Prevention of Motorcycle Injuries in Africa: Case of West Africa and Ghana

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Overview of Presentation

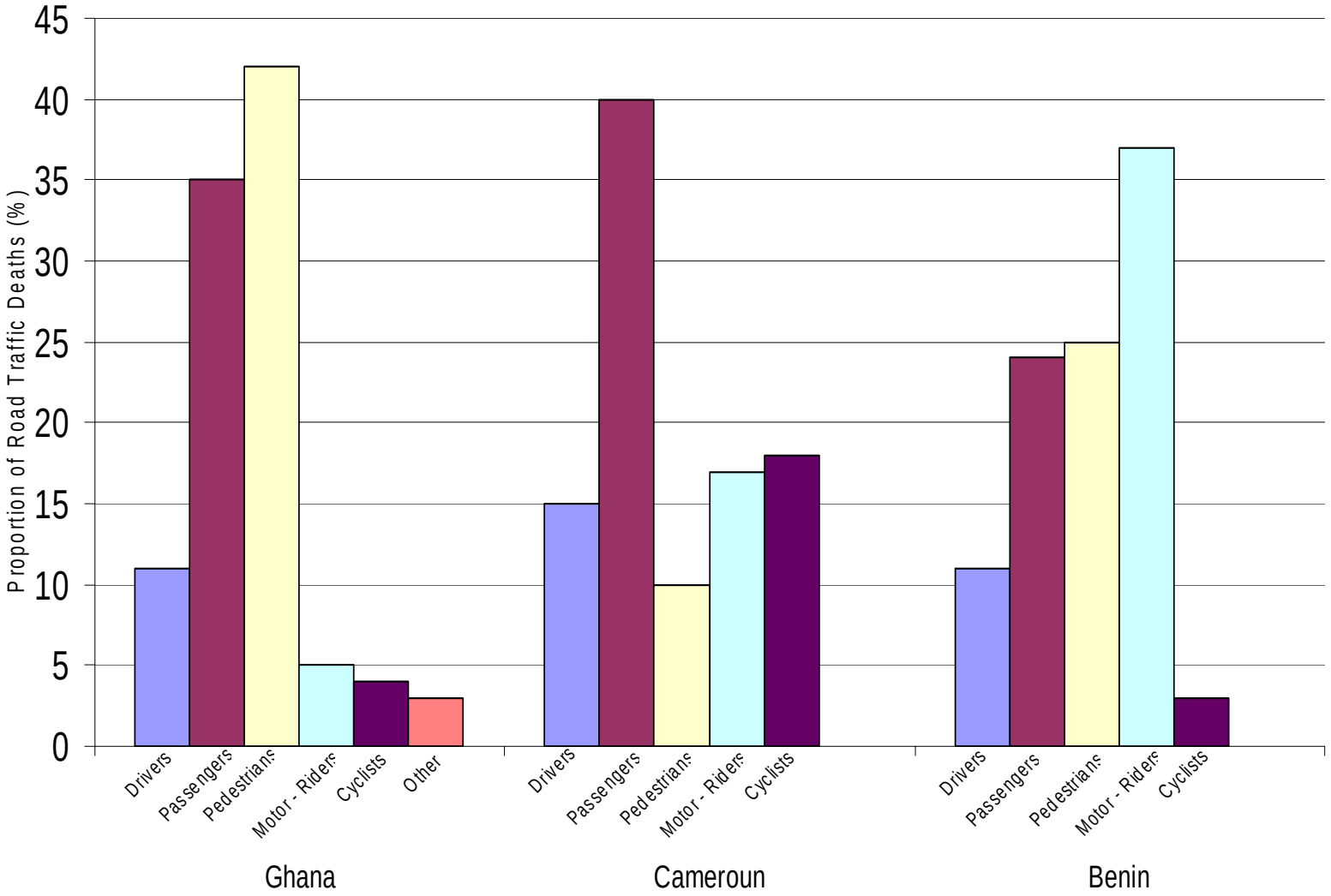
- General background
- Road traffic injuries pattern in selected West African Countries
- The Ghanaian RTI situation
- Strategies for prevention
- Conclusion

General Background

- In most West African countries the use of motorcycles as personal means of transport has become popular due to
  - Cost compared to automobile
  - Short to medium distance personal travels needs
  - Manoeuvrability and convenience- Time budget and low cost infrastructural needs
  - Congestion in large cities

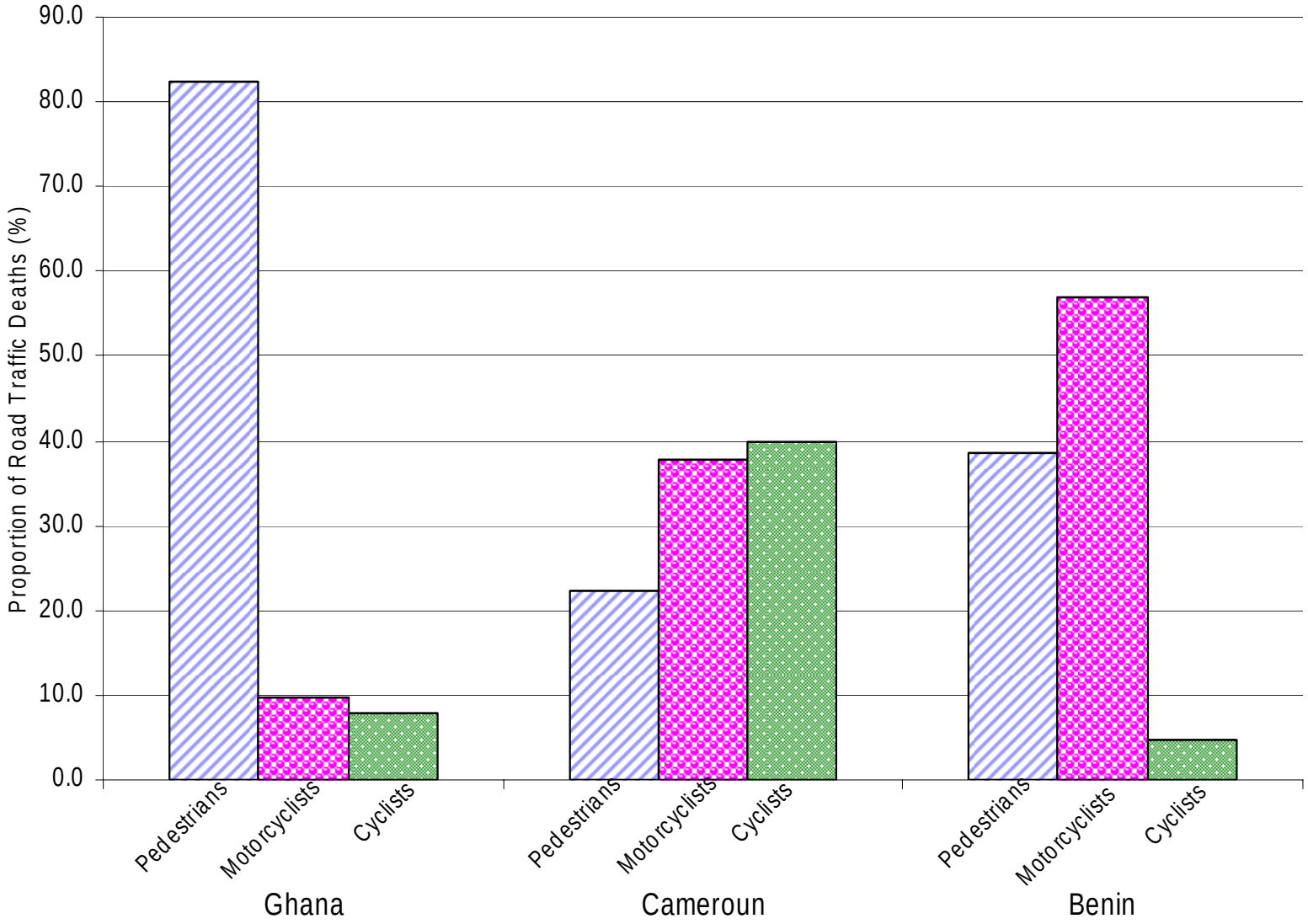
  The issue of personal safety is mostly not considered

Distribution (%) of Traffic Deaths By Transport Participants in Ghana, Cameroun & Benin



Source: WHO, 2009

Distribution (%) of Traffic Deaths By Vulnerable Road Users in Ghana, Cameroun & Benin



Source: WHO. 2009

The motorcycle injuries situation in Ghana

- The general pattern
- Factors affecting MC injuries in northern parts of Ghana
- Risk factors
- Cost effective strategic interventions

Table 1. Regional Distribution (%) of Killed and Serious injuries (KSI) by Road User Class in Ghana (2004 – 2008)

Region	Pedestrian	Car Occupant	Goods Veh. Occp	Bus/ Minibus	Motor cyclist	Pick-Up Occupants	Cyclist	Other
Ashanti	33.2	12.8	10.4	34.4	4.2	2.4	1.9	0.7
Brong Ahafo	22.5	16.5	16.4	27.6	6.8	3.3	5.5	1.4
Central	35.2	15.5	6.7	34.5	2.6	2.8	2.6	0.2
Eastern	28.6	17.5	10.8	33.6	3.1	3.1	2.8	0.7
Greater Accra	45.1	15.3	3.7	21.8	7.8	2.1	3.9	0.4
Northern	11.4	7.8	31.0	25.6	12.5	5.2	4.8	1.6
Upper East	18.8	5.8	11.9	15.4	30.4	6.8	10.2	0.7
Upper West	14.4	9.5	14.4	19.9	24.5	11.4	5.9	0.0
Volta	22.3	14.6	7.7	40.9	5.9	4.8	3.4	0.5
Western	27.0	16.2	13.8	31.4	5.3	3.0	2.8	0.4
Whole Country	30.8	14.6	10.5	30.4	6.4	3.2	3.4	0.6

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Table 2. Motorcycle Injuries by Road Location Environment in Northern Ghana (2004 - 2008)

Road Location	Killed	Serious	Slight	Total	F.I
Urban	143	356	239	**738**	19.4
Rural	36	55	26	**117**	30.8
Village	108	164	81	**353**	30.6
Total	**287**	**575**	**346**	**1208**	23.8
%	**23.8**	**47.6**	**28.6**	**100.0**	

Table 3. Motorcycle Injuries by Time of Day in the Northern Ghana (2004 - 2008)

Time of Day	Killed	Serious	Slight	**Total**	F.I
00 - 02	6	4	2	**12**	50.0
02 - 04	2	2	1	**5**	40.0
04 - 06	8	7	3	**18**	44.4
06 - 08	17	32	23	**72**	23.6
08 - 10	21	40	47	**108**	19.4
10 - 12	23	60	34	**117**	19.7
12 - 14	29	60	35	**124**	23.4
14 - 16	25	75	47	**147**	17.0
16 - 18	31	102	46	**179**	17.3
18 - 20	50	92	68	**210**	23.8
20 - 22	53	77	32	**162**	32.7
22 - 24	23	26	8	**57**	40.4
Total	**288**	**577**	**346**	**1211**	23.8
%	**23.8**	**47.6**	**28.6**	**100.0**	

Table 4. Motorcycle Injuries by Collision Mechanism in Northern Ghana (2004 - 2008)

Collision Type	Killed	Serious	Slight	**Total**	F.I
Head On	63	70	31	**164**	38.4
Rear End	64	153	85	**302**	21.2
Right Angle	55	94	71	**220**	25.0
Side Swipe	13	106	59	**178**	7.3
Ran Off Road	19	22	14	**55**	34.5
Hit Object On/Off Road	11	9	2	**22**	50.0
Hit Parked Vehicle	4	3	8	**15**	26.7
Hit Pedestrian	38	100	66	**204**	18.6
Animal	11	10	7	**28**	39.3
Other	10	10	3	**23**	43.5
Total	**288**	**577**	**346**	**1211**	23.8

Table 5. Motorcyclists Injuries by Other Vehicles involvement in Northern Ghana (2004 - 2008)

Vehicle Involved	Killed	Serious	Slight	**Total**	F.I
None	50	48	22	**120**	**41.7**
Car	2	26	29	**57**	3.5
Heavy Goods Veh	3	7	4	**14**	21.4
Bus	4	9	5	**18**	22.2
Motor Cycle	114	296	168	**578**	19.7
Bicycle	18	27	16	**61**	**29.5**
Other	0	2	1	**3**	0.0
Total	**191**	**415**	**245**	**851**	**22.4**

Table 6. Estimates of relative risk of death of motorcyclists in Northern Ghana

Category	Fatal	Non Fatal Injuries	Relative Risk (RR)	p - value
User Status				
Passenger	29	157	-	-
Driver	192	514	1.74	0.001
Gender				
Female	16	71	-	-
Male	205	600	1.38	0.147
Vehicle Type				
Car Occupant	52	453	-	-
Motorcyclist	221	671	2.41	0.000
Road Environment				
Urban	114	443	-	-
Rural	25	59	1.45	0.054
Village	82	167	1.61	0.000
Time of Day				
6am - 12 noon	45	163	-	-
12 noon - 6pm	65	268	0.9	0.552
6pm - 12 midnight	98	230	1.38	0.036
12 midnight- 6am	13	10	2.61	0.000
Age				
< 16	4	16	0.76	0.527
16 - 25	46	177	0.78	0.105
26 - 45	117	327	-	-
46 - 60	33	65	1.28	0.143
> 60	6	7	1.75	0.113
Unknown	15	79	0.61	0.033

Strategies for prevention

- Safety system approach
- Haddon’s matrix approach
- Traffic safety cycle consideration

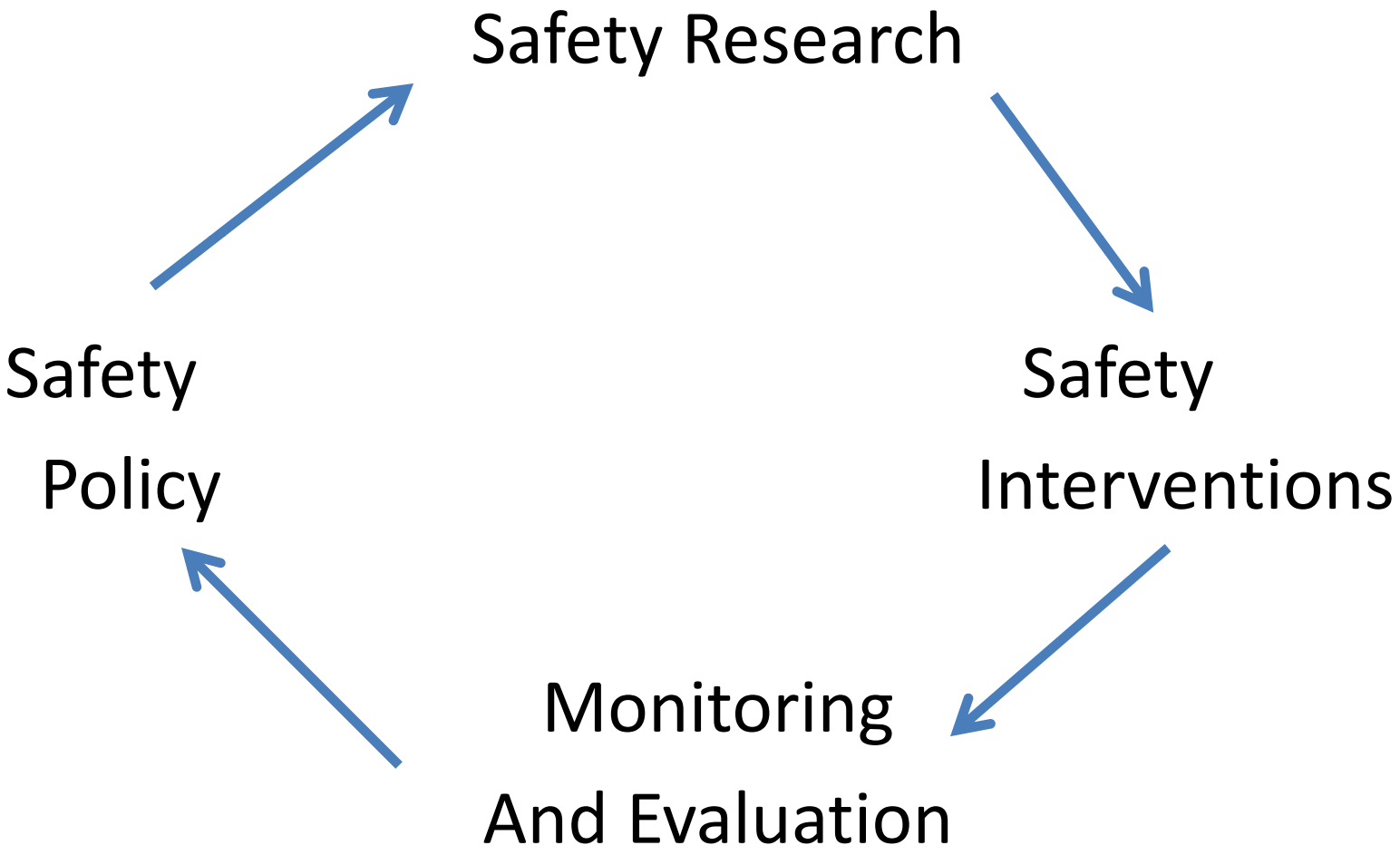
The safety system approach

- Human-Vehicle-Environment interfaces
- 3 Es
  - Engineering: modification of road infrastructure; street lighting
  - Education and training
  - Enforcement of traffic laws and regulations
  - (Emergency services)

The Haddon's Matrix

- The crash events: pre-crash, crash and post crash events
- Host-vector-environment interactions

The Road Safety Cycle



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The Road Safety Cycle

• Safety Research	• Safer roads, safer vehicles and road user behaviour
• Safety intervention	• Passive and Active interventions (air bags, seatbelts, speed humps, etc). Improved roads and vehicles.
• Monitoring & Evaluation	• Before and after studies; Trend analysis; Statistical models & tests.
• Safety Policy	• BAC levels; Seatbelt use; Speed controls; Vehicle inspections, etc

Conclusion

- Motorcycle injuries can be prevented in Africa, and in particular in Ghana in West Africa by modifying the road networks, improving street lighting and enforcing the use of standard crash helmets to ensure the safe movements of motorcyclists

Thanks for listening