Iowa's Accident Location and Analysis System (ALAS) and Location Tool

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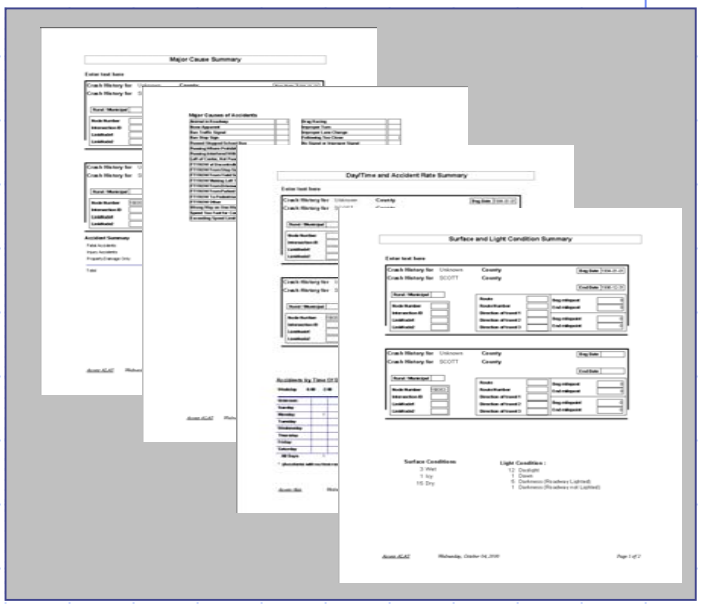
Iowa Department of Transportation

CTRE Center for Transportation Research and Education

ALAS “tool-kit”

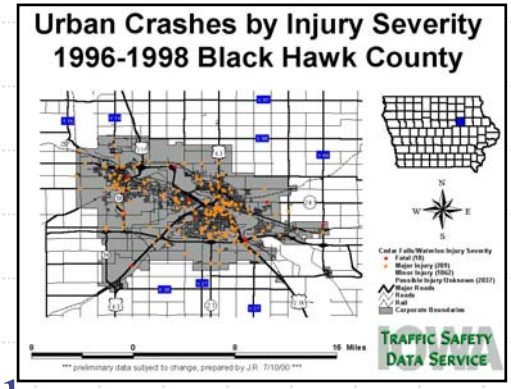
- Access-ALAS (free)
- GIS-ALAS (free, but requires ArcView)
- Intersection Magic (IMW) (free, statewide license)
- CARE (Alabama) (coming soon, free, statewide license)
- Iowa Traffic Safety Data Service (ITSDS) (free, but major sponsors get top priority)

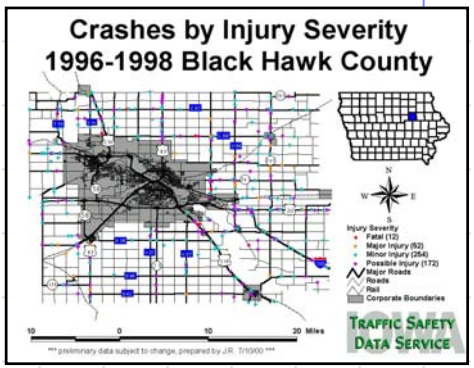
Access-ALAS



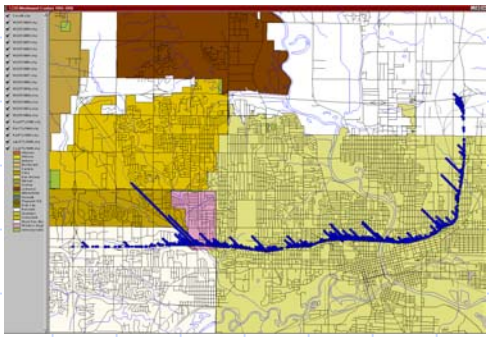
- MicroSoft Access-based
- Written in-house @ Iowa DOT
- Run-time and freely distributed
- Intended for less sophisticated users
- Uses old node-link location system
- Produces tabular reports
- Map front-end nearly completed (negates need for node-link location system)
- Planning of other updates in the works
- 250+ current users

GIS-ALAS

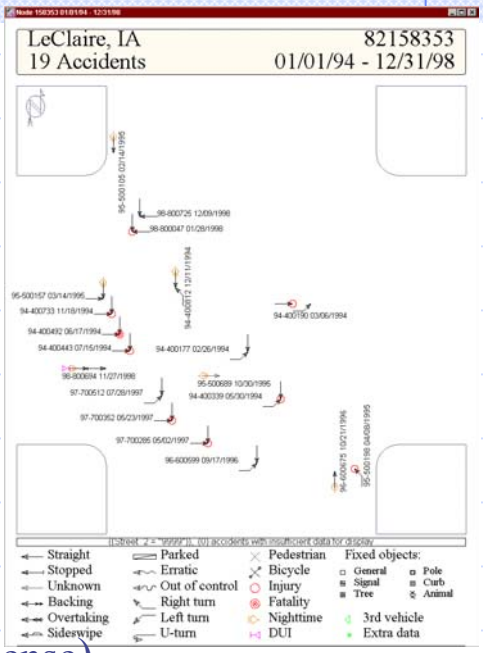




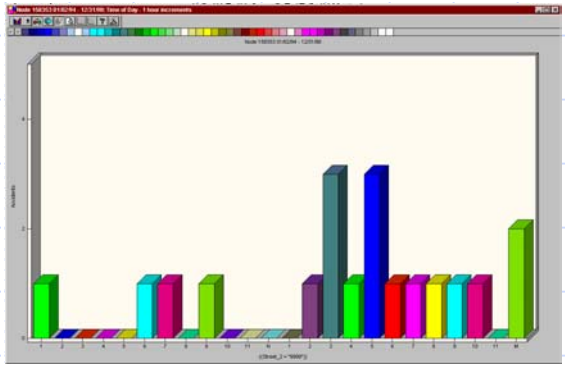
- ESRI ArcView GIS-based
- Written by CTRE and in-house @ Iowa DOT
- Freely distributed project/extension (but requires an ESRI ArcView license)
- Intended for more sophisticated users
- Allows user to add own additional layers
- Produces tabular reports and maps
- Configuration files to facilitate data updates (e.g., MMUCC)
- Updates currently underway (completion < 6 months)
- ~20 Beta users

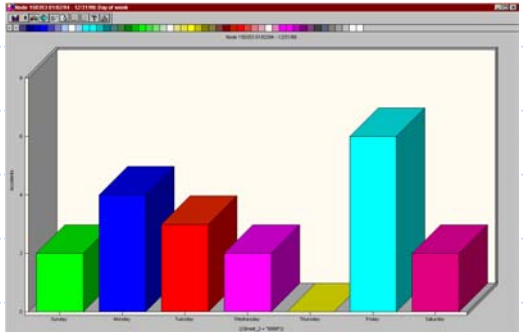


Intersection Magic

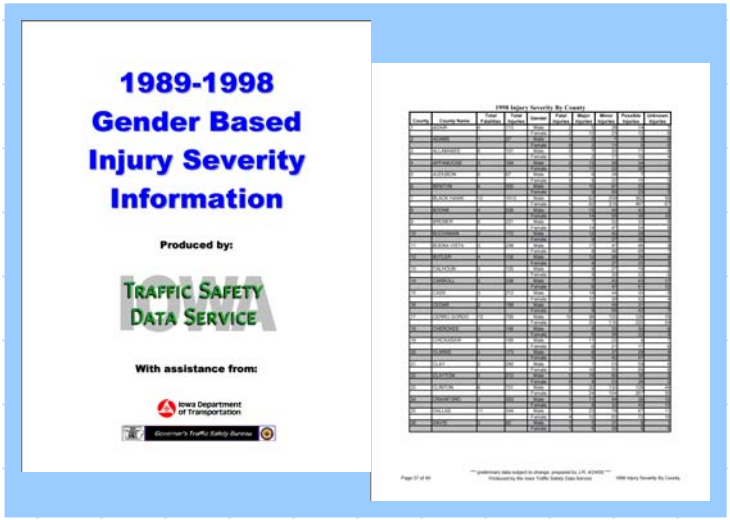


- Vendor software (Pd' Programming)
- Configuration files updated by Iowa DOT
- Freely distributed (within constraints of Iowa statewide license)
- Intended for all users
- Uses old node-link location system
- Produces intersection collision diagrams and tabular reports
- Planning of updates in the works
- 100+ current users

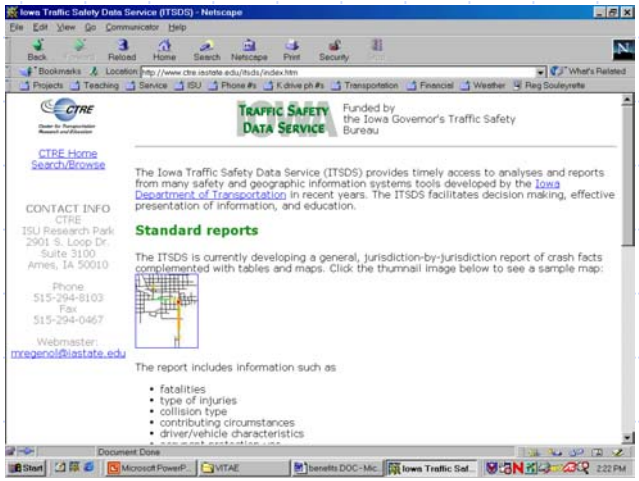


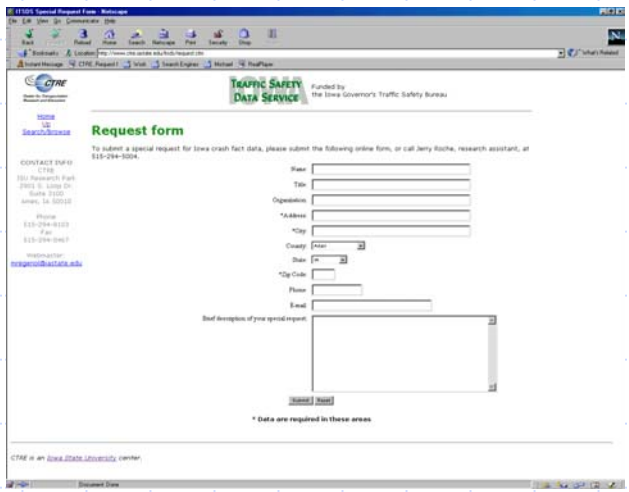


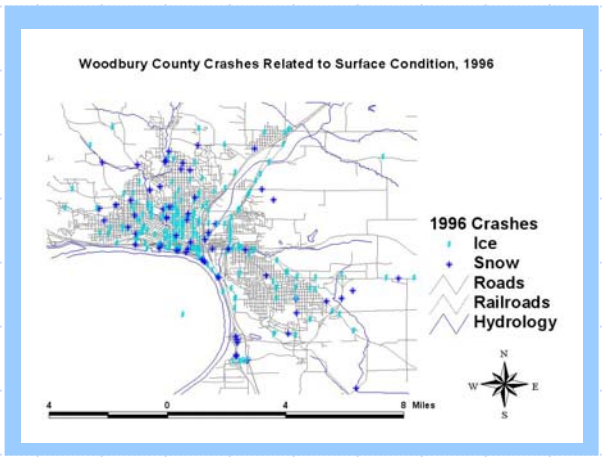
ITSDS



- Operated at CTRE
- Paid for by Iowa GTSB
- Responds to requests from any entity needing crash data
- Produces maps and tabular reports for requesting entities







Hotline: (515) 294-5004

E-mail: itsds@iastate.edu

Web: www.ctre.iastate.edu/itsds

CARE

- "Vendor" software (University of Alabama)
- Statewide license and set-up in progress
- Freely available (within constraints of Iowa statewide license)
- Intended for all users
- Produces tabular reports and graphics
- Iowa usage mainly for system-wide and statewide analyses

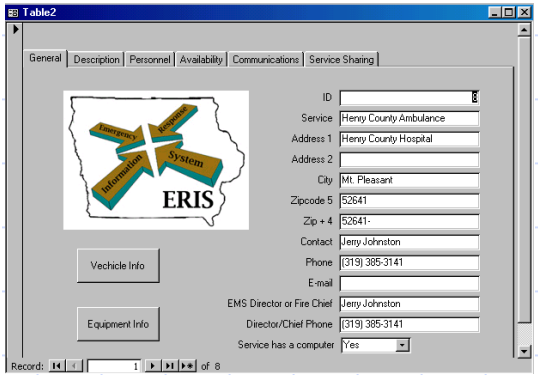
ALAS Steps

- Indicate desired location
- Refine query/search parameters
- Request report
- Further refine/save/discard/print

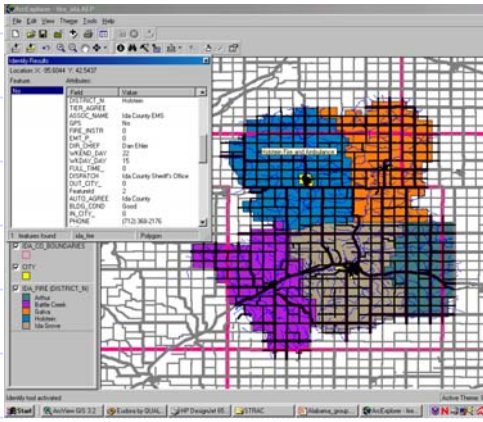
ALAS Development Timeline

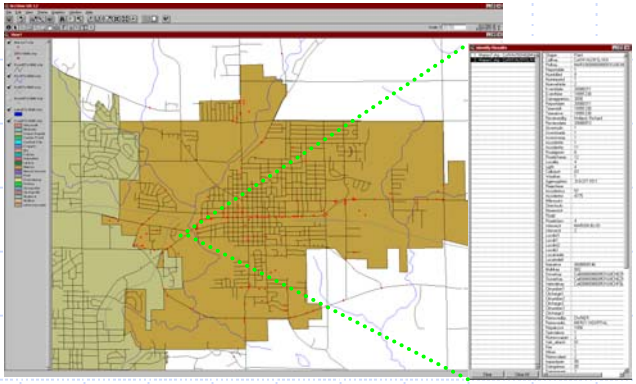
- 1999 data
  - Access-ALAS → 6 months-1 year?
  - GIS-ALAS → < 6 months
  - IMW → 1-2 months
- MMUCC compliant data
  - Access-ALAS → 1 year?
  - GIS-ALAS → < 6 months
  - IMW → 1 year?
- Future
  - combining all these into one
  - adding CARE
  - adding functionality (data, queries, reports, display)

Other Iowa initiatives



- SMS/STRAC (www.iowasms.org)
- Emergency Response Information System (ERIS)
- "MMUCC" crash form (begins 01/01/2001)
- Statewide Linear Referencing System (LRS)
- Location Tool (CTRE)
  - Traffic and Criminal System (TRACS)
  - EMS Data Client
  - CODES



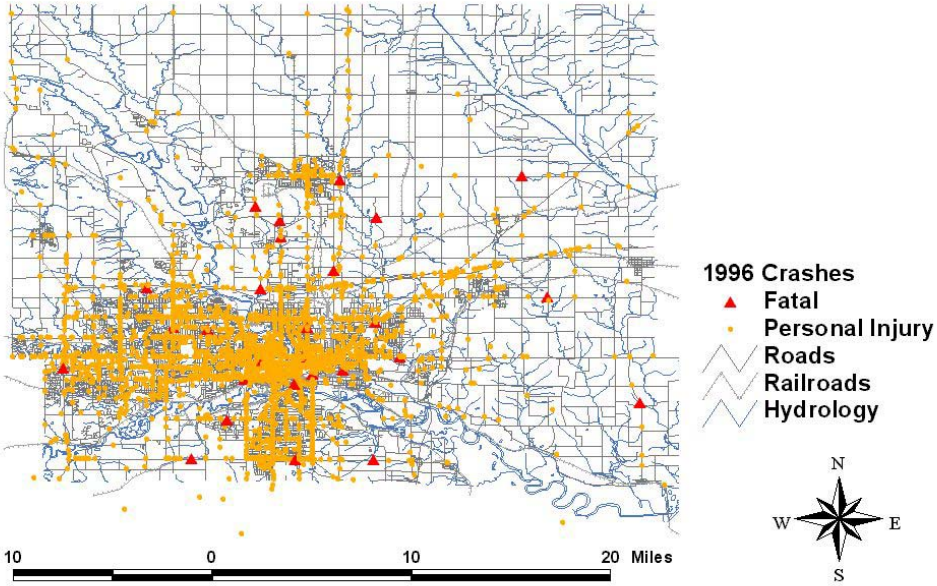


Breakout Session

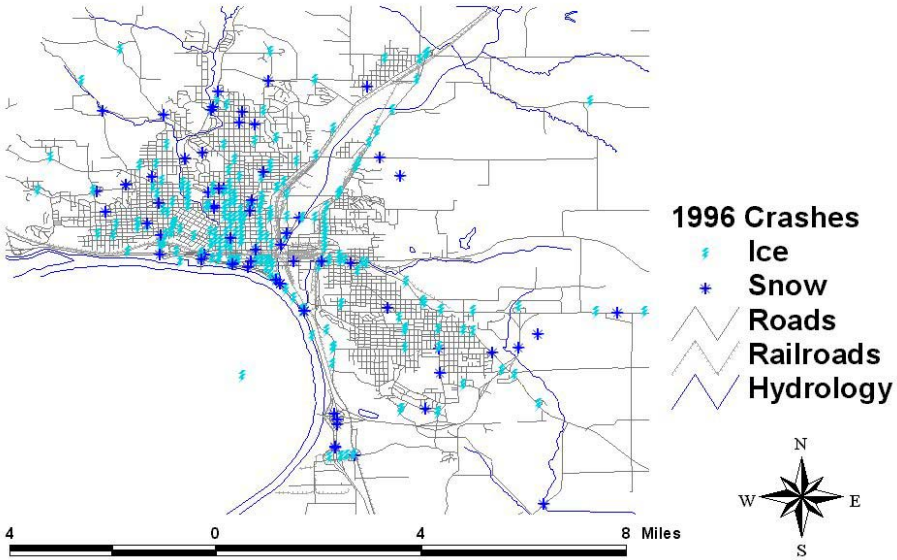
- Location Tool Demonstration
- More details
- Visualizations from ALAS tools
- Questions/Discussion

GIS Accident Location and Analysis System (GIS-ALAS)

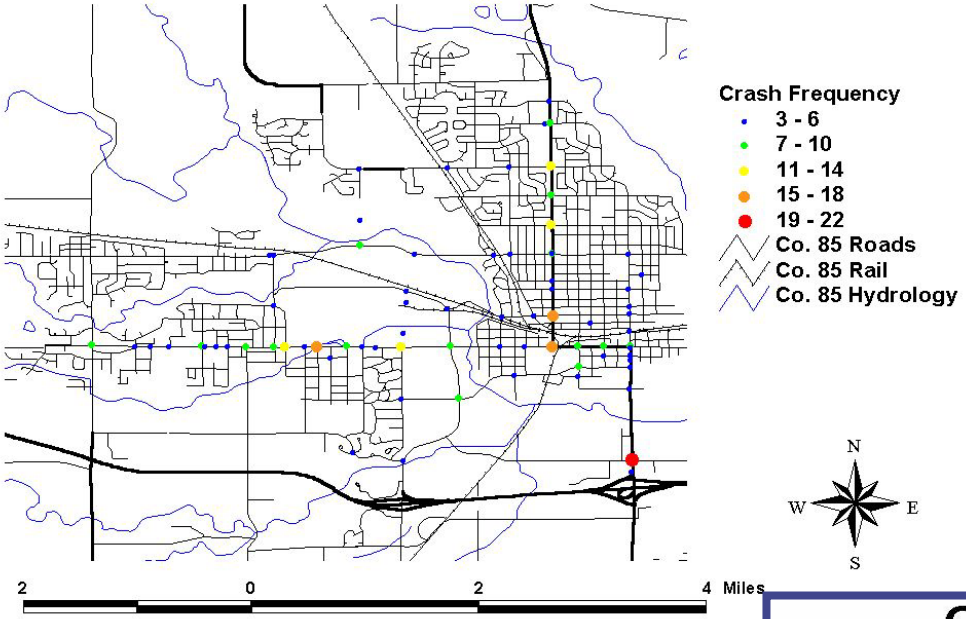
Polk County Fatal and Personal Injury Crashes, 1996



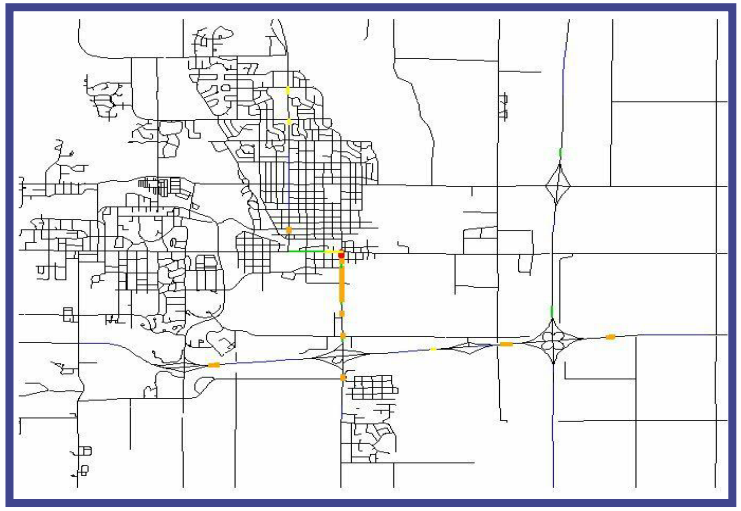
Woodbury County Crashes Related to Surface Condition, 1996

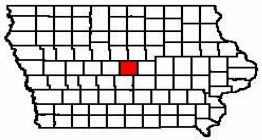


High Crash Locations
Ames, Iowa 1997



Crash Rates on Major Roads
1994 Link-Based Crashes





Crash Rates on Major Roads
- <1.50
- 1.5 - 3
- 3 - 5
- 5 - 12
- >12.0

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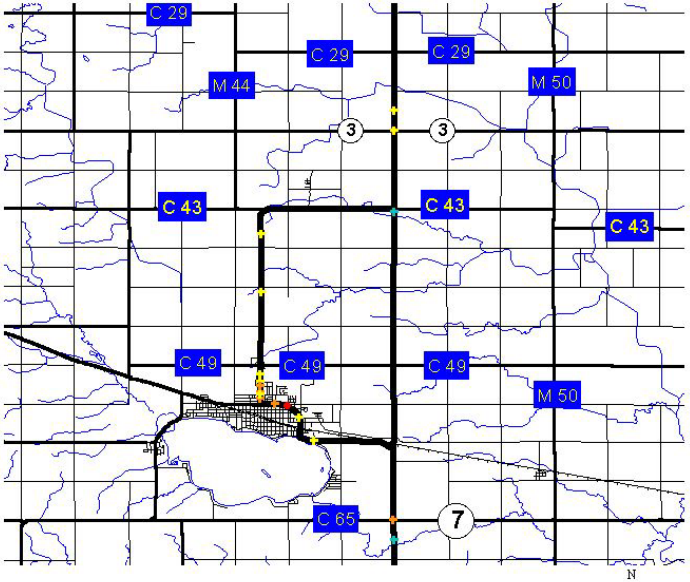
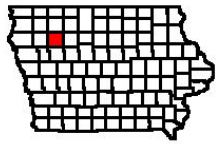
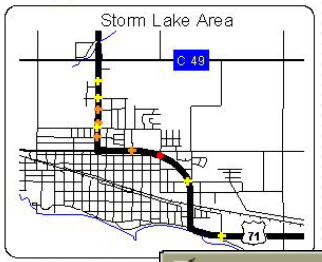
US 71 Corridor Enforcement
1995-1997 Buena Vista County



preliminary data subject to change, prepared by J.R. 3/13/00



Injury Severity
- Fatal (2)
- Major Injury (15)
- Minor Injury (43)
- Possible Injury/Unknown (94)
- US 71
- Major Roads
- Roads
- Rail
- Hydrology



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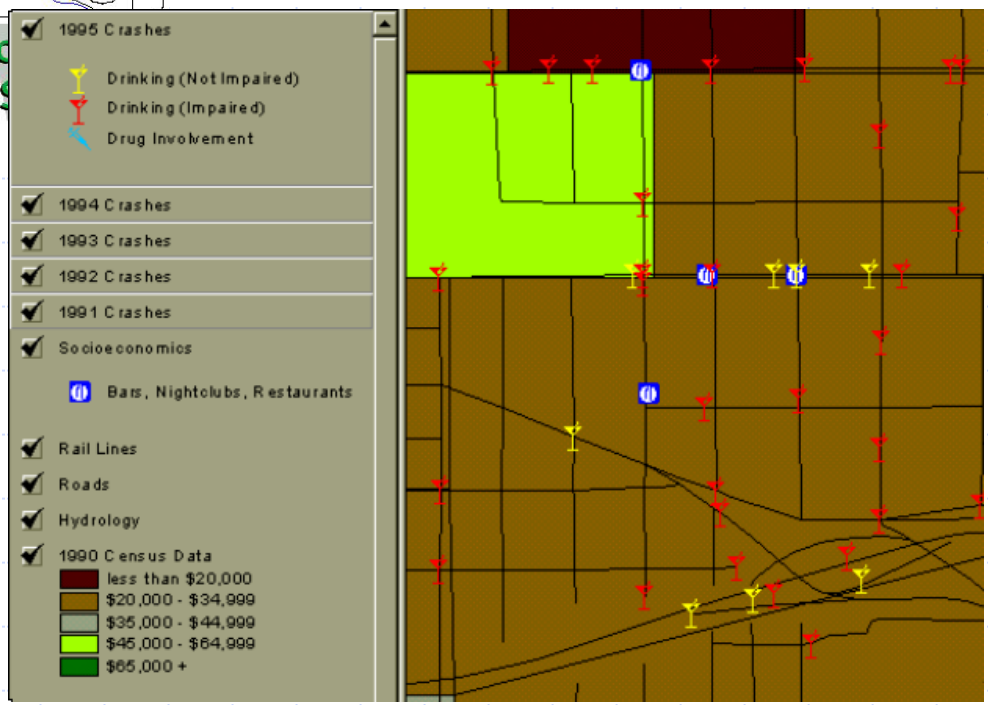
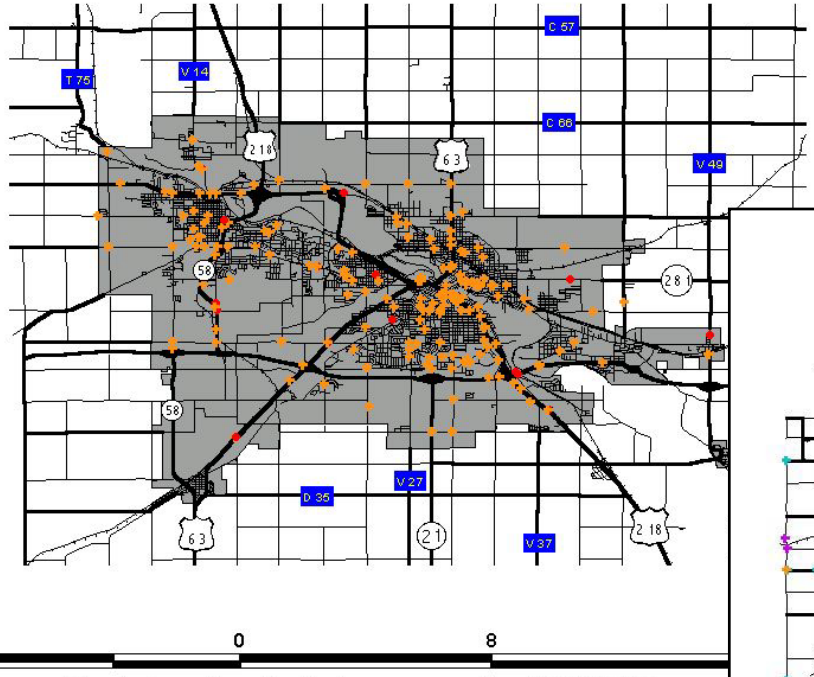
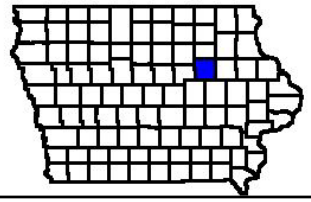


Urban Crashes by Injury Severity 1996-1998 Black Hawk County

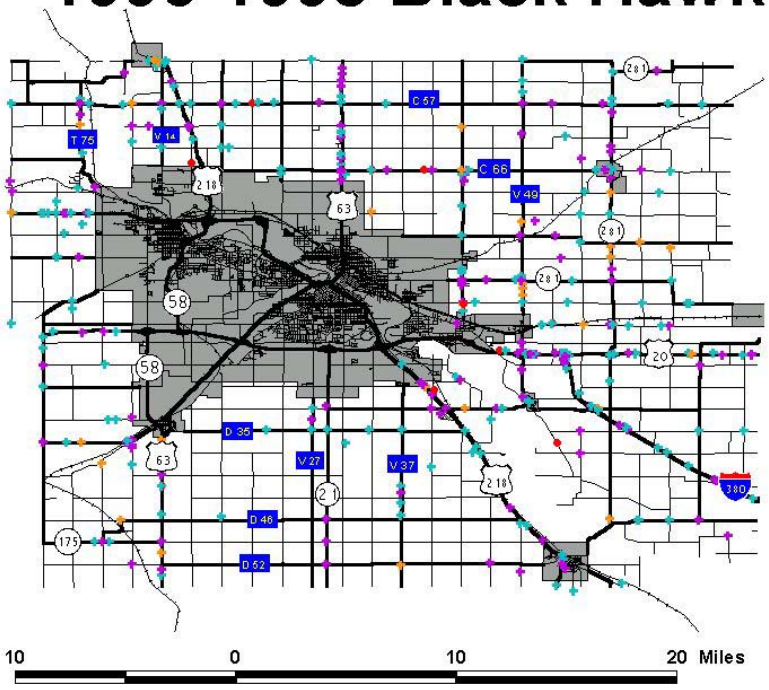


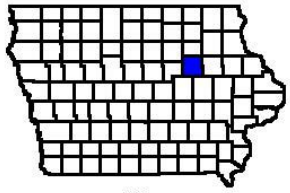


*** preliminary data subject to change, prepared by J.R. 7/10/00 ***

-produced for Sgt. Baskerville, Black Hawk Co. Sheriffs Office

Crashes by Injury Severity 1996-1998 Black Hawk County





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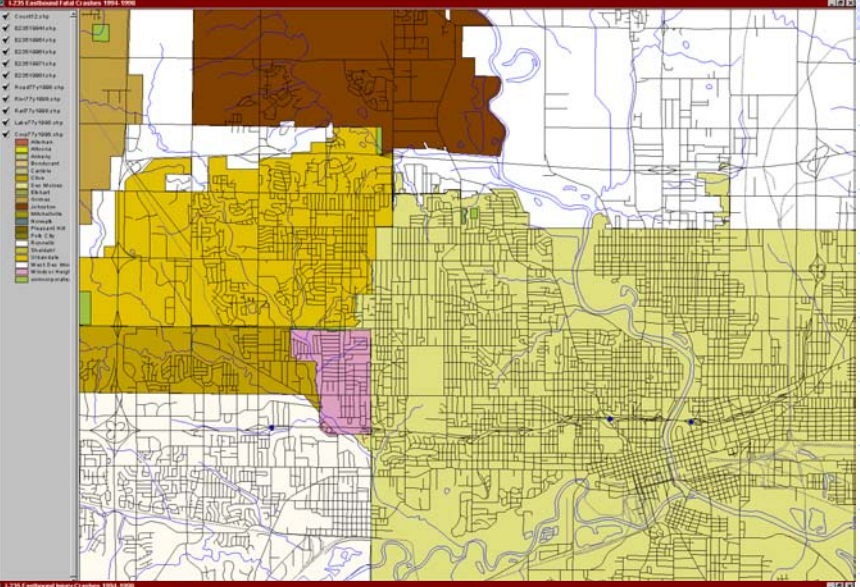
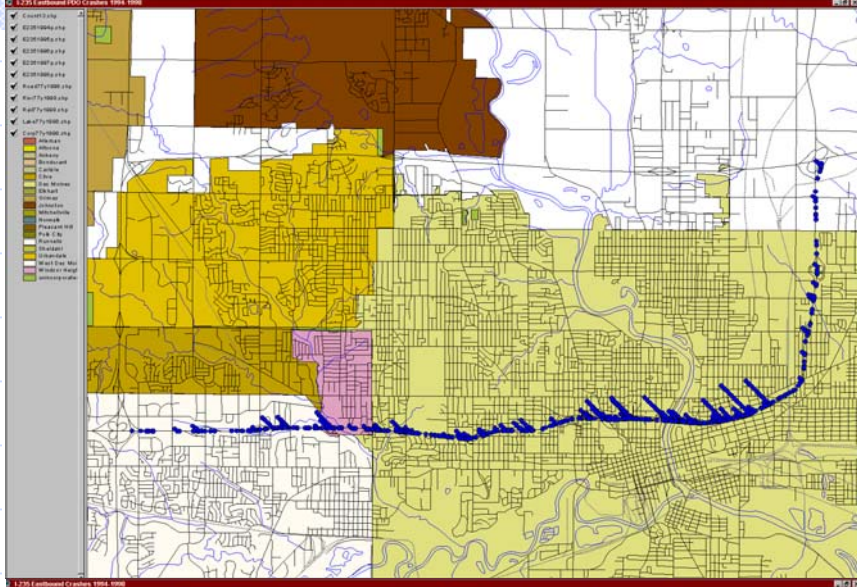
Injury Severity
- Fatal (12)
- Major Injury (52)
- Minor Injury (254)
- Possible Injury (172)
- Major Roads
- Roads
- Rail
- Corporate Boundaries

IOWA TRAFFIC SAFETY DATA SERVICE

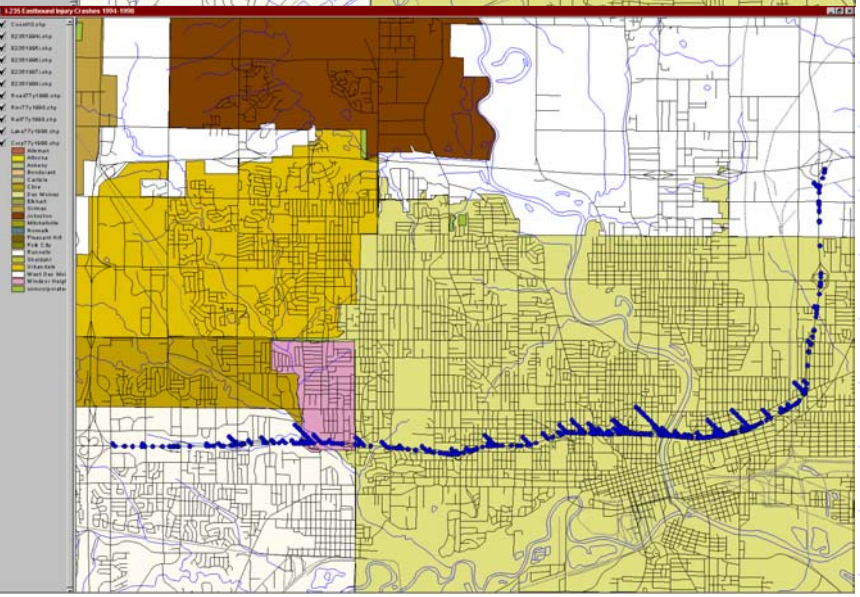
*** preliminary data subject to change, prepared by J.R. 7/10/00 ***



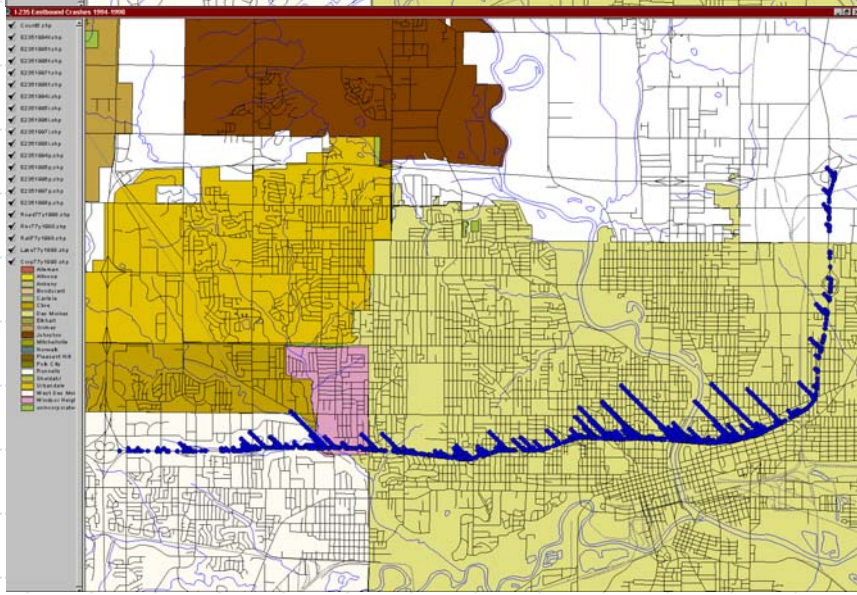
Fatals



PDOs

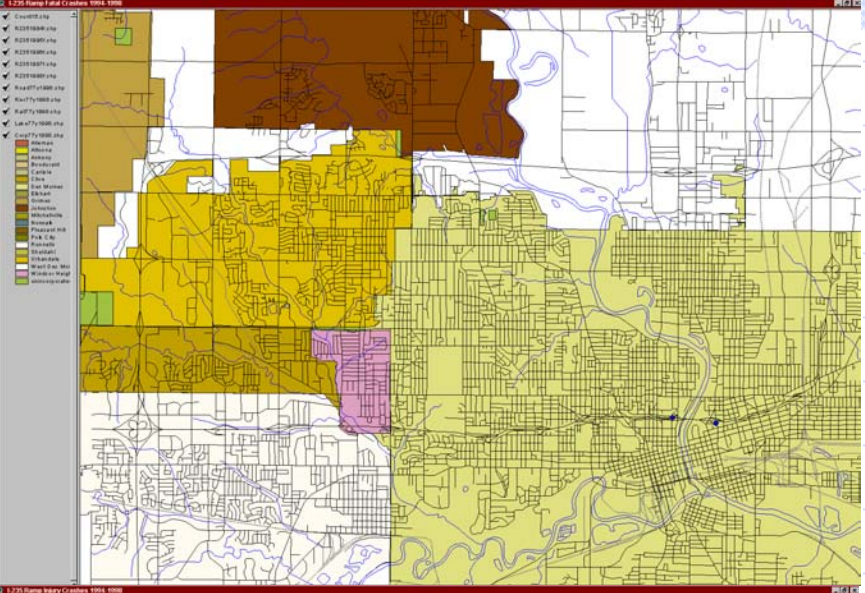


Injuries

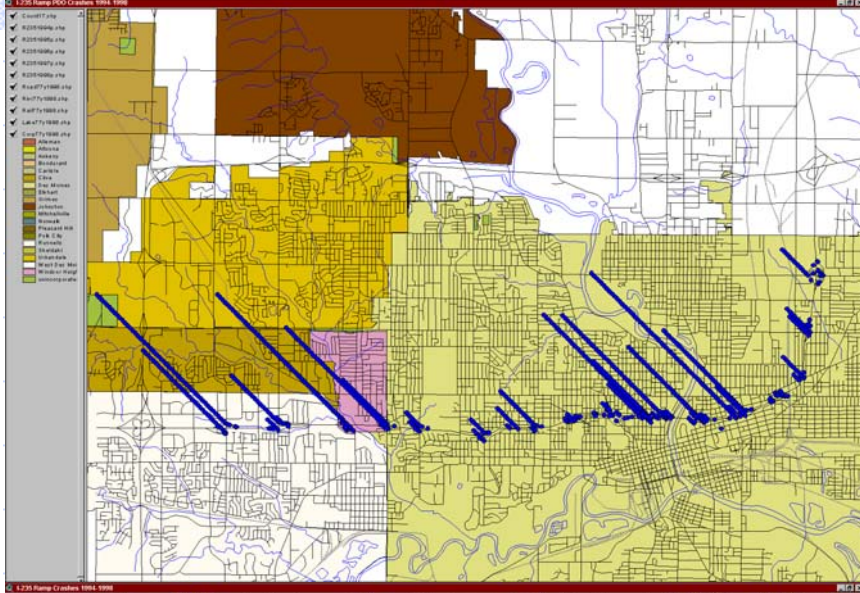


Overall

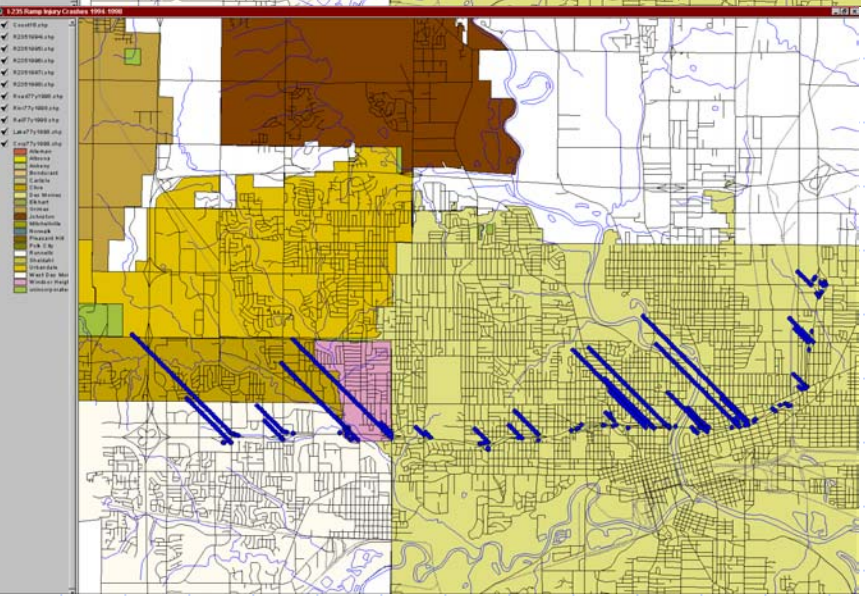
I-235 Eastbound



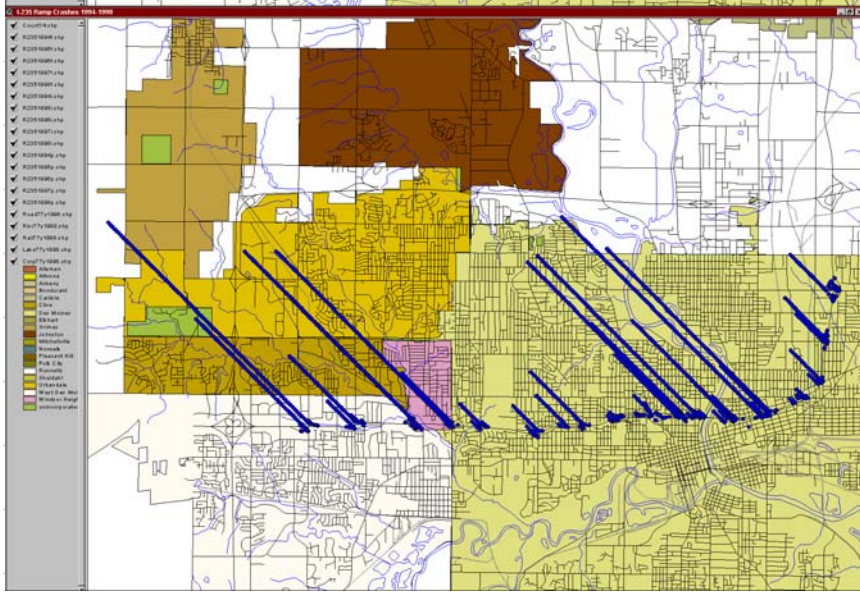
Fatals



PDOs

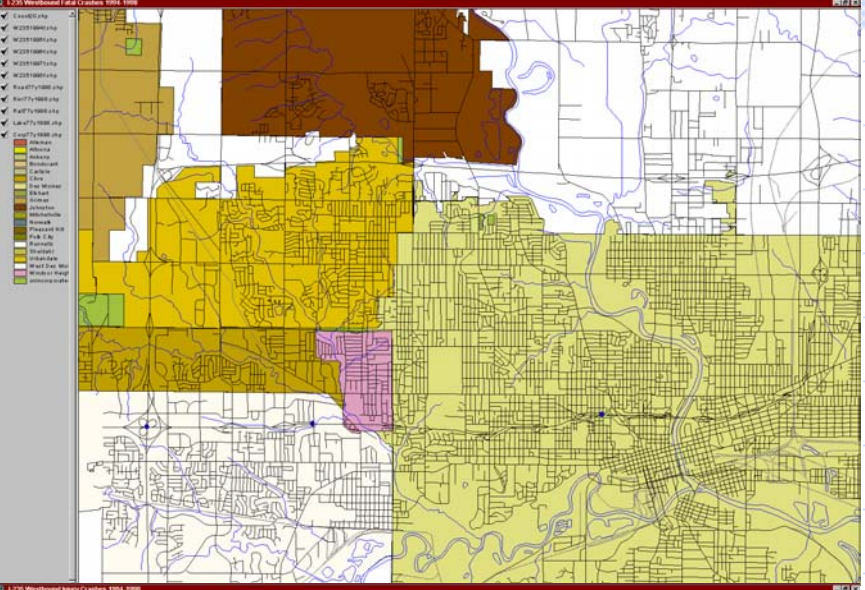


Injuries

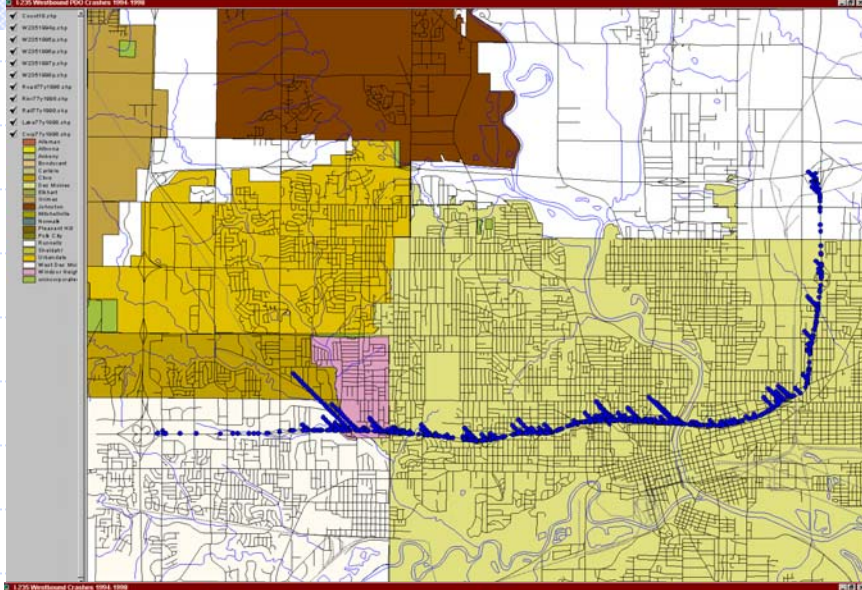


Overall

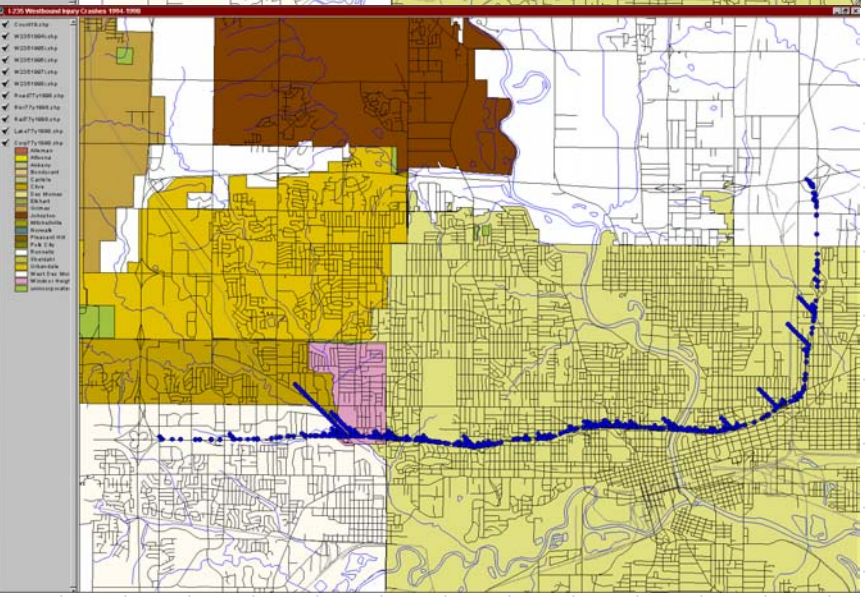
I-235 Ramps



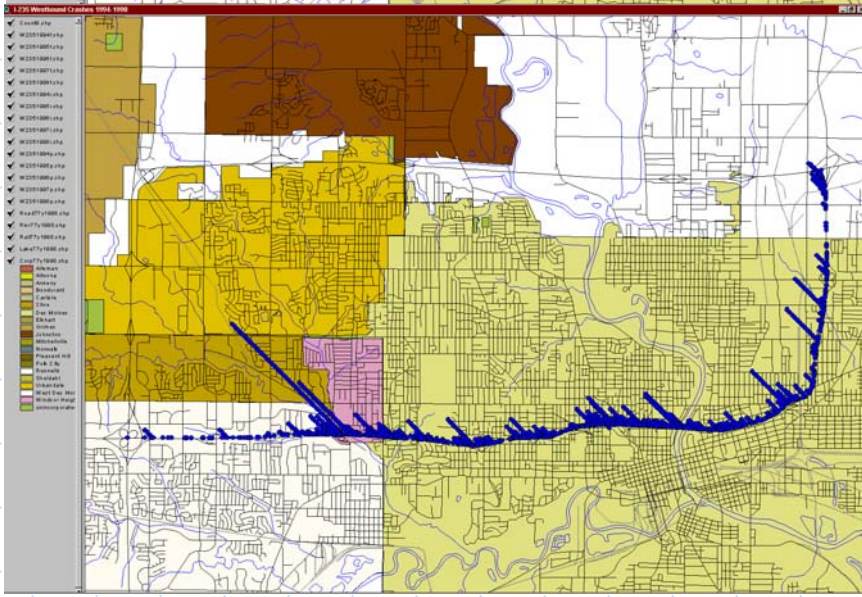
Fatals



PDOs



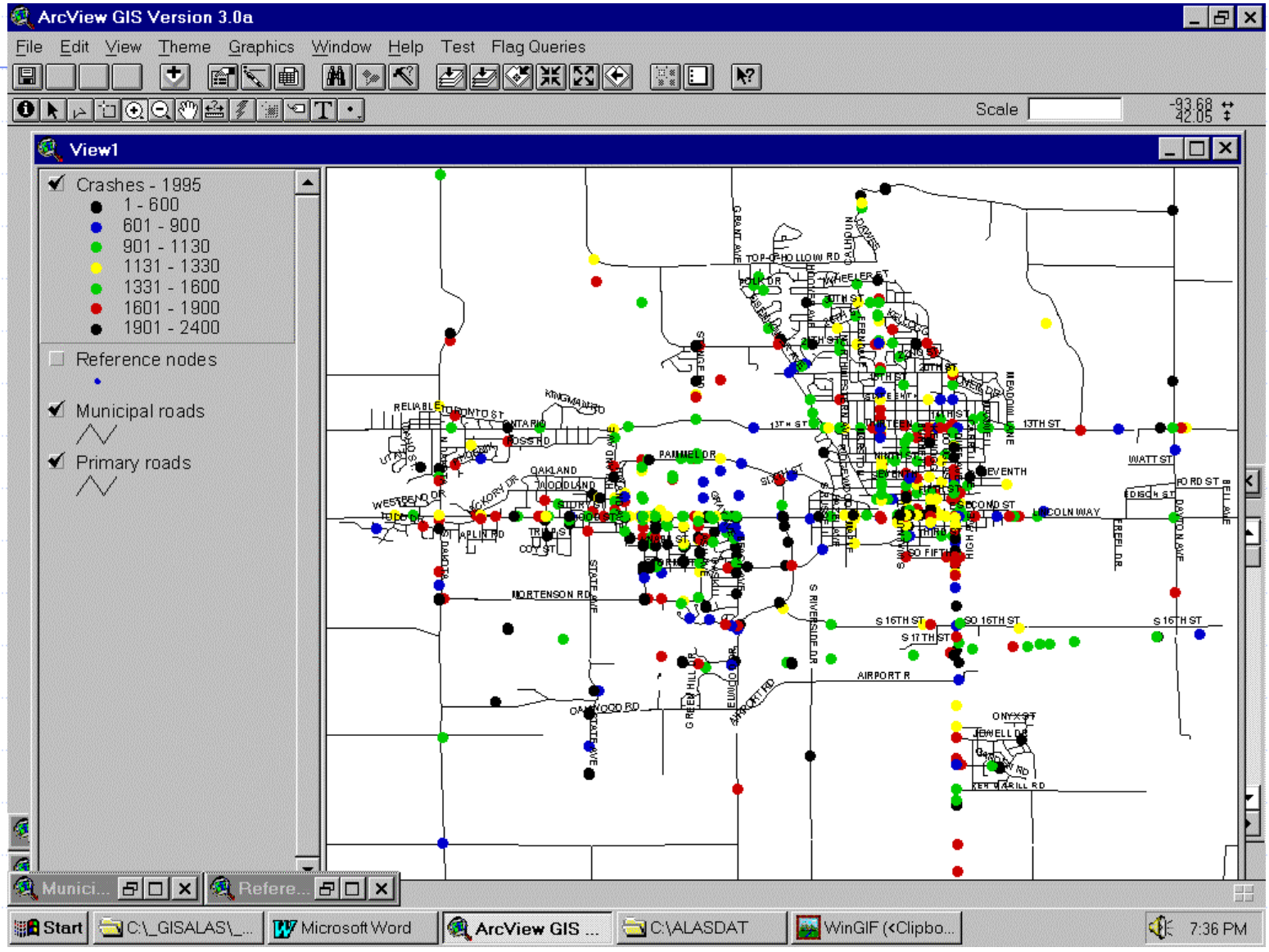
Injuries



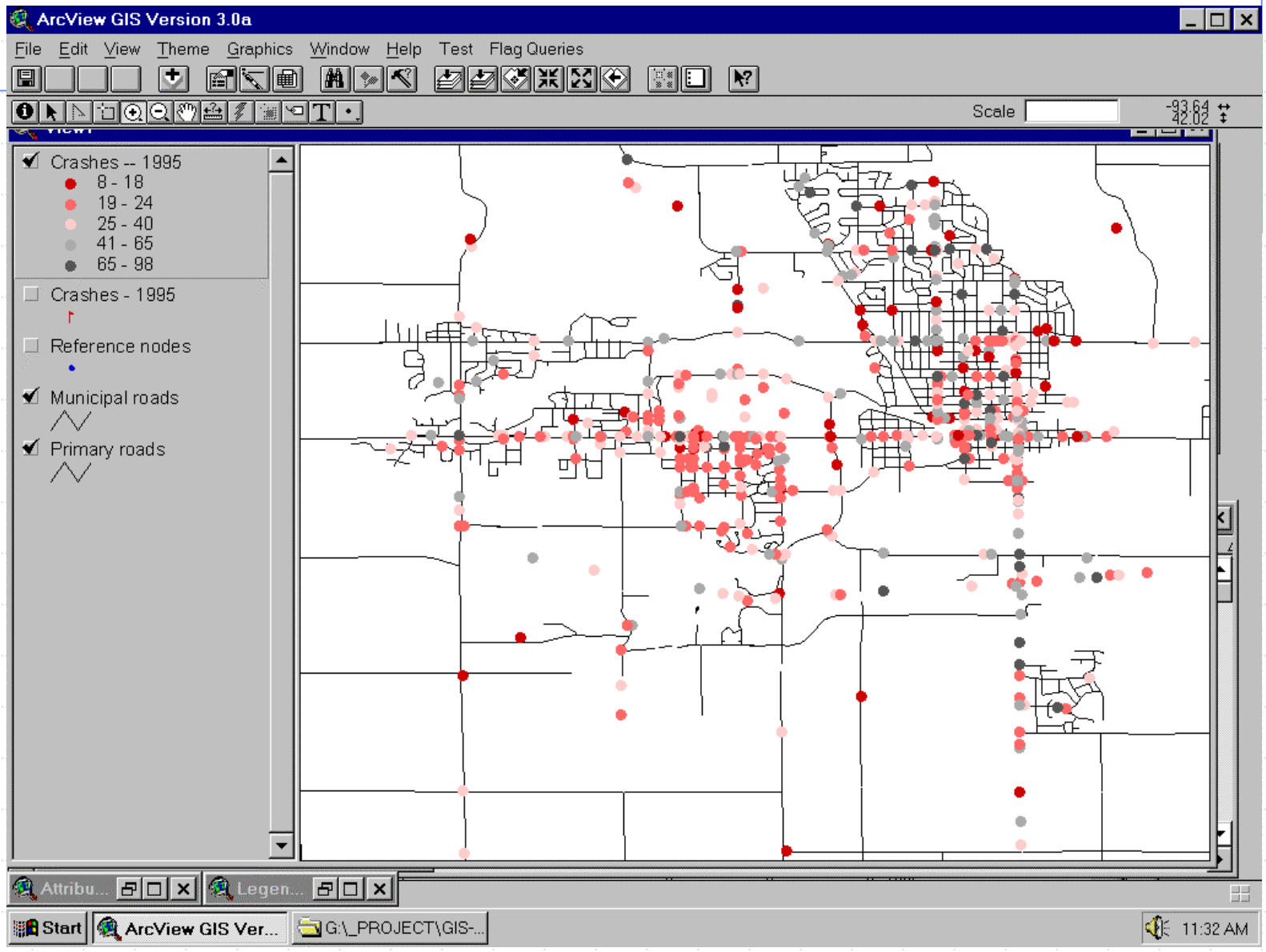
Overall

I-235 Westbound

Thematic Map - Crashes by Time of Day



Thematic Map - Crashes by Age



Aerial photo integration

Workzone Crashes 1994-1998

Workzone Crash Summary
1994-1998

	# of Crashes	# of Vehicles	# of Fatal Crashes	# of Injury Crashes	# of PDO Crashes	# of Fatalities	# of Injuries	# of Major Injuries	# of Minor Injuries	# of Possible Injuries	# of Unknown
1994	343	625	6	139	198	8	227	19	76	127	5
1995	373	645	1	169	203	1	266	23	91	149	3
1996	368	621	2	150	216	2	243	31	82	124	6
1997	353	628	7	151	195	10	258	21	74	148	15
1998	282	509	7	121	154	9	196	24	80	84	8
Total	1719	3028	23	730	966	30	1190	118	403	632	37
Mean	343.80	605.60	4.60	146.00	193.20	6.00	238.00	23.60	80.60	126.40	7.40
Std. Dev.	36.55	54.77	2.88	17.64	23.34	4.18	27.81	4.56	6.62	26.37	4.62

Workzone Crash Summary
1994-1998

	0000-0059	0100-0159	0200-0259	0300-0359	0400-0459	0500-0559	0600-0659	0700-0759	0800-0859	0900-0959	1000-1059	1100-1159
Sunday	0	1	4	3	1	2	1	3	4	0	2	9
Monday	0	2	1	1	1	3	4	11	10	12	10	19
Tuesday	4	3	3	0	3	2	5	13	11	9	17	23
Wednesday	1	3	0	0	1	4	3	17	15	19	19	15
Thursday	1	2	2	2	1	2	7	10	15	21	10	16
Friday	2	3	3	2	1	3	6	19	13	10	18	18
Saturday	3	9	6	1	1	2	1	8	10	9	13	25
Total	11	23	19	9	9	18	27	81	78	80	89	125
Mean	2.20	4.60	3.80	1.80	1.80	3.60	5.40	16.20	15.60	16.00	17.80	25.00
Std. Dev.	1.66	2.99	2.30	1.24	0.94	1.36	2.87	7.37	6.14	8.56	8.13	9.36

	1200-1259	1300-1359	1400-1459	1500-1559	1600-1659	1700-1759	1800-1859	1900-1959	2000-2059	2100-2159	2200-2259	2300-2359	Total	Mean	Std. Dev.
Sunday	7	8	8	17	11	15	13	10	3	6	2	8	138	5.75	4.86
Monday	21	25	21	23	24	25	9	5	4	9	3	4	247	10.29	8.80
Tuesday	17	11	22	15	17	16	16	13	9	7	4	2	242	10.08	6.79
Wednesday	21	28	16	14	24	22	7	12	8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Thursday	23	17	24	21	33	35	14	6	6						
Friday	13	14	26	38	32	30	26	12	7						
Saturday	17	10	14	16	8	12	9	4	7						
Total	119	113	131	144	149	155	94	62	44						
Mean	23.80	22.60	26.20	28.80	29.80	31.00	18.80	12.40	8.80						
Std. Dev.	9.20	10.38	10.28	12.19	13.38	12.75	8.64	5.37	3.46						

Workzone Crash Summary
1994-1998

	January	February	March	April	May	June	July	August	September	Oct
1994	5	4	10	18	32	59	43	67	44	
1995	3	4	9	13	39	52	60	62	48	
1996	2	6	6	26	24	67	57	64	42	
1997	10	3	4	20	47	67	36	60	43	
1998	2	4	3	12	31	33	64	35	42	
Total	22	21	32	89	173	278	260	288	219	
Mean	4.40	4.20	6.40	17.80	34.60	55.60	52.00	57.60	43.80	
Std. Dev.	3.36	1.10	3.05	5.67	8.73	14.10	11.94	12.90	2.49	

Workzone Crash Summary
1994-1998

	January	February	March	April	May	June	July	August	September	October	November	December
1	2	0	2	1	4	8	11	9	9	2	8	2
2	2	1	2	2	6	10	6	14	8	7	2	3
3	1	0	1	2	4	13	9	8	7	6	4	1
4	0	1	1	1	3	11	1	10	7	9	1	1
5	0	1	0	1	9	10	2	10	6	8	6	3
6	0	1	0	1	6	9	4	9	7	[illegible]	[illegible]	[illegible]
7	0	1	0	5	3	8	8	10	3			
8	0	0	1	0	7	11	8	6	9			
9	0	1	0	2	9	6	4	13	7			
10	1	0	0	3	3	9	11	7	8			
11	2	0	0	2	11	16	7	13	7			
12	0	1	0	3	6	10	8	8	12			
13	0	2	1	3	6	11	7	13	8			
14	1	1	1	6	6	4	5	9	12			
15	0	0	0	1	7	8	12	9	5			
16	1	0	2	6	6	5	8	7	15			
17	2	0	4	2	4	11	11	15	4			
18	0	1	0	3	6	9	5	9	8			
19	1	2	4	5	4	5	9	7	9			
20	1	0	2	3	6	13	16	9	6			
21	2	2	2	1	3	8	4	11	4			
22	1	0	0	3	7	6	7	8	7			
23	0	2	1	0	5	7	12	12	9			
24	1	1	0	0	1	7	6	10	9			
25	1	0	0	9	7	7	12	12	6			
26	0	0	1	2	10	20	12	7	4			
27	0	1	0	7	5	12	5	5	7			
28	1	1	1	5	6	8	14	5	4			
29	1	1	1	5	6	6	7	13	8			
30	0	NA	4	5	4	10	13	6	4			
31	1	NA	1	NA	3	NA	16	4	NA			
Total	22	21	32	89	173	278	260	288	219			
Mean	4.40	4.20	6.40	17.80	34.60	55.60	52.00	57.60	43.80			
Std. Dev.	3.82	3.61	5.59	15.25	29.58	47.25	44.50	49.19	37.22			

Workzone Crash Summary
1994-1998

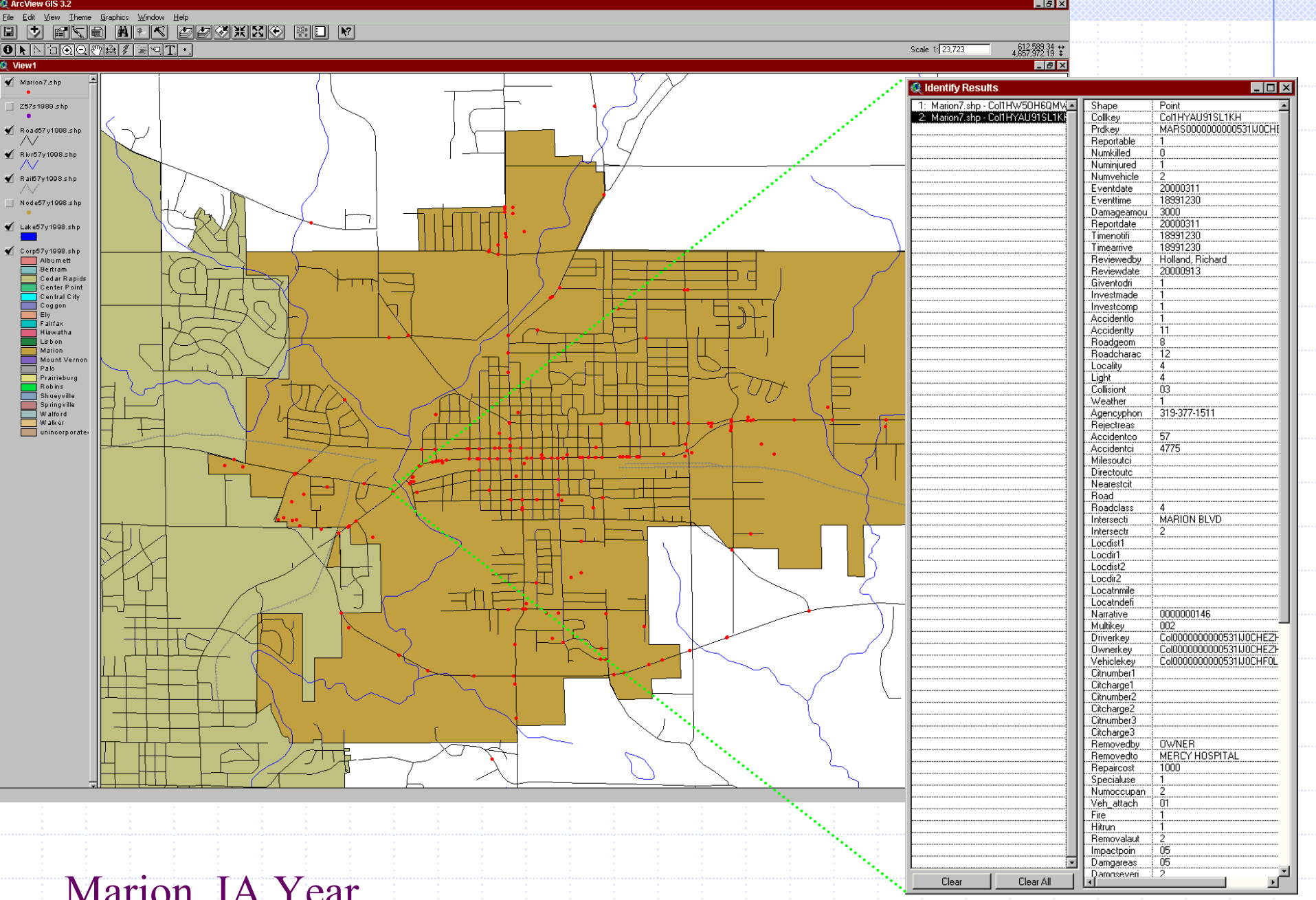
	Rural	Urban
1994	137	206
1995	176	197
1996	155	213
1997	144	209
1998	106	176
Total	718	1001
Mean	143.60	200.20
Std. Dev.	25.68	14.75

Workzone Crash Summary
1994-1998

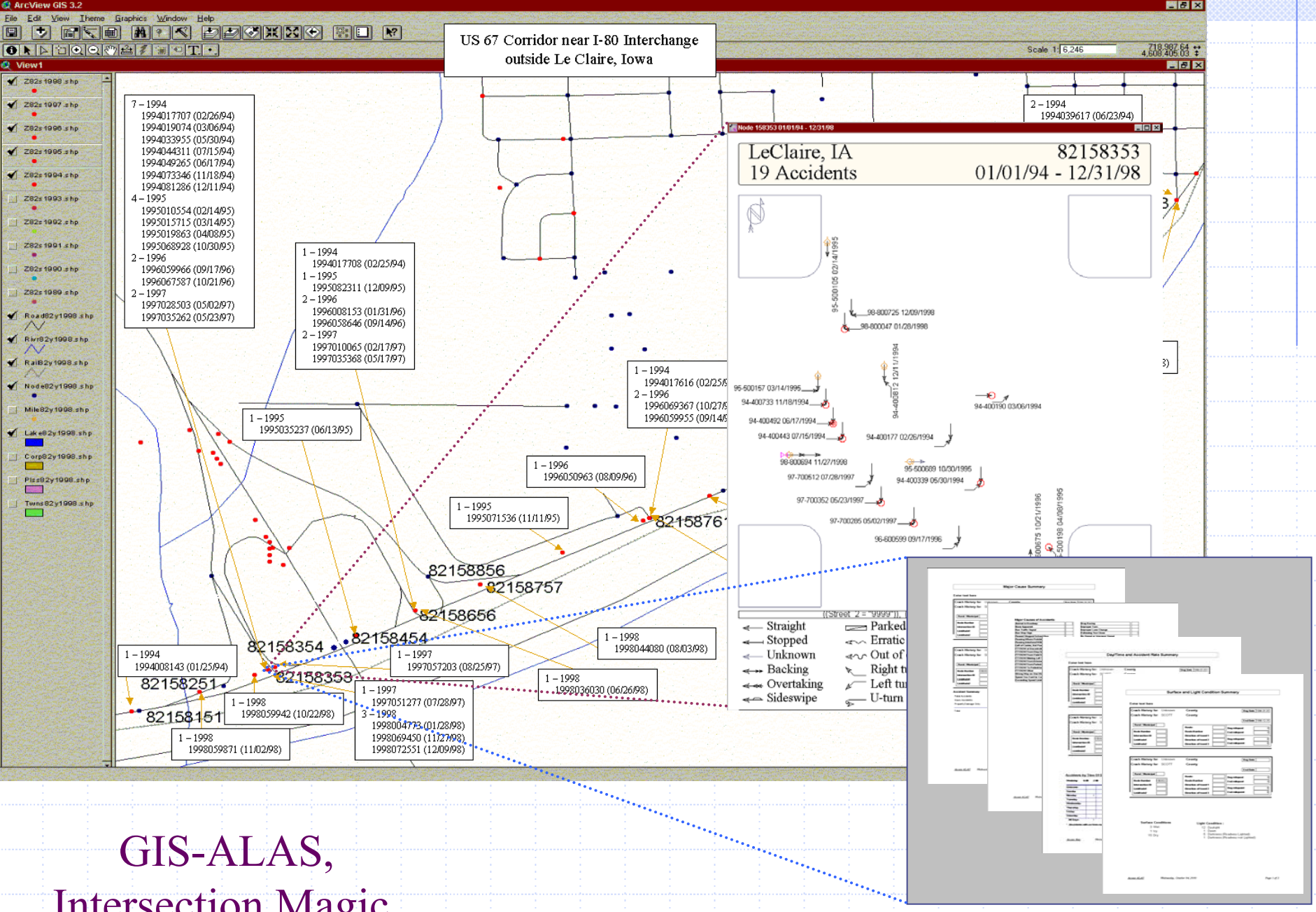
	1994	1995	1996	1997	1998	Total	Mean	Std. Dev.
Head-on	6	4	5	5	4	24	4.80	0.84
Broadside/Left Turn	8	11	15	12	13	59	11.80	2.58
Rear End	146	170	139	142	115	712	142.40	19.60
Rear End/Right Turn	2	3	1	2	3	11	2.20	0.84
Rear End/Left Turn	8	3	4	3	5	23	4.60	2.07
Sideswipe/Opposite Direction	0	0	1	3	1	5	1.00	1.22
Sideswipe/Same Direction	11	7	7	11	11	47	9.40	2.19
Sideswipe/Right Turn	5	2	6	5	1	19	3.80	2.17
Sideswipe/Left Turn	8	5	9	7	4	33	6.60	2.07
Sideswipe/Dual Left Turn	1	0	0	1	2	4	0.80	0.84
Sideswipe/Dual Right Turn	0	1	1	2	0	4	0.80	0.84
Broadside/Right Angle	29	22	28	19	17	115	23.00	5.34
Broadside/Right Entering	0	2	2	1	1	6	1.20	0.84
Broadside/Left Entering	0	3	0	4	3	10	2.00	1.87
Headon/Left Entering	2	8	9	4	7	30	6.00	2.92
Sideswipe/Both Left Turning	0	0	0	0	0	0	0.00	0.00
Other	38	52	60	46	34	250	50.00	10.49
Single	46	71	61	69	48	295	59.00	11.60
Pedestrian	4	3	4	1	4	16	3.20	1.30
Bicycle	0	0	1	1	0	2	0.40	0.55
Unknown	15	10	21	21	13	80	16.00	4.90
Total	349	377	374	359	286	1745	349.00	37.01
Mean	16.62	17.95	17.81	17.10	13.62			
Std. Dev.	12.28	15.14	14.37	14.25	9.68			

Workzone Crash Summary
1994-1998

	1994	1995	1996	1997	1998	Total	Mean	Std. Dev.
Head-on	8	12	14	9	11	54	10.80	2.39
Rear End	156	176	144	147	123	746	149.20	19.25
Sideswipe	25	15	24	29	19	112	22.40	5.46
Broadside	37	38	45	36	34	190	38.00	4.18
Other	38	52	60	46	34	250	50.00	10.49
Single	46	71	61	69	48	295	59.00	11.60
Pedestrian	4	3	4	1	4	16	3.20	1.30
Bicycle	0	0	1	1	0	2	0.40	0.55
Unknown	15	10	21	21	13	80	16.00	4.90
Total	349	377	374	359	286	1745	349.00	37.01
Mean	38.78	41.89	41.56	39.89	31.78			
Std. Dev.	21.51	25.58	22.90	23.09	17.33			

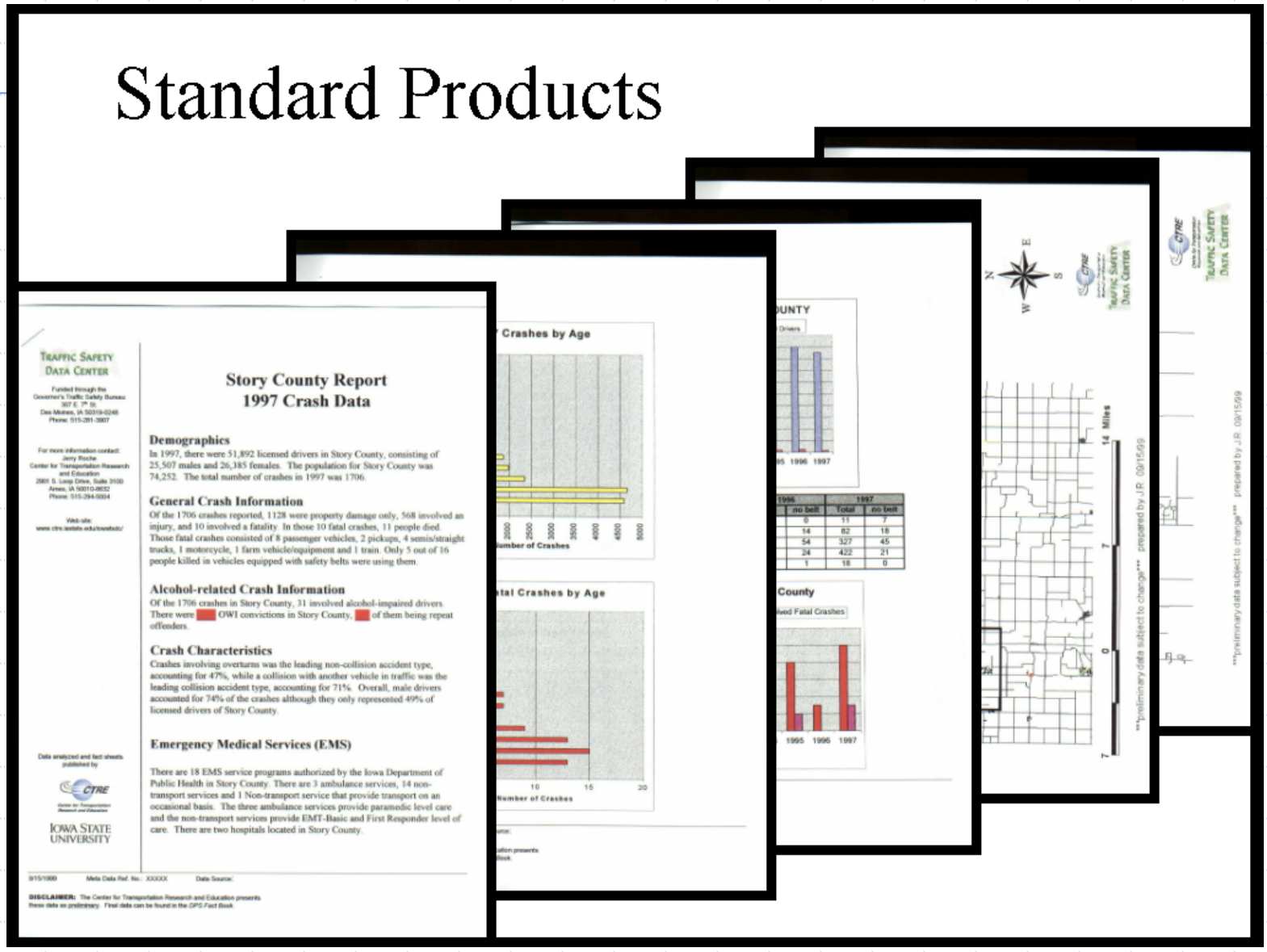


Marion, IA Year 2000 TRACS Data



GIS-ALAS, Intersection Magic, and Access-ALAS

ITSDS


Standard Products
Traffic Safety Data Center
Funded through the Governor's Traffic Safety Bureau
307 E. 7th St.
Des Moines, IA 50319-0248
Phone: 515-281-3907
For more information contact:
Jerry Roche
Center for Transportation Research and Education
2901 S. Loop Drive, Suite 3100
Ames, IA 50010-8632
Phone: 515-294-5004
Web-site:
www.ctre.iastate.edu/iowatsdc/
Story County Report
1997 Crash Data
Demographics
In 1997, there were 51,892 licensed drivers in Story County, consisting of 25,507 males and 26,385 females. The population for Story County was 74,252. The total number of crashes in 1997 was 1706.
General Crash Information
Of the 1706 crashes reported, 1128 were property damage only, 568 involved an injury, and 10 involved a fatality. In those 10 fatal crashes, 11 people died. Those fatal crashes consisted of 8 passenger vehicles, 2 pickups, 4 semis/straight trucks, 1 motorcycle, 1 farm vehicle/equipment and 1 train. Only 5 out of 16 people killed in vehicles equipped with safety belts were using them.
Alcohol-related Crash Information
Of the 1706 crashes in Story County, 31 involved alcohol-impaired drivers. There were OWI convictions in Story County, of them being repeat offenders.
Crash Characteristics
Crashes involving overturns was the leading non-collision accident type, accounting for 47%, while a collision with another vehicle in traffic was the leading collision accident type, accounting for 71%. Overall, male drivers accounted for 74% of the crashes although they only represented 49% of licensed drivers of Story County.
Emergency Medical Services (EMS)
There are 18 EMS service programs authorized by the Iowa Department of Public Health in Story County. There are 3 ambulance services, 14 non-transport services and 1 Non-transport service that provide transport on an occasional basis. The three ambulance services provide paramedic level care and the non-transport services provide EMT-Basic and First Responder level of care. There are two hospitals located in Story County.
Data analyzed and fact sheets published by
CTRE
Center for Transportation Research and Education
Iowa State University
9/15/1999
Meta Data Ref. No.: XXXXX
Data Source:
DISCLAIMER: The Center for Transportation Research and Education presents these data as preliminary. Final data can be found in the DPS Fact Book.
Crashes by Age
Number of Crashes
County
Fatal Crashes
1995
1996
1997
14 Miles
preliminary data subject to change prepared by J.R. 09/15/99

1989-1998 Gender Based Injury Severity Information

Produced by:

IOWA TRAFFIC SAFETY DATA SERVICE

With assistance from:

Iowa Department of Transportation

Governor's Traffic Safety Bureau

1998 Injury Severity By County

County	County Name	Total Fatalities	Total Injuries	Gender	Fatal Injuries	Major Injuries	Minor Injuries	Possible Injuries	Unknown Injuries
1	ADAIR	4	113	Male	2	5	28	14	7
				Female	2	15	23	15	6
2	ADAMS	1	27	Male	1	2	7	0	0
				Female	0	2	11	5	0
3	ALLAMAKEE	6	101	Male	5	7	33	11	8
				Female	1	2	17	19	4
4	APPANOOSE	3	164	Male	2	13	39	34	2
				Female	1	11	32	30	3
5	AUDUBON	0	87	Male	0	6	28	7	1
				Female	0	8	22	15	0
6	BENTON	6	205	Male	3	15	67	33	3
				Female	3	9	50	23	5
7	BLACK HAWK	12	1613	Male	8	62	259	302	56
				Female	4	62	318	487	67
8	BOONE	4	226	Male	3	15	49	42	2
				Female	1	14	56	38	10
9	BREMER	8	221	Male	5	7	52	33	6
				Female	3	14	47	54	8
10	BUCHANAN	2	172	Male	1	12	42	28	1
				Female	1	9	37	36	7
11	BUENA VISTA	3	248	Male	3	17	47	46	9
				Female	0	8	46	68	7
12	BUTLER	4	135	Male	2	12	26	24	4
				Female	2	4	37	25	3
13	CALHOUN	3	125	Male	2	8	27	19	2
				Female	1	9	32	22	6
14	CARROLL	2	236	Male	2	7	43	43	17
				Female	0	6	47	61	12
15	CASS	3	212	Male	1	18	44	35	8
				Female	2	12	39	52	4
16	CEDAR	2	199	Male	2	3	49	31	3
				Female	0	8	56	42	7
17	CERRO GORDO	13	700	Male	10	36	125	126	15
				Female	3	33	116	225	24
18	CHEROKEE	3	146	Male	1	8	33	30	6
				Female	2	6	26	33	4
19	CHICKASAW	0	100	Male	0	11	23	9	7
				Female	0	6	21	17	6
20	CLARKE	2	173	Male	2	6	37	29	4
				Female	0	5	43	47	2
21	CLAY	2	282	Male	1	7	53	59	8
				Female	1	10	50	89	6
22	CLAYTON	5	212	Male	5	18	60	38	5
				Female	0	8	53	28	2
23	CLINTON	6	751	Male	3	32	132	128	44
				Female	3	24	154	207	30
24	CRAWFORD	2	203	Male	1	11	44	36	10
				Female	1	8	32	49	13
25	DALLAS	11	344	Male	7	23	78	67	11
				Female	4	12	63	72	18
26	DAVIS	2	92	Male	1	5	31	9	1
				Female	1	9	28	9	0

*** preliminary data subject to change, prepared by J.R. 4/24/00 ***
Produced by the Iowa Traffic Safety Data Service

ERIS-Emergency Response Information System

Table2

General | Description | Personnel | Availability | Communications | Service Sharing

Emergency Response Information System ERIS

ID	
Service	Henry County Ambulance
Address 1	Henry County Hospital
Address 2	
City	Mt. Pleasant
Zipcode 5	52641
Zip + 4	52641-
Contact	Jerry Johnston
Phone	(319) 385-3141
E-mail	
EMS Director or Fire Chief	Jerry Johnston
Director/Chief Phone	(319) 385-3141
Service has a computer	Yes

Vechicle Info

Equipment Info

Record: 1 of 8

ida.AEP

Tools Help

Y: 42.5437

Attributes:

Field	Value
DISTRICT_N	Holstein
TIER_AGREE	
ASSOC_NAME	Ida County EMS
GPS	No
FIRE_INSTR	0
EMT_P_	0
DIR_CHIEF	Dan Ehler
WKEND_DAY	22
WKDAY_DAY	15
FULL_TIME_	0
DISPATCH	Ida County Sheriff's Office
OUT_CITY_	0
FeatureId	2
AUTO_AGREE	Ida County
BLDG_COND	Good
IN_CITY_	0
PHONE	(712) 368-2176

ida_fire | Polygon

IDA_CO_BOUNDARIES

CITY

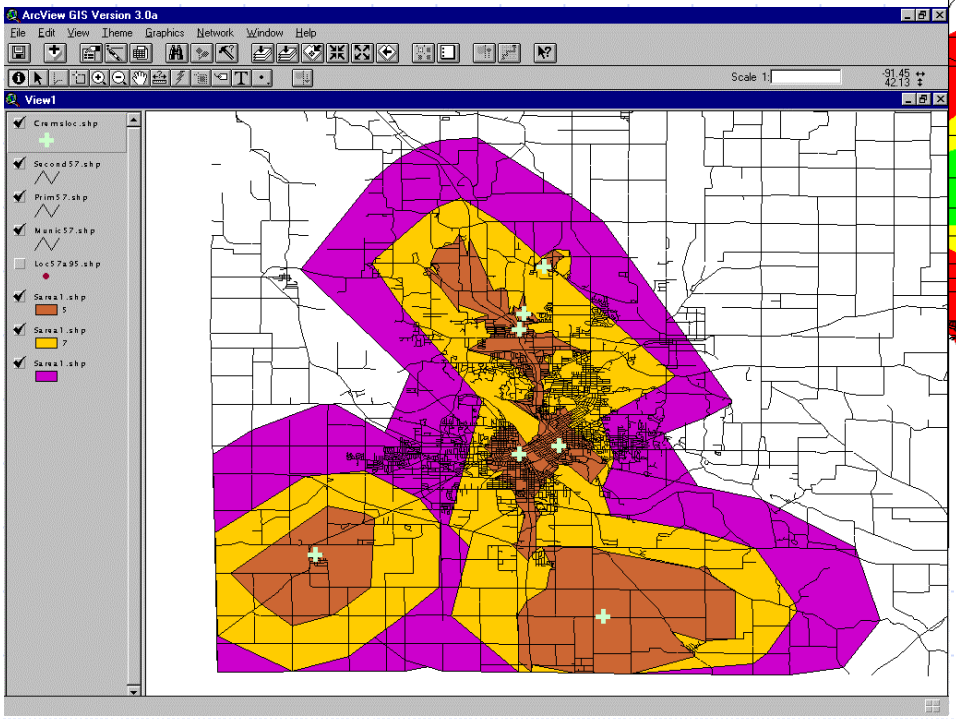
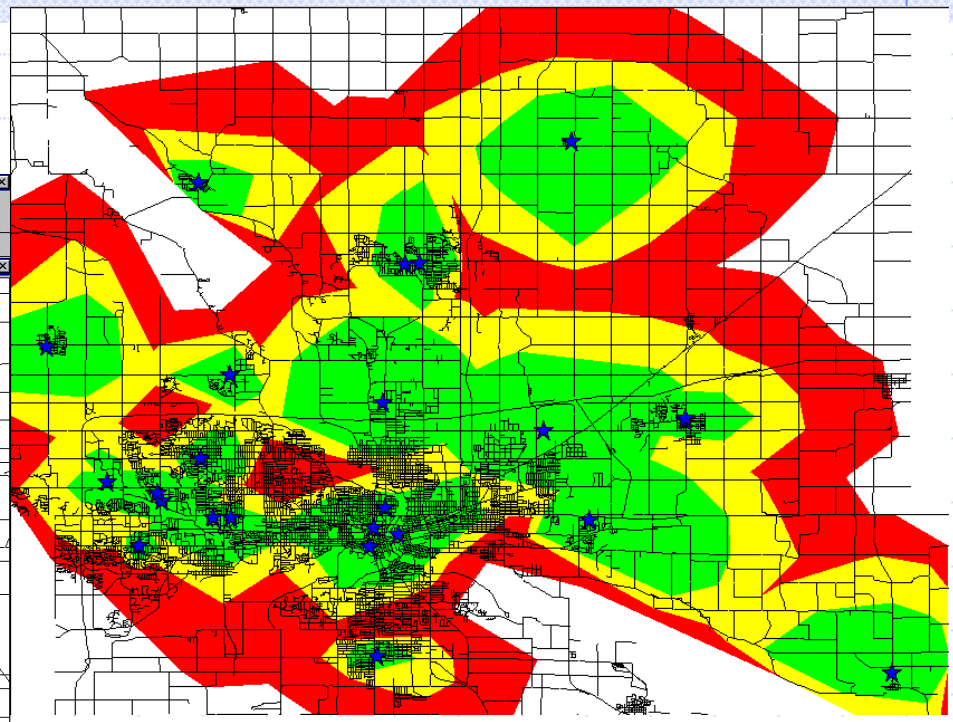
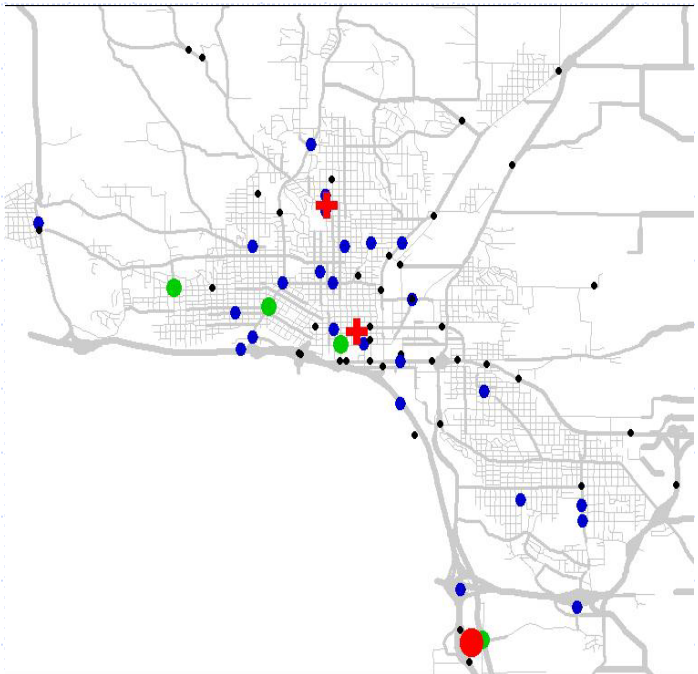
IDA_FIRE (DISTRICT_N)

- Arthur
- Battle Creek
- Galva
- Holstein
- Ida Grove

Holstein Fire and Ambulance

Identify tool activated

Active Theme: ID

Start | ArcView GIS 3.2 | Eudora by QUAL... | HP DesignJet 65... | STRAC | Alabama_group.... | ArcExplorer - fire...

Emergency Response Times