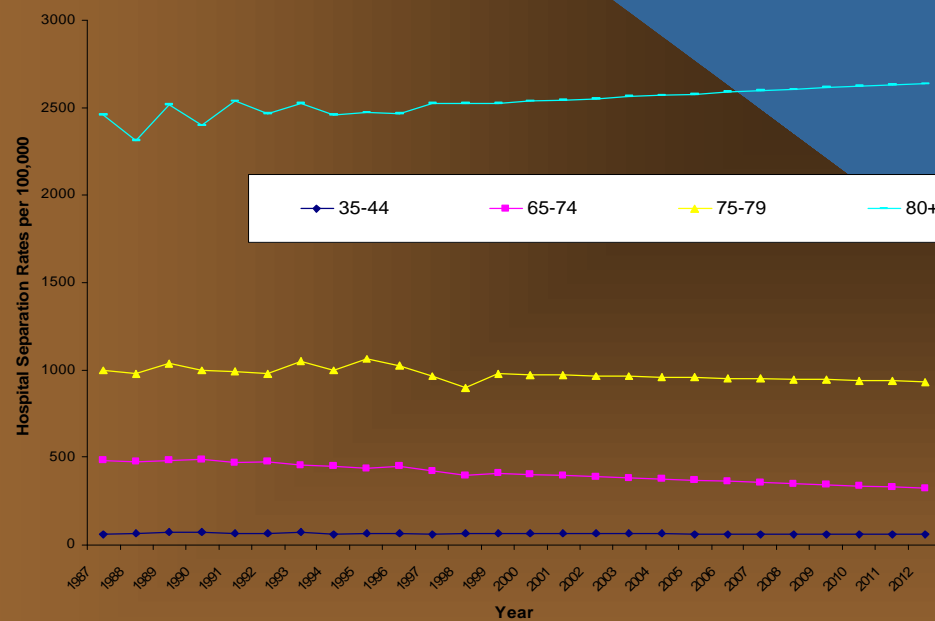
Number of Deaths due to Falls, BC, Females



Hospital Separation Rates per 100,000, BC, Falls, Males, Fractures of the Lower Limb



Hospital Separation Rates per 100,000, BC, Falls, Females, Fractures of the Lower Limb



Priorities for Injury Prevention 25+

Activities	25 - 64	Older	Rural & Remote
Falls		X	
Poisoning			
Burns & Scalds		X	
Sports & Leisure	X		X
Transport	X		X
Self Harm			X
Violence			X

Direct Costs (\$ Millions) resulting from Unintentional Injuries, Canada, 1995-96

<u>Direct Costs</u>	<u>Motor-Vehicle</u>	<u>Falls</u>	<u>All Cause</u>
Hospitalized			
Hosp	36.2	370.4	509.3
Med	31.5	286.0	397.7
Rehab	2.4	18.8	28.0
Non-Hospitalized			
Med	46.7	327.8	626.5
Rehab	31.1	22.0	42.7
Permanent Disability	255.2	1,373.7	2,614.7
Total Costs	375.1	2,398.7	4,218.9

SMARTRISK, 1998

Indirect Costs (\$ Millions) resulting from Unintentional Injuries, Canada, 1995-96

<u>Direct Costs</u>	<u>Motor-Vehicle</u>	<u>Falls</u>	<u>All Cause</u>
Morbidity			
Hosp	1.8	5.4	10.7
Part Perm Dis	190.4	762.8	1,888.2
Tot Perm Dis	137.2	372.4	847.8
Mortality	966.3	64.6	1,771.7
Total Costs	1,295.7	1,205.2	44,518.4

Direct & Indirect Costs resulting from Unintentional Injuries, Canada, 1995-96

	<u>Motor-Vehicle</u>	<u>Falls</u>	<u>All Cause</u>
Direct	\$375,053,007	\$2,398,684,836	\$4,218,967,622
Indirect	\$1,295,719,904	\$1,205,147,771	\$4,518,850,394
Total Costs	\$1,670,772,911 (19.1%)	\$3,603,832,607 (41.2%)	\$8,737,818,016 (100.0%)

Strategies for young children (0-14 years)

- ◆ Playground safety
 - ◆ Surfaces
 - ◆ fall height
- ◆ Issues to consider
 - ◆ Compliance with recommended standards

Strategies Contd...

- ◆ Sports and Recreation
 - ◆ Risk Management plans for sporting facilities
 - ◆ evaluate different equipment (need research)

Strategies for young adults (15-64 years)

- ◆ Despite the apparent size and cost of of the problem in this age group
 - ◆ Paucity of well evaluated interventions

Implications for Prevention: Emerging Priorities

- PREVENTION of injuries occurring in the home and school settings.
- ◆ INTERVENTION that focuses on
 - ◆ development of children
 - ◆ specific hazards at developmental levels particular capacities and limitation of their own children

Are Clinically Based Injury Prevention Interventions Effective?

- Assessment of the effect of intervention on safety behaviors such as:
 - ◆ Bicycle helmet use
 - ◆ “childproofing” practices

Are Clinically Based Injury Prevention Interventions Effective? cont.

- Factors that influence the effectiveness of interventions:
 - Predisposing factors (advice given to concerned population)
 - Enabling factors (strategies demonstrated in schools)
 - Reinforcing factors (subsidies for equipment)
 - Target audience (health of population, age of children, concern of parents)

Home Injury Prevention Practices

- Gielen study (1995), based on 150 interviews
- Mothers expressed strong support for home injury prevention practices
- Factors associated with implementation of prevention practices:
 - family income
 - housing quality
 - environmental barriers
- Skill based interventions needed to help parents living in substandard housing with limited financial resources

Effectiveness of Community Based Injury Prevention Programs

- **PURPOSE:** Evaluate effectiveness of community based childhood injury prevention program to reduce home hazards
- **METHOD:** High risk pregnant women given safety education, home assessment, and safety supplies

Children Can't Fly

- 1972 New York City Health Dept. Pilot program to reduce morbidity and mortality from window falls
- four components:
 - Data Gathering** – voluntary falls reporting system
 - Referrals** - home visits for victims
 - Education** – one-to-one counseling, community, dissemination and instruction, media campaign
 - Prevention Service** – distribution of easy-to-install, free window guards
- In the Bronx, 50% decline in reported window falls over two years; a citywide decline of 35%

Opportunities for Action

- Improve knowledge of long-term consequences of concussions and minor head injuries due to falls
- Study trends in injuries associated with equipment (ie. baby walkers) and conduct a cost-benefit study of the use of hazardous products
- Inform public of safety criteria for home injury prevention (ie. window and stairway safety)