

Crash Analysis 1978-2000

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Presentation design by:

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Reasons Behind Research

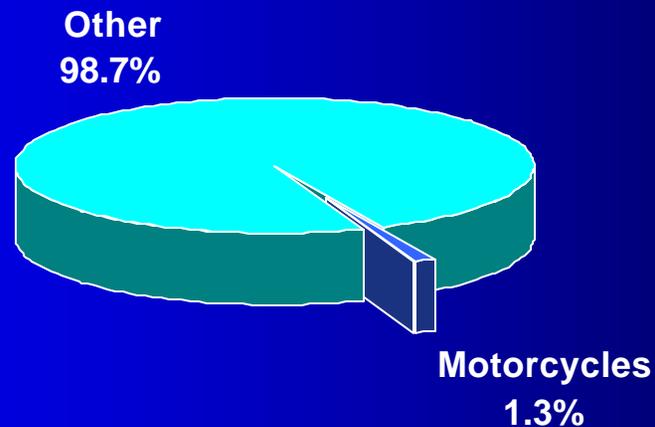
- Crash trend research is essential for proper training of motorcyclists.
- Some long-term myths about crashes can be dispelled through increased research.
- Recent hands on research is needed for more accurate results.

Map of Area Covered



1978-2000

- 15,307 total crashes within area
- 195 were motorcycle related



Break Down by Year 1978-1985

Year	Single Vehicle	MC injuries	Mopeds	Total
1978	3	8	0	11
1979	3	14	0	19
1980	1	11	1	13
1981	0	3	0	3
1982	1	6	0	6
1983	1	9	2	10
1984	4	13	3	14
1985	4	11	2	17

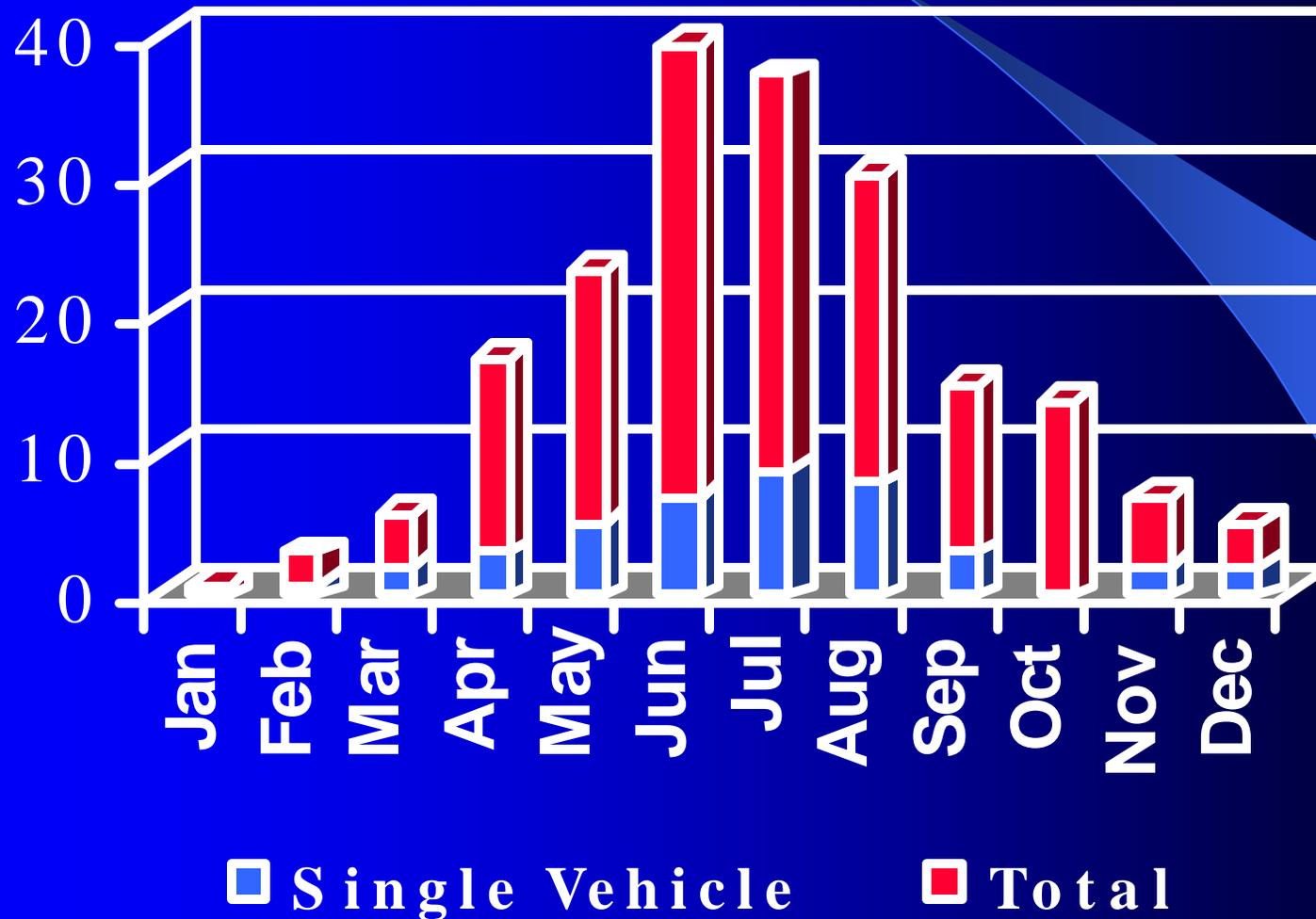
Break Down by Year 1986-1993

Year	Single Vehicle	MC injuries	Mopeds	Total
1986	4	6	0	9
1987	2	6	3	6
1988	1	5	2	10
1989	4	7	1	7
1990	3	8	0	12
1991	1	4	2	5
1992	2	7	2	8
1993	1	5	2	5

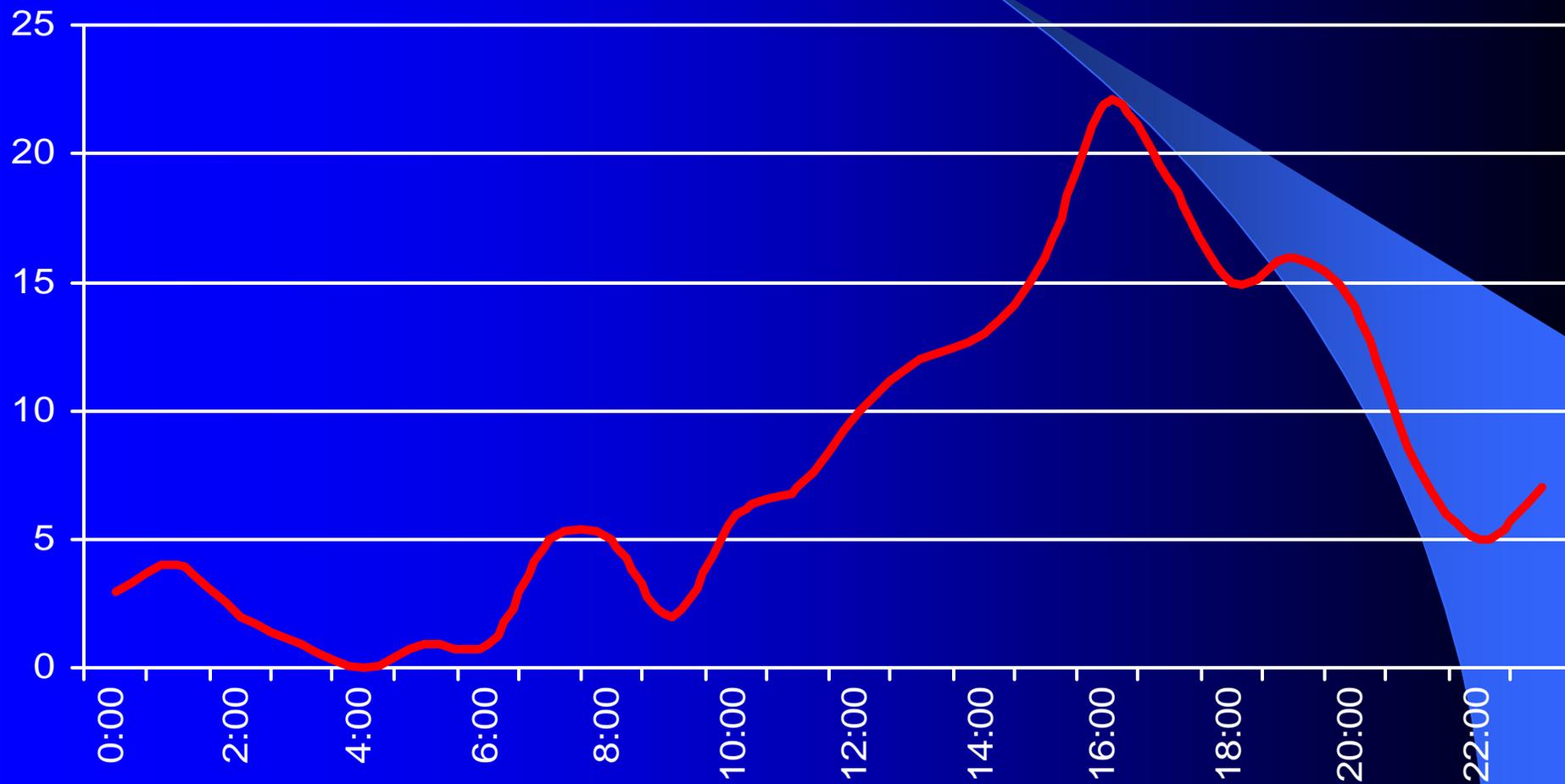
Break Down by Year 1994-2000

Year	Single Vehicle	MC injuries	Mopeds	Total
1994	2	4	1	6
1995	0	1	0	1
1996	1	6	4	6
1997	0	4	0	5
1998	1	6	2	11
1999	2	5	2	5
2000	1	5	0	6
Total	42	154	29	195

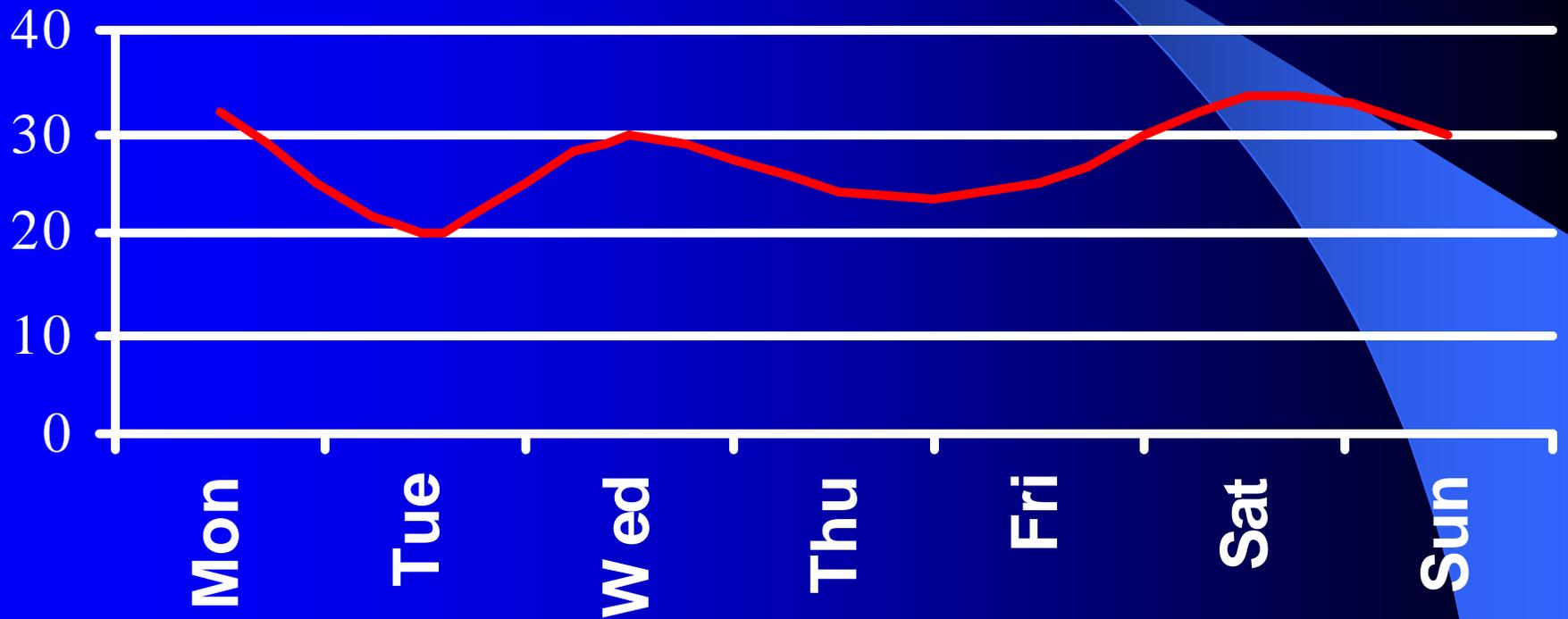
Breakdown by Month



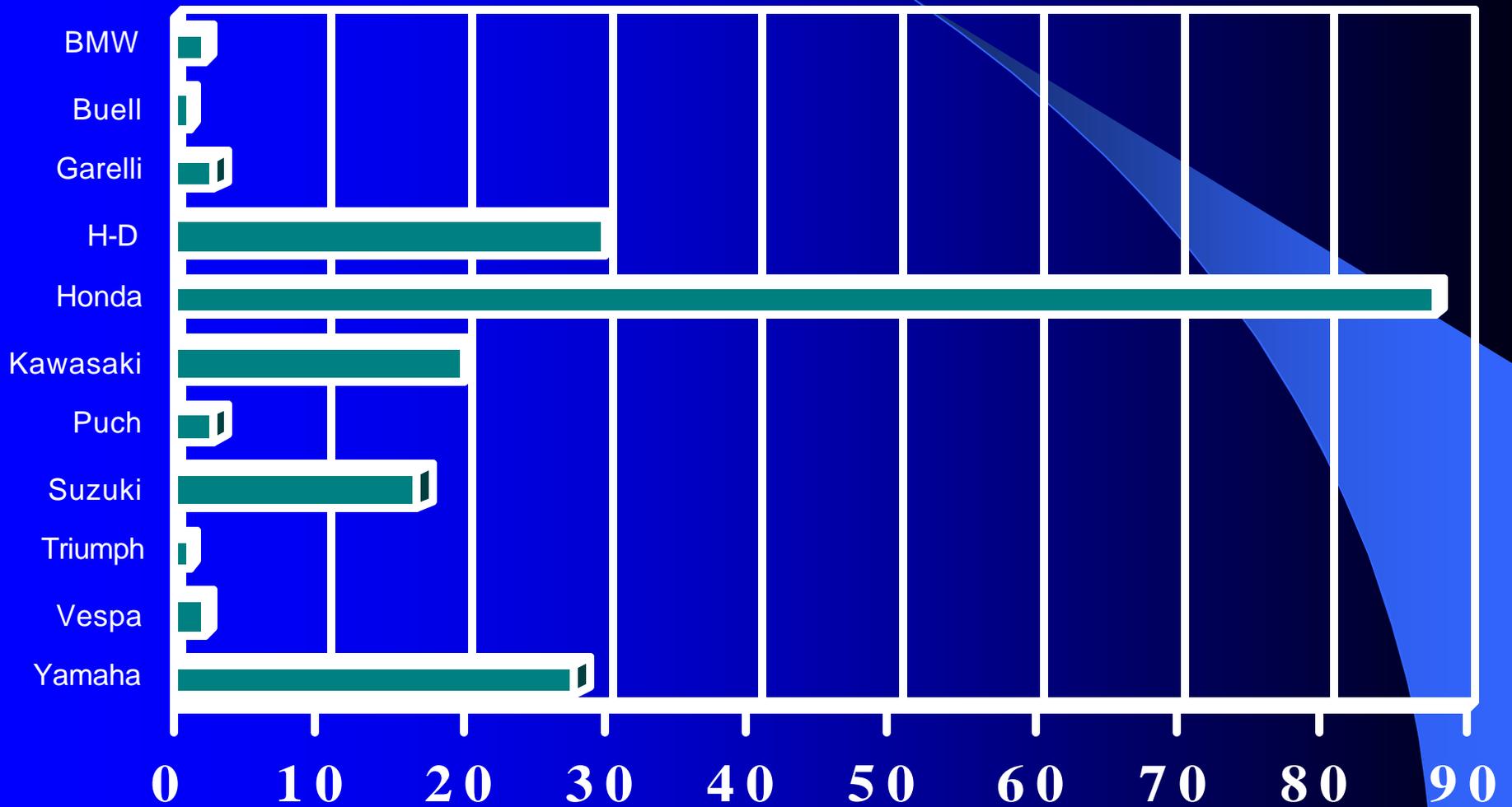
Breakdown by Time



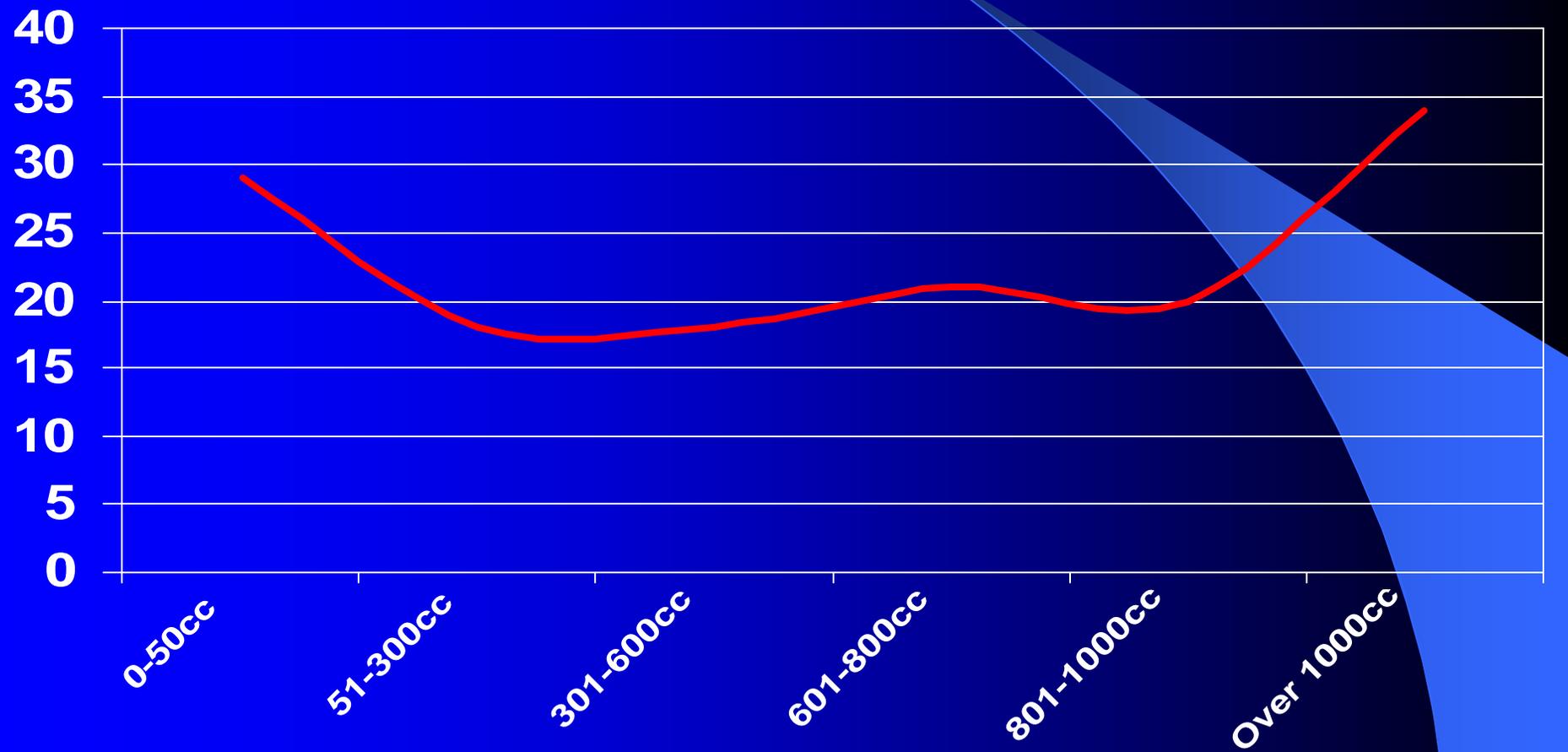
Breakdown by Day



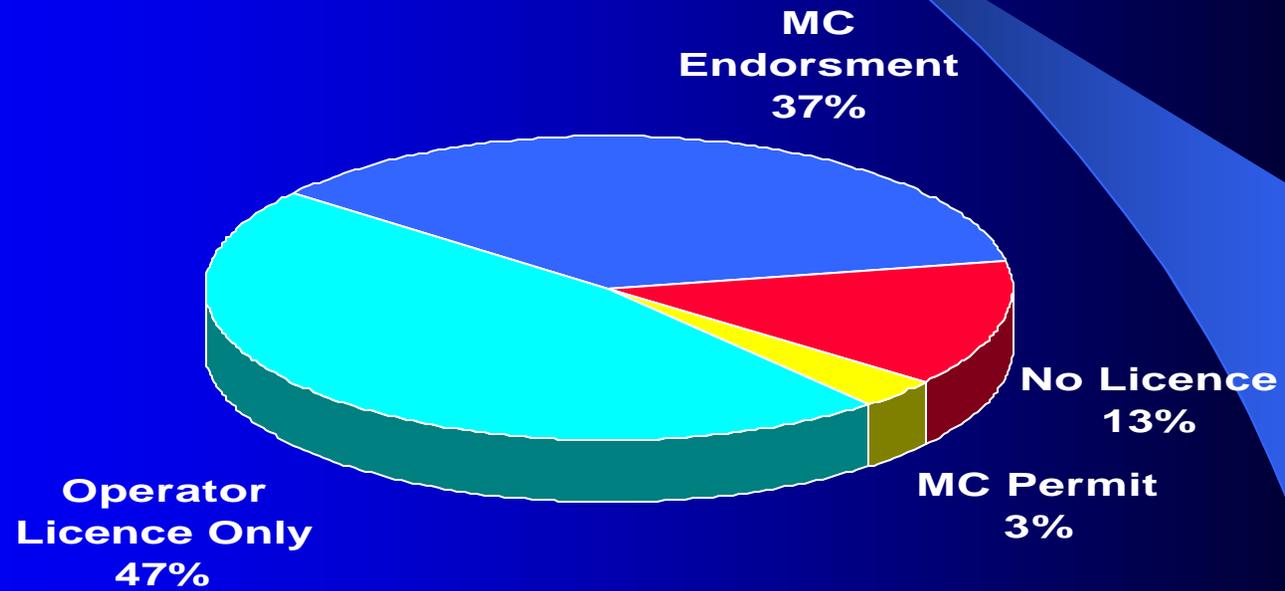
Type of MC



Size of Engine



License Status



Alcohol Involvement

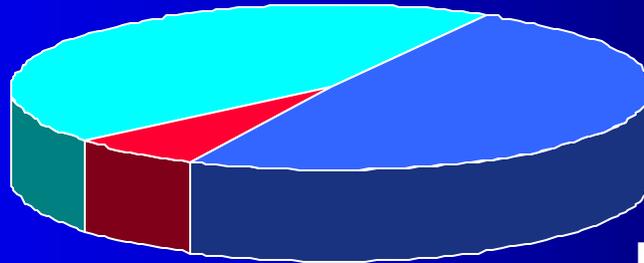
- Motorcycle operators were reported to have consumed alcohol in only 16 of the 195 total crashes.
- 2 of these were below the legal limit of .10% in Indiana.
- Motorcycle alcohol involvement was a direct cause in only 3.1% of all crashes.

Top Crash Locations

Location of Crash	Crashes
2 lane residential	38
4 lane commercial	37
Residential intersection	34
Commercial intersection	31
Rural	15
4 lane residential	12

Primary Fault in Collisions

**Motorcycle
or Moped
44%**



**Shared
7%**

**Vehicle,
Pedestrian
or Other
49%**

Actions of at Fault MC

Action	Crashes
Improper turning	20
Improper speed	14
Improper braking	13
Failure to yield	10
Improper following distance	10
Ran stop signal	7
<i>Forgot to unchain rear wheel</i>	<i>1</i>

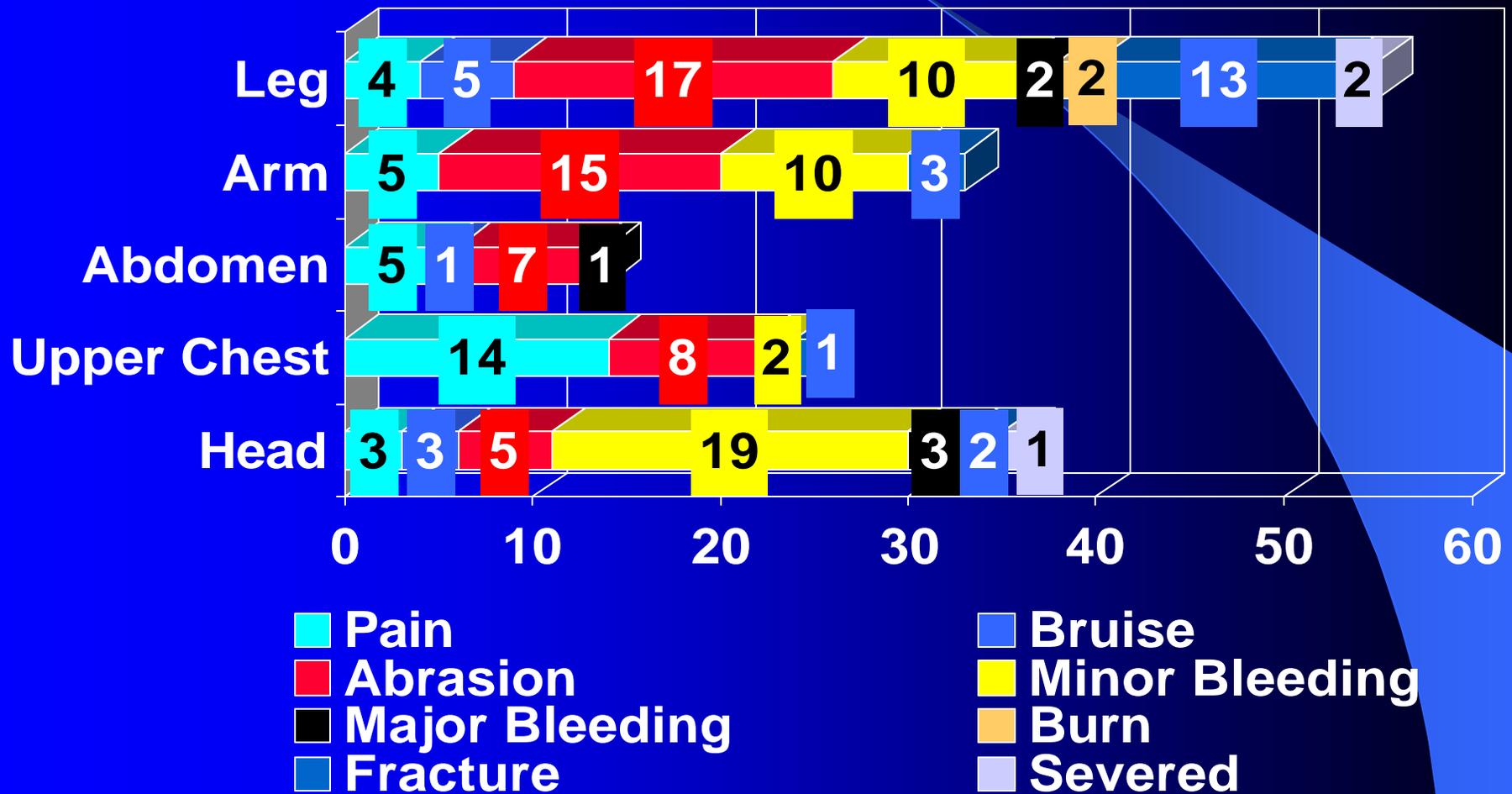
Actions of Other Participants

Action	Crashes
Failure to yield	46
Improper turning	8
Following too close	7
Improper backing	6
D.U.I.	5
Failed to signal	3

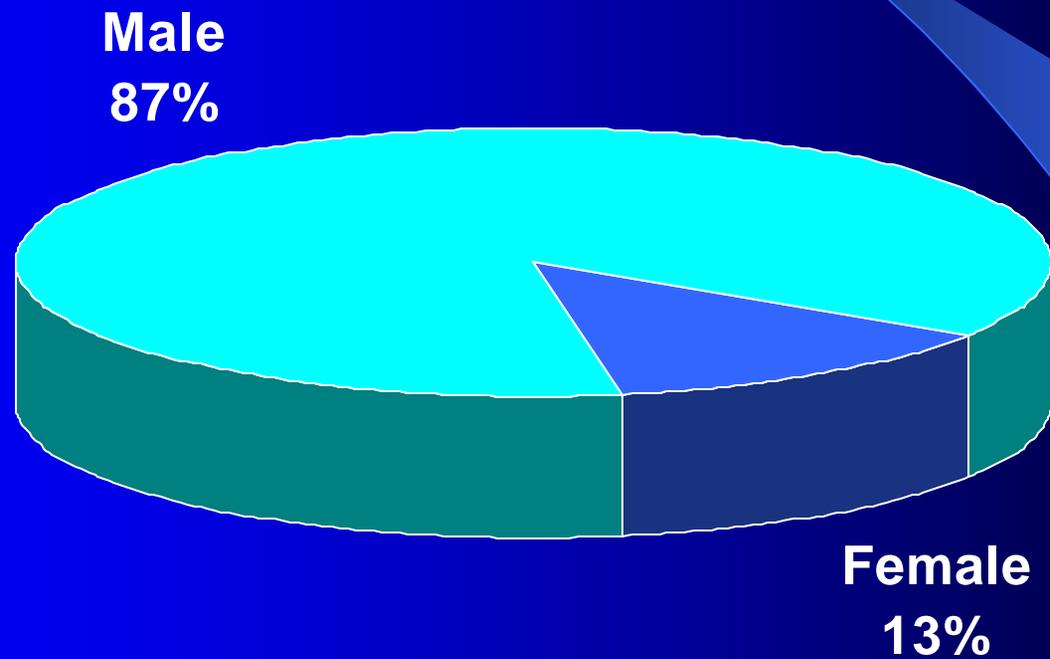
Disputed Faults

Action	Crashes
Turn signal dispute	6
Conflicting story	1
Both vehicles run RR gates	1
Shopping mall	1
Narrow road/Blind curve	1
Wave Around	1

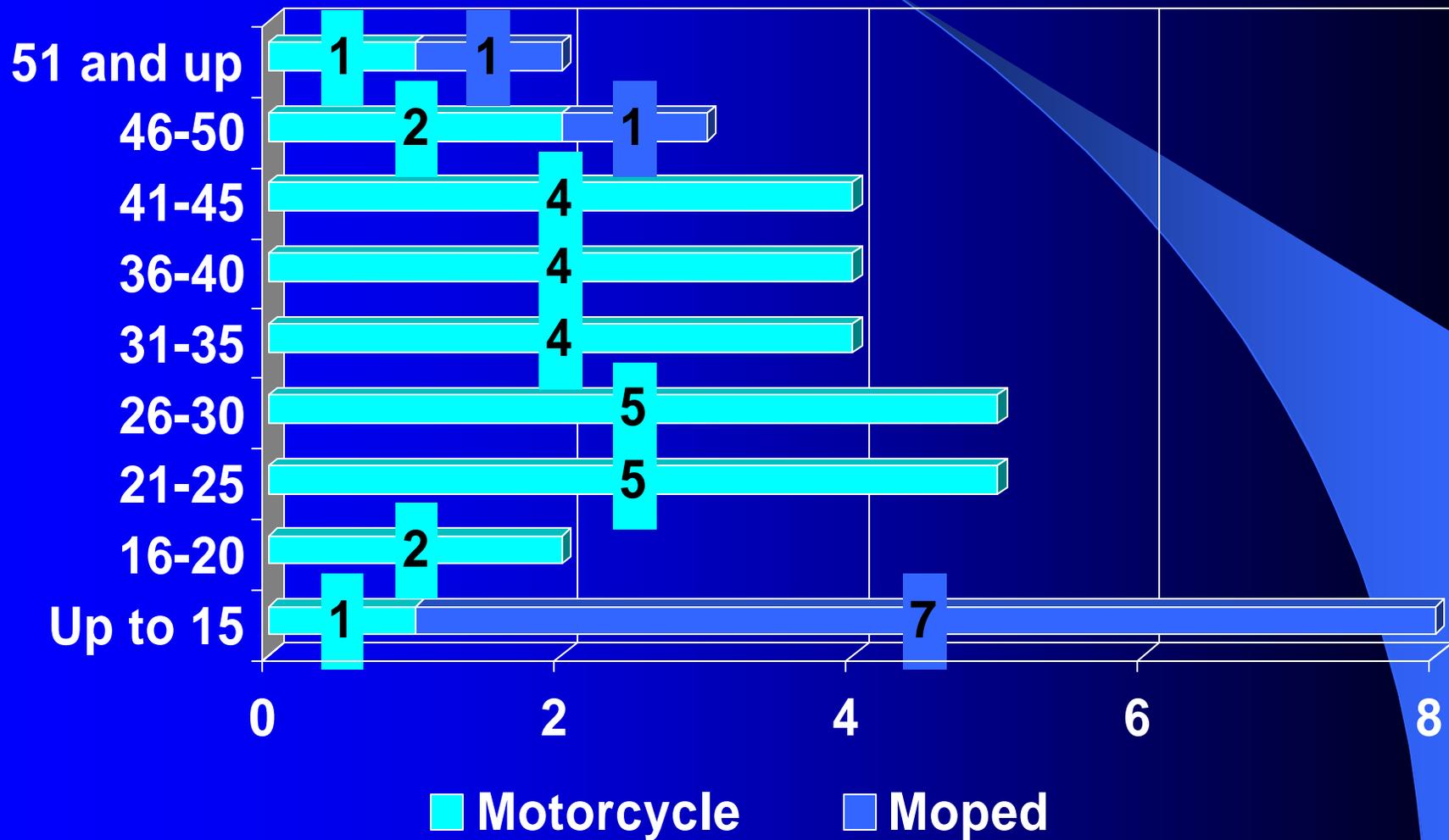
Number of Injuries by Location



Operators Gender Since 1994

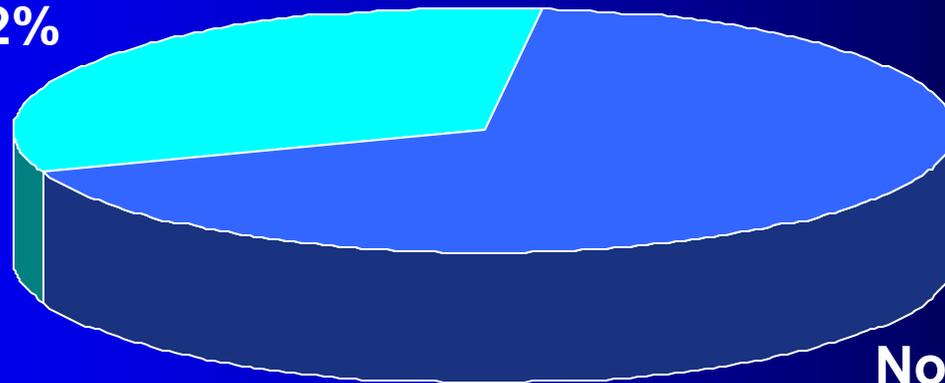


Crashes based on Age



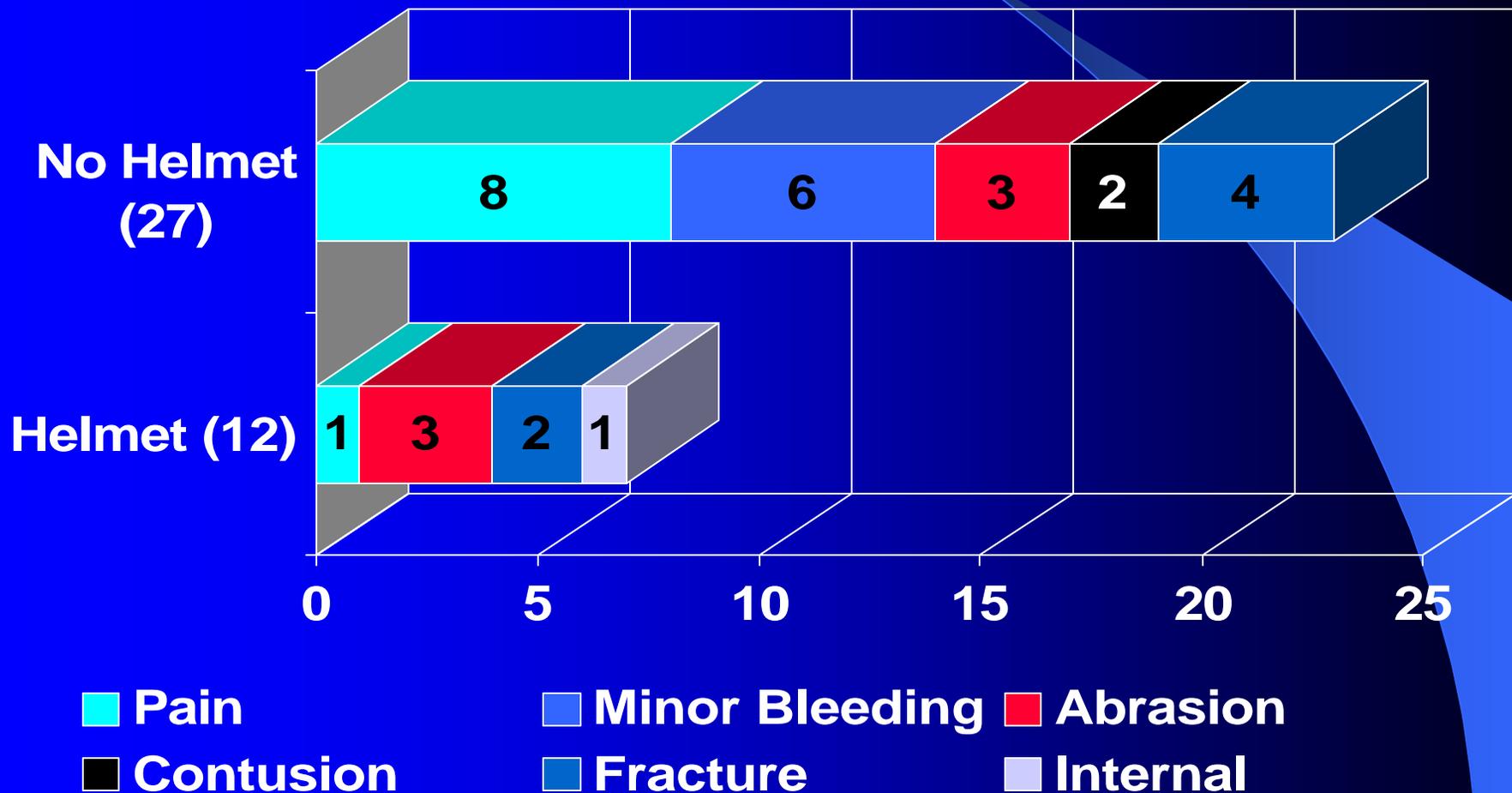
Helmet vs. No Helmet

Helmet
32%



No Helmet
68%

Injury comparison of helmet usage



Officers Involved

MC Experience	Primary	Secondary
MSF Instructor	47 / 24.1%	16 / 8.2%
MC Officer	51 / 26.2%	22 / 11.3%
MC Rider	123 / 63.1%	63 / 32.3%
Reconstructionist	50 / 25.6%	26 / 13.3%

Conclusions

- Almost equal blame is given to MC and other participant in collisions.
- Alcohol use by riders is lower than expected.
- It is a myth that crashes mainly occur early or late in the riding season.
- Sport or racing bikes are under represented.

Breakdown of crashes by year

<u>Year</u>	<u>Total</u>	<u>Single Vehicle</u>	<u>Rider/passenger injuries</u>	<u>Mopeds</u>
1978	11	3	8	0
1979	19	3	14	0
1980	13	1	11	1
1981	3	0	3	0
1982	6	1	6	0
1983	10	1	9	2
1984	14	4	13	3
1985	17	4	11	2
1986	9	4	6	0
1987	6	2	6	3
1988	10	1	5	2
1989	7	4	7	1
1990	12	3	8	0
1991	5	1	4	2
1992	8	2	7	2
1993	5	1	5	2
1994	6	2	4	1
1995	1	0	1	0
1996	6	1	6	4
1997	5	0	4	0
1998	11	1	6	2
1999	5	2	5	2
2000(incl Aug) 7		1	5	0
Totals	196	42	154	29

Breakdown by Month

	Total	Single Vehicle	Rider/passenger injuries	Mopeds
January	1	0	1	1
February	3	1	2	0
March	6	2	5	2
April	17	3	11	3
May	23	5	17	1
June	39	7	30	9
July	37	9	31	3
August	31	8	22	3
September	15	3	13	2
October	14	0	12	2
November	7	2	5	1
December	3	2	4	1
Totals	196	42	154	29

Breakdown by time of day

0000 to 0059	3
0100 to 0159	4
0200 to 0259	2
0300 to 0359	1
0400 to 0459	0
0500 to 0559	1
0600 to 0659	1
0700 to 0759	5
0800 to 0859	5
0900 to 0959	2
1000 to 1059	6
1100 to 1159	7
1200 to 1259	10
1300 to 1359	12
1400 to 1459	13
1500 to 1559	16
1600 to 1659	22
1700 to 1759	19
1800 to 1859	16
1900 to 1959	16
2000 to 2059	14
2100 to 2159	8
2200 to 2259	5
2300 to 2359	7

Breakdown by day of the week

Monday	32
Tuesday	20
Wednesday	30
Thursday	24
Friday	25
Saturday	35
Sunday	30

Type of motorcycle

Size of motorcycle

Honda	88	0 – 50cc	29
Harley-Davidson	31	51 – 300cc	18
Yamaha	28	301 - 600cc	18
Kawasaki	20	601 - 800cc	21
Suzuki	17	801 – 1000cc	20
Puch	3	Over 1000cc	35
Garrelli	3	*Officer did not report size -	55
BMW	2		
Vespa	2		
Triumph	1		
Buell	1		

License status of motorcycle operator

Operator license only (non-rider)	82	
Motorcycle endorsement	64	
Never issued a driver's license	23	*majority mopeds
Motorcycle permit	6	* violations – 2

It was reported that the motorcycle rider had been drinking in only 16 crashes (below legal limit in 2)

Location of reported crashes

1. 2 lane residential streets.....39

2. 4 lane urban/commercial streets.....37

3. Residential intersections.....34

4. Urban/commercial intersections.....31

5. Rural streets.....15

6. 4 lane residential streets.....12

7. Private property commercial.....8

8. Off road.....5 *probably many unreported

9. Rural intersections.....5

10. School zones.....3

11. Major overpass.....2

12. Railroad tracks.....2

13. 4 lane divided.....2

14. Public park.....1

Participant who is primarily at fault in collision

Vehicle/pedestrian/other	81
Motorcycle/Moped	72
Undetermined/shared	11

Actions of at-fault motorcycle/moped

(Collisions and single vehicle together)

1. Improper turning.....	20
2. Improper speed/lost control.....	14
3. Improper braking.....	13
4. Failure to yield right of way.....	10
5. Following too close.....	10
6. Ran stop sign/traffic light.....	7
7. Driving left of center.....	5
8. Operating intoxicated/left road.....	4
9. Improper passing.....	3
10. Improper swerve around obstacle.....	2
11. Object hit rider in the face.....	2
12. Forgot to put kickstand up.....	2
13. Unsafe vehicle/lost control.....	2
14. Rider attention diverted.....	2
15. Off road crash/ lost control.....	2
16. Loose material on surface.....	2
17. Operator inattention.....	2
18. Illegally riding on sidewalk.....	1
19. Small animal encounter crash.....	1
20. No headlight after dark.....	1
21. Forgot to unchain rear wheel.....	1

Vehicle/pedestrian actions

1. Failure to yield right of way...46
2. Improper turning.....8
3. Following too close.....7
4. Improper backing.....7
5. O.W.I./ hit and run.....5
6. Driver inattention.....3
7. Failed to signal intentions.....3
8. Ran stop sign.....3
9. Improper lane usage.....2
10. Too fast for conditions.....1
11. Driver asleep.....1
12. Driving left of center.....1

Disputed or shared fault

1. Turn signal dispute.....6
2. Conflicting story at signal.....1
3. Both vehicles avoid RR gates....1
4. Narrow road/view obscured.....1
5. Shopping mall collision.....1
6. "Wave around" m/c pass imp....1

Location and type of reported injuries

	Head/face	Shoulder/upper chest	Abdomen/hip	Arm	Leg
Pain	3	14	5	5	4
Bruise	3	0	1	0	5
Abrasion	5	8	7	16	17
Minor bleeding	19	2	0	10	10
Major bleeding	3	0	1	0	2
Burn	0	0	0	0	2
Fracture	2	1	0	3	14
Severed	1	0	0	0	2

Sex of Riders *since 1994

Male 33

Female 5

Age of Rider *since 1994 (m denotes moped)

13 – 1
13m – 1
14m – 1
15m – 5
18 – 1
20 – 1
21 – 1
22 – 2
24 – 1
25 – 1
26 – 2
27 – 1
28 – 1
29 – 1
31 – 2
32 – 1
34 – 1
38 – 1
39 – 2
40 – 1
41 – 1
42 – 1
44 – 2
48 – 2
49 – 1
49m – 1
54 – 1
54m – 1

Helmets (Data since 1994)

Yes – 12

Injuries:

None – 4

Pain – 1 (shoulder)

Abrasion – 3 (leg 2, hip 1)

Fracture – 2 (neck 1, extremity 1)

Internal – 1 (chest)



No Helmet – 27

Injuries:

None – 5

Minor bleeding – 6 (head 4, arm 2)

Pain – 8 (hip 3, shoulder 2, back 1, neck 1, entire body 1)

Abrasion – 3 (arm 2, leg 1)

Fracture – 4 (extremity 3, shoulder 1)

Contusion – 2 (head 1, hip 1)

Investigating Officers

	<u>Primary</u>	<u>Assists</u>	<u>Total</u>
1. McCarter* (pm/c,I,MSF,R)	20	5	25
2. Kuhn** (pm/c, I, MSF, R)	15	9	24
3. Heinzman (m/c) ret a	14	4	18
4. Vanek* (R)	7	8	15
5. Messinio* (m/c, R)	8	4	12
6. Daugherty (m/c) ret a	10	1	11
7. Gulley** (m/c)	9	2	11
8. Mele ret a	8	3	11
9. LaBuda*	6	5	11
10. Schoon ret a	9	1	10
11. Hardacker** (m/c)	6	4	10
12. Starcevich** (m/c)	6	3	9
13. Maze (m/c) ret a	0	9	9
14. Bailey** (m/c)	6	3	9
15. Kottka* (m/c)	4	4	8
16. Grimmer* (pm/c, MSF)	7	0	7
17. Schroeder ret a	7	0	7
18. Teeling (pm/c, MSF) ret a	5	2	7
19. Argadine* (m/c)	4	2	6
20. Degard ret a	4	2	6
21. Gang** (pm/c)	4	2	6
22. Litke**	4	2	6
23. Segally ret a	3	2	5
24. Gill*	3	2	5
25. Stevens**	5	0	5
26. Bertuca (m/c)	5	0	5
27. Martin ** (pm/c)	1	4	5
28. Rentas**	3	0	3
29. Burrow**	3	0	3
30. Smith res a	3	0	3
31. Markovich ret u	2	0	2
32. Pfeiffer**	1	1	2
33. Mowery, Jr**	1	1	2
34. Moore**	1	1	2
35. Madejczyk ret u	1	0	1
36. Swetz res u	1	0	1
37. Mowery, Sr ret a	0	1	1
38. Bottiger**	0	1	1

** = current uniform officer

* = officer assigned to other duty

pm/c = police motor officer

m/c = motorcycle experience

I = instructor

R = crash reconstruction

MSF = Motorcycle Safety Foundation

ret = retired (a available, u unavailable)

About this survey

Griffith, Indiana is a diverse community located approximately twenty-five miles southeast of Chicago, near the shores of Lake Michigan. The expanding railroads brought its first settlers in the early 1850's. Griffith grew because of industry located in the south part of town, near the railroad access. As Chicago and northwest Indiana grew, oil pipelines, foundries, and steel mills sprung up to fuel and support this surge. The Michigan Southern, New York Central, Baltimore and Ohio, Elgin Joliet and Eastern, Grand Trunk, and the Chicago and Erie now joined the Erie and Kalamazoo railroad that was first installed in 1852. At one time, more railroads and tracks intersected at one crossing in Griffith than at any other point in America.

The town of Griffith was incorporated in 1904, about the time the first Harley-Davidson roared down a midwestern road. The first marshal was hired in 1905. As the town grew, the need for a more professional police organization was needed, and a state recognized metropolitan police department was created in 1956. The town has continued to grow, and as we enter the new decade the staff of the Griffith Police Department will reach 40. The area the officer's patrol contains an airport, factories, paper plants, oil companies, and rural areas in the south. The north includes shopping malls, large apartment complexes, and restaurants. A large residential area lies in between. Griffith has all types of roads, a 4 lane divided highway, major intersections, commercial areas, and residential streets. Also located in its boundaries are many local and county parks, along with a vast wooded area frequented by dirt and ATV motorcycles.

The crashes studied and enclosed in this paper are solely prepared by the Griffith Police Department, of which I am a member. There are some collisions not included that have been investigated by the Lake County Police Department and the Indiana State Police. This study may be different in the fact that all data is gathered by myself as I studied the actual original report. Approaching my fellow officers could rectify any errors or confusion. I hope this gives the report some authority and credibility. The study begins in 1978 and runs through June 2000. This time frame was picked to co-incide with the history of motorcycle safety training in Indiana.

Mopeds are included in this study because of similar dynamics to motorcycles. I hope you find it useful and interesting.

Summary

Over the past years, I have attended many seminars and conferences. Accident surveys have been presented at many of these, and recently it seems that many of these surveys have been slanted to suit the organization that paid for it. Although this study is small in numbers, it is a thorough one. I have been on scene at the crash, or handled and studied each report. If questions arose, I was able to review them with the investigating officer. The results are evident here.

A few more points need to be addressed. First, single vehicle motorcycle crashes are probably much higher than indicated. Many times we receive a report of a motorcycle down only to arrive and find nothing. I believe the reason for this is that the rider is embarrassed to have crashed alone and simply leaves the scene. Perhaps the rider has no insurance coverage to compensate his damages. Second, the area of injuries was given special attention. I researched each report to get a precise location and type of injury. Many studies just rely on computer data.

Although this is probably far from a scientific study, I feel several important observations can be made. I admit to being surprised at many of these findings:

1. Almost equal blame is given to the motorcycle and opposing participant in collisions.
2. Most crashes occur in the late afternoon.
3. Alcohol use by riders is lower than I expected.
4. Residential crashes are higher than I anticipated.
5. Leg injuries are the most common.
6. Most motorcycle riders involved in crashes cannot brake or corner properly.
7. Crashes are spread out evenly over all days of the week.
8. It is a myth that crashes mainly occur early or late in the riding season.
9. Sport or racing bikes are under represented.

The findings that I am not surprised at are in the licensing section. It is clear that riders involved in crashes have not been properly trained, and in most cases have not even been properly licensed by the state. The fact that strikes me most is that in every crash, (even those that the cyclist was not at fault), the skills and knowledge from a motorcycle safety class could have helped a rider avoid a collision. I am convinced that more emphasis should be placed on training and education, and less on mandatory helmet laws and insurance issues.

Finally, I believe much more study is needed. The last comprehensive study that I am aware of is outdated. The Hurt report was important in its time, but is now several years old. A larger study than mine is needed. However, this study should be as detailed as the Hurt report was, and include on scene investigations by teams in cooperation with the local police and hospitals. Thank you for your consideration in this matter.

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