

Using Text Analysis Techniques on RoadSoft Traffic Crash Data

- December 15, 2021
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- City of Kalamazoo

take

value

use

royal

take

apkt

value

aeluv

use

esu

royal

alor



What Do You Use
RoadSoft For?

What Can We Do With RoadSoft?



INVENTORY



EVALUATE



LOOK AT IMPROVEMENT
SCENARIOS



WHAT ELSE DO YOU DO?

Mix and Match

- Overlaying different layers

WHO DOES THIS?

- Exporting to ESRI or some other platform

WHO DOES THIS?

What About Crash Data?

Spot maps

Diagrams

Summary tables

UD-10s

WHO LOOKS AT THESE?

What About Those UD-10s?

Source data

Narratives

WHO READS THESE? IF YOU DO, WHAT DO YOU DO WITH
THE WORDS YOU HAVE READ?

Then and Now

- Biggest differences
 - More Data
 - Increased emphasis on people
 - How we get data –
 - Social networks

BIGGEST DIFFERENCE

- HOW WE CAN MAKE USE OF DATA

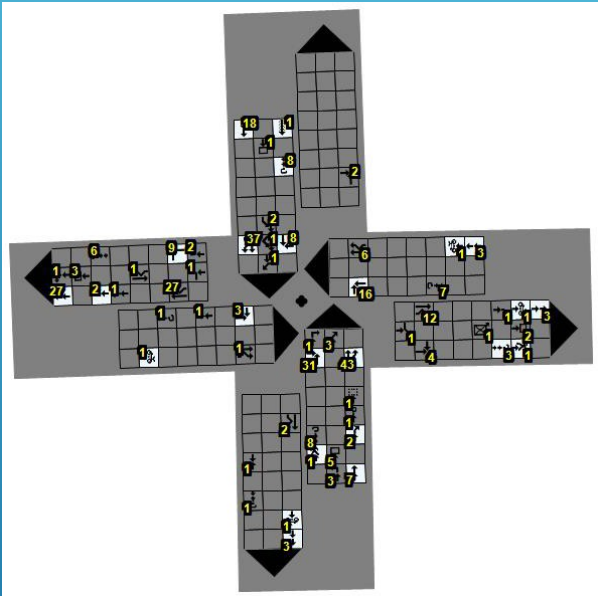
Examples

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Collision Diagram Report

PDO: 308
Injury: 46
Fatal: 0
Total: 354



Crash Severity Report

Crash Type	Number of Crashes by Severity					Number of Persons by Degree of Injury				
	Fatal	A Injury	B/C and Property Damage	Other	Total	Fatal	Type A	Type B	Type C	Not Injured
Angle Driveway	0	0	3 100	0	3	0	0	0	0	6 100.0
Angle Straight	0	2 2.7	72 97.3	0	74	0	3 1.4	6 2.7	23 10.5	187 85.4
Angle Turn M	0	0	6 100 R	0	6	0	0	0	0	15 100.0
Backing	0	0	1 100	0	1	0	0	0	1 33.3	2 66.7
Bicycle	0	0	4 100	0	4	0	0	1 25.0	3 75.0	3 75.0

Crash Summary Report

Ap pro ach Dir ecti on	Total	Number of Crashes by Type									
		Head On	Head On Lt	Angle Str	Angle Turn	Rear End	Rear Turn	Ped	Park	Drive	Other
E	43	0	0	10	2	5	0	2	1	2	21
N	90	0	0	11	1	20	2	0	0	3	53
S	94	1	0	22	1	9	2	0	0	2	57
W	96	1	0	16	1	27	3	0	1	2	45
Other	31	0	0	15	1	1	0	1	0	0	13
Total	354	2	0	74	6	62	7	3	2	9	189
Average Per Year	35.4	0.2	0.0	7.4	0.6	6.2	0.7	0.3	0.2	0.9	18.9
Percent of Total	100.0	0.6	0.0	20.9	1.7	17.5	2.0	0.8	0.6	2.5	53.4
2011	40	1	0	13	2	9	0	0	0	0	15
2012	38	0	0	7	1	9	2	1	0	1	17
2013	35	1	0	10	0	3	0	0	0	1	20
2014	32	0	0	9	0	10	0	0	0	0	13
2015	35	0	0	6	1	6	0	0	1	0	21
2016	34	0	0	6	1	5	2	0	0	2	18
2017	35	0	0	7	0	4	1	1	0	0	22
2018	40	0	0	4	0	5	0	0	1	2	28
2019	36	0	0	9	1	6	2	0	0	2	16
2020	29	0	0	3	0	5	0	1	0	1	19

One Line Listing Crash Report

Region	Number	MP	Number	MP	Area	Location	Type	Dir	Impact	Intent	Dir	Impact	Intent	Weather	Condition	Date	Day	
			Hour	UD-10	Fatal	A B C Injury PDO Alcohol Drugs												
Southwest	39052	3.135	1020	5.908	Intersect	Within	SS-SM	S Front-Lft	Turn left	S Pass-side	Go straight	Clear	Dry	9/12/2019	THU 04PM-05PM	0 0 0 0 0	Y No Uncoded	
Southwest	39052	3.126	1020	5.899	Intersect	Within	AN-ST	S Front-Rght	Go straight	E Front-Lft	Go straight	Clear	Dry	10/1/2013	TUE 08AM-09AM	0 0 0 1 1	N No Uncoded	
Southwest	39052	3.135	1020	5.908	Intersect	Within	AN-ST	W Pass-side	Go straight	S Front-Cen	Go straight	Clear	Dry	11/13/2013	WED 10PM-11PM	0 0 0 0 0	Y No Uncoded	
Southwest	39052	3.135	1020	5.908	Intersect	Within	AN-ST	S Driver-side	Go straight	W Front-Cen	Go straight	Clear	Dry	2/18/2017	SAT 04PM-05PM	0 0 0 2 2	N No Uncoded	
Southwest	39052	3.135	1020	5.908	Intersect	Within	AN-ST	E Front-Cen	Go straight	S Pass-side	Go straight	Clear	Dry	7/28/2016	THU 11AM-NOON	0 0 0 0 0	Y No Uncoded	
Southwest	39052	3.200	10208	5.973	Intersect	Within	SS-SM	S Front-Lft	Turn left	S Pass-side	Go straight	Clear	Dry	11/8/2018	MON 11AM-NOON	1265352	0 0 0 0 0	Y No Uncoded
Southwest	39052	3.198	1020	5.971	Intersect	Within	SS-SM	N Pass-side	Go straight	U Unknow	Go straight	Snow	Icy	2/9/2018	FRI NOON-01PM	1302150	0 0 0 0 0	Y No Uncoded
Southwest	39052	3.195	1020	5.968	Intersect	Within	SS-SM	S Front-Lft	Change lanes	S Pass-side	Go straight	Clear	Dry	4/6/2018	FRI NOON-01PM	1360059	0 0 0 0 0	Y No Uncoded
Southwest	39052	3.136	1020	5.909	Intersect	Straight	AN-ST	W Rear-Rght	Enter Road	S Front-Cen	Go straight	Clear	Dry	8/21/2018	TUE NOON-01PM	1476726	0 0 0 0 0	Y No Uncoded
Southwest	39052	3.201	1020	5.974	Intersect	Within	SS-SM	SE Front-Lft	Turn right	S Pass-E side	Turn right	Clear	Wet	10/15/2018	MON 07AM-08AM	1500175	0 0 0 0 0	Y No Uncoded
Southwest	39052	3.195	1020	5.968	Intersect	Other	SS-SM	S None	Change lanes	S Front-Rght	Go straight	Clear	Dry	4/12/2019	FRI 04PM-05PM	1677273	0 0 0 0 0	Y No Uncoded
Southwest	39052	3.195	1020	5.968	Intersect	Straight	HD-ON	S Pass-side	Go straight	N Front-Cen	Go straight	Rain	Wet	1/1/2018	SAT 01AM-02AM	7858340	0 0 0 0 0	Y No Uncoded
Southwest	39052	3.204	1020	5.977	Intersect	Within	SS-SM	S Front-Lft	Turn left	S Front-Rght	Go straight	Clear	Dry	2/19/2011	SAT 08AM-09AM	7943556	0 0 0 0 0	Y No Uncoded
Southwest	39052	3.204	1020	5.977	Intersect	Within	AN-ST	S Front-Rght	Go straight	E Roof	Go straight	Cloud	Snowy	2/22/2011	TUE 04PM-05PM	7949696	0 0 0 0 0	Y No Uncoded
Southwest	39052	3.204	1020	5.977	Intersect	Within	SS-SM	S Front-Rght	Go straight	S Driver-side	Go straight	Rain	Wet	3/22/2011	TUE 04PM-05PM	7987953	0 0 0 0 0	Y No Uncoded
Southwest	39052	3.196	1020	5.969	Intersect	Straight	SS-SM	S Pass-side	Go straight	S Front-Lft	Change lanes	Cloud	Dry	12/6/2011	TUE 01PM-02PM	8212216	0 0 0 0 0	Y No Uncoded
Southwest	39052	3.149	1020	5.922	Intersect	Straight	MISC-MV	S Front-Lft	Change lanes	S Front-Rght	Go straight	Clear	Wet	1/3/2012	TUE 10AM-11AM	8231660	0 0 0 0 0	Y No Uncoded
Southwest	39052	3.199	1020	5.972	Intersect	Within	AN-TN	E Front-Lft	Turn left	S Pass-side	Go straight	Clear	Dry	11/6/2012	TUE 10AM-11AM	8472412	0 0 0 0 0	Y No Uncoded

Table 1: Crash Data by Crash Type and Severity						
Crash Type	Crash Severity			Crash Location		
	Minor	Major	Fatal	Urban	Suburban	Rural
Sideswipe	0	1	0	1	4	
	0 %	3 %	0 %	3 %	10 %	
Pedestrian	1	0	1	1	8	
	3 %	0 %	3 %	3 %	21 %	
Head-On	0	1	1	1	7	
	0 %	3 %	3 %	3 %	20 %	
Rear-End	0	0	0	2	4	
	0 %	0 %	0 %	6 %	13 %	
Single-Vehicle	0	0	0	4	5	
	0 %	0 %	0 %	11 %	14 %	
Multi-Vehicle	0	0	2	1	5	
	0 %	0 %	6 %	3 %	15 %	
Other	1	0	0	0	3	
	3 %	0 %	0 %	0 %	9 %	
Total	0	0	2	0	5	
	0 %	0 %	5 %	0 %	13 %	
Crash Severity	0	0	2	1	2	
	0 %	0 %	5 %	3 %	6 %	
Crash Location	1	0	1	0	3	
	3 %	0 %	3 %	0 %	10 %	
Grand Total	3	1	2	1	3	4
Total %	3 %	1 %	2 %	1 %	3 %	4 %

	Muddy	Slushy	Snowy	Wet	Others
00 %	00 %	5	13	3	00 %
00 %	00 %	3	8 %	13	3
00 %	00 %	2	6 %	5	1
00 %	26 %	5	16 %	5	1
00 %	00 %	3	9 %	7	2
00 %	00 %	2	6 %	4	1
00 %	00 %	4	11 %	12	3
00 %	13 %	1	3 %	6	1
00 %	00 %	3	8 %	9	2
00 %	13 %	2	7 %	3	1
00 %	41 %	3	8 %	7	2

Year		Dark Unlighted Others	Lighted Dawn	Dark Daylight		Dusk
2011	4	0	1	32	2	1
	10 %	0 %	3 %	80 %	5 %	3 %
2012	7	1	1	28	1	0
	18 %	3 %	3 %	74 %	3 %	0 %
2013	8	0	0	27	0	0
	23 %	0 %	0 %	77 %	0 %	0 %
2014	4	0	2	26	0	0
	13 %	0 %	6 %	81 %	0 %	0 %
2015	10	0	1	24	0	0
	29 %	0 %	3 %	69 %	0 %	0 %
2016	12	0	0	21	1	0
	35 %	0 %	0 %	62 %	3 %	0 %
2017	7	0	1	26	1	0
	20 %	0 %	3 %	74 %	3 %	0 %
2018	4	1	4	28	2	1
	10 %	3 %	10 %	70 %	5 %	3 %
2019	4	0	1	29	2	0
	11 %	0 %	3 %	81 %	6 %	0 %
2020	9	0	1	16	3	0
	31 %	0 %	3 %	55 %	10 %	0 %
Total		69	21	235	72	17

Year		Fatal Property Crashes	Number Total Killed Crashes	Injury Total Crashes Injuries	Number Year Injured	
2011	0	0	5	8	35	40
	0 %		13 %		88 %	
2012	0	0	8	9	30	38
	0 %		21 %		79 %	
2013	0	0	7	7	28	35
	0 %		20 %		80 %	
2014	0	0	2	3	30	32
	0 %		6 %		94 %	
2015	0	0	2	4	33	35
	0 %		6 %		94 %	
2016	0	0	6	9	28	34
	0 %		18 %		82 %	
2017	0	0	6	8	29	35
	0 %		17 %		83 %	
2018	0	0	5	8	35	40
	0 %		13 %		88 %	
2019	0	0	1	1	35	36
	0 %		3 %		97 %	
2020	0	0	4	5	25	29
	0 %		14 %		86 %	
Total		0	46	62	308	354

Summary of Crash Statistics

Dates: 1/1/2011 to 12/31/2020

TOTAL NUMBER OF CRASHES:

354

CRASHES BY DAY OF WEEK

	F	A	B/C and PDO	Total	% of Crashes
Sunday	= 0	1	37	38	10.7%
Monday	= 0	0	49	49	13.8%
Tuesday	= 0	1	59	60	16.9%
Wednesday	= 0	0	53	53	15.0%
Thursday	= 0	0	56	56	15.8%
Friday	= 0	0	60	60	16.9%
Saturday	= 0	1	37	38	10.7%

CRASHES BY SURFACE CONDITION

Dry	= 0	2	230	232	65.5%
Wet	= 0	1	76	77	21.8%
Icy	= 0	0	8	8	2.3%
Snowy	= 0	0	30	30	8.5%
Muddy	= 0	0	0	0	0.0%
Slushy	= 0	0	4	4	1.1%
Debris	= 0	0	0	0	0.0%
Water	= 0	0	0	0	0.0%
Sand	= 0	0	0	0	0.0%
Oil	= 0	0	0	0	0.0%
Other	= 0	0	1	1	0.3%
Unknown	= 0	0	2	2	0.6%
Uncoded & Errors	= 0	0	0	0	0.0%

CRASHES BY TIME OF DAY

MDNT-01AM	= 0	0	3	3	0.8%
01AM-02AM	= 0	0	8	8	2.3%
02AM-03AM	= 0	0	5	5	1.4%
03AM-04AM	= 0	0	3	3	0.8%
04AM-05AM	= 0	0	3	3	0.8%
05AM-06AM	= 0	0	0	0	0.0%
06AM-07AM	= 0	0	4	4	1.1%
07AM-08AM	= 0	0	15	15	4.2%
08AM-09AM	= 0	0	24	24	6.8%
09AM-10AM	= 0	0	19	19	5.4%
10AM-11AM	= 0	0	22	22	6.2%
11AM-NOON	= 0	0	21	21	5.9%
NOON-01PM	= 0	0	25	25	7.1%
01PM-02PM	= 0	2	32	34	9.6%
02PM-03PM	= 0	0	33	33	9.3%
03PM-04PM	= 0	0	25	25	7.1%
04PM-05PM	= 0	0	27	27	7.6%
05PM-06PM	= 0	0	21	21	5.9%
06PM-07PM	= 0	0	15	15	4.2%
07PM-08PM	= 0	0	12	12	3.4%
08PM-09PM	= 0	0	6	6	1.7%
09PM-10PM	= 0	1	10	11	3.1%
10PM-11PM	= 0	0	8	8	2.3%
11PM-MDNT	= 0	0	11	11	3.1%
Uncoded & Errors	= 0	0	1	1	0.3%

CRASHES BY TYPE

	F	A	B/C and PDO	Total	% of Crashes
Angle Driveway	= 0	0	3	3	0.8%
Angle Straight	= 0	2	72	74	20.9%
Angle Turn	= 0	0	6	6	1.7%
Animal	= 0	0	0	0	0.0%
Backing	= 0	0	1	1	0.3%
Bicycle	= 0	0	4	4	1.1%
Fixed Object	= 0	0	11	11	3.1%
Head-on	= 0	0	2	2	0.6%
Head-on Left-Turn Driveway	= 0	0	0	0	0.0%
Head-on L-Turn Not Driveway	= 0	0	0	0	0.0%
Hit Train	= 0	0	0	0	0.0%
Misc. Multiple Vehicle	= 0	0	36	36	10.2%
Misc. Single Vehicle	= 0	0	2	2	0.6%
Other Driveway	= 0	0	1	1	0.3%
Other Object	= 0	0	1	1	0.3%
Overturn	= 0	0	0	0	0.0%
Parking	= 0	0	2	2	0.6%
Pedestrian	= 0	0	3	3	0.8%
Rear End Driveway	= 0	0	5	5	1.4%
Rear End Left Turn	= 0	0	4	4	1.1%
Rear End Right Turn	= 0	0	3	3	0.8%
Rear End Straight	= 0	1	61	62	17.5%
Side Swipe Opposite	= 0	0	1	1	0.3%
Side Swipe Same	= 0	0	133	133	37.6%

CRASHES BY MONTH

January	= 0	0	43	43	12.1%
February	= 0	1	33	34	9.6%
March	= 0	0	28	28	7.9%
April	= 0	0	22	22	6.2%
May	= 0	0	23	23	6.5%
June	= 0	0	26	26	7.3%
July	= 0	1	25	26	7.3%
August	= 0	0	35	35	9.9%
September	= 0	0	39	39	11.0%
October	= 0	1	29	30	8.5%
November	= 0	0	22	22	6.2%
December	= 0	0	26	26	7.3%
Uncoded & Errors	= 0	0	0	0	0.0%

CRASHES BY WEATHER CONDITION

Clear	= 0	1	202	203	57.3%
Cloudy	= 0	2	65	67	18.9%
Fog	= 0	0	1	1	0.3%
Rain	= 0	0	43	43	12.1%
Sleet/Hail	= 0	0	1	1	0.3%
Snow	= 0	0	35	35	9.9%
Wind	= 0	0	0	0	0.0%
Blowing Snow	= 0	0	2	2	0.6%
Blowing Sand	= 0	0	0	0	0.0%
Smoke	= 0	0	0	0	0.0%
Unknown	= 0	0	2	2	0.6%
Uncoded & Errors	= 0	0	0	0	0.0%

Taking Things to the Next Level



```
for object to mirror...
mirror_mod.mirror_object

operation == "MIRROR_X":
    mirror_mod.use_x = True
    mirror_mod.use_y = False
    mirror_mod.use_z = False
operation == "MIRROR_Y":
    mirror_mod.use_x = False
    mirror_mod.use_y = True
    mirror_mod.use_z = False
operation == "MIRROR_Z":
    mirror_mod.use_x = False
    mirror_mod.use_y = False
    mirror_mod.use_z = True

#selection at the end -add
mirror_ob.select= 1
modifier_ob.select=1
context.scene.objects.active
("Selected" + str(modifier_ob.name))
mirror_ob.select = 0
= bpy.context.selected_object
data.objects[one.name].select

print("please select exactly one object")

-- OPERATOR CLASSES -----

bpy.types.Operator):
    "X mirror to the selected object.mirror_mirror_x"
    "Mirror X"
```

Text Analysis

What We Can Look At



Characteristics of a set of words



How the words relate to each other



How the words are used in the documents

Phrases

What Can We Do?

- Several Things!!!



Why Bother?



PROVIDES DOCUMENTED
REFERENCES



PROVIDE REAL-WORLD
CONTEXT

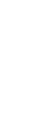
Search Text For Words That Are Used



UD10 Narratives

Base Word Cloud





SPIN



KWIC - Stated

Search multiple texts for common phrases



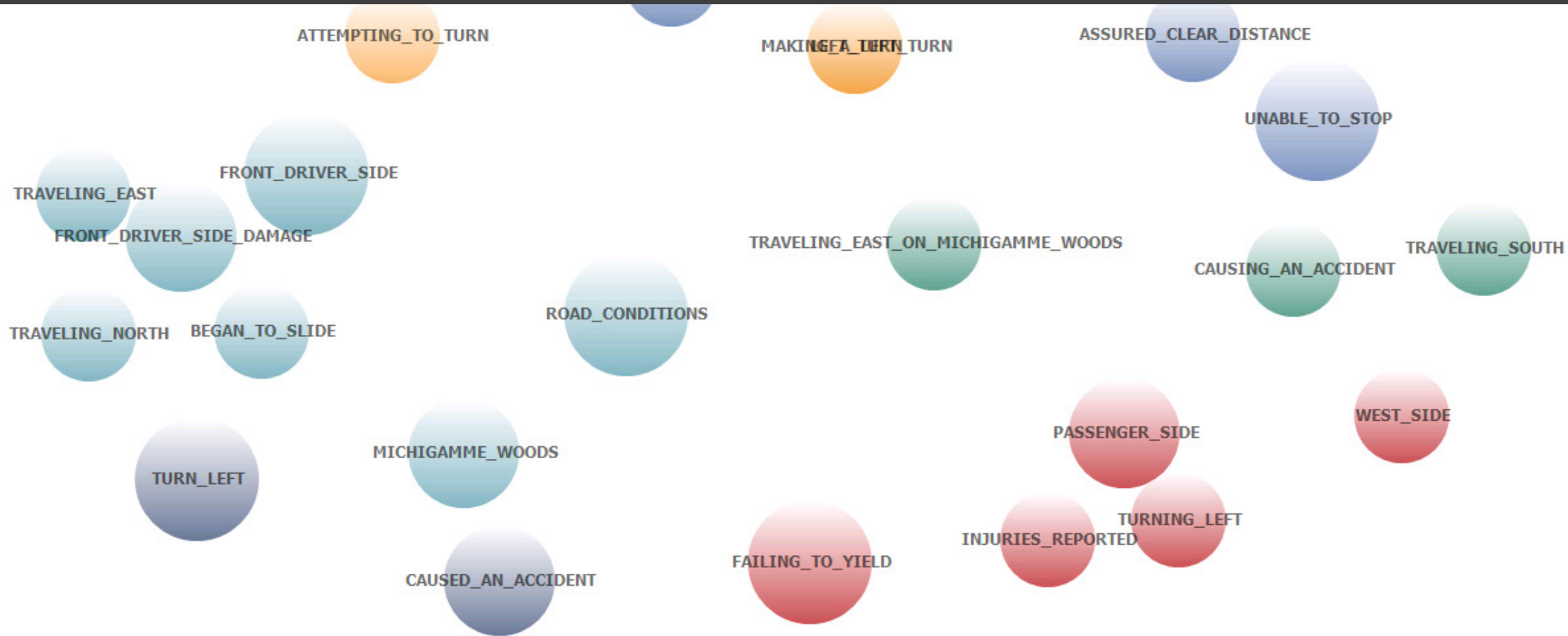
UD10 Narratives

Phrase finder table

	FREQUENCY	NO. CASES	% CASES	LENGTH	TF • IDF
FRONT DRIVER SIDE	9	3	7.50%	3	10.1
MICHIGAMME WOODS	7	5	12.50%	2	6.3
LEFT TURN	6	4	10.00%	2	6.0
TRAVELING EAST	6	5	12.50%	2	5.4
FAILING TO YIELD	5	5	12.50%	3	4.5
LOST CONTROL	5	5	12.50%	2	4.5
MICHIGAN AVE	5	4	10.00%	2	5.0
ROAD CONDITIONS	5	5	12.50%	2	4.5
TURN LEFT	5	5	12.50%	2	4.5
UNABLE TO STOP	5	5	12.50%	3	4.5
CAUSED AN ACCIDENT	4	4	10.00%	3	4.0
FRONT DRIVER SIDE DAMAGE	4	3	7.50%	4	4.5
PASSENGER SIDE	4	4	10.00%	2	4.0
ASSURED CLEAR DISTANCE	3	2	5.00%	3	3.9
ATTEMPTING TO TURN	3	3	7.50%	3	3.4
BEGAN TO SLIDE	3	3	7.50%	3	3.4
CAUSING AN ACCIDENT	3	3	7.50%	3	3.4
INJURIES REPORTED	3	3	7.50%	2	3.4
MAKING A LEFT TURN	3	3	7.50%	4	3.4

See How Words and Phrases Relate





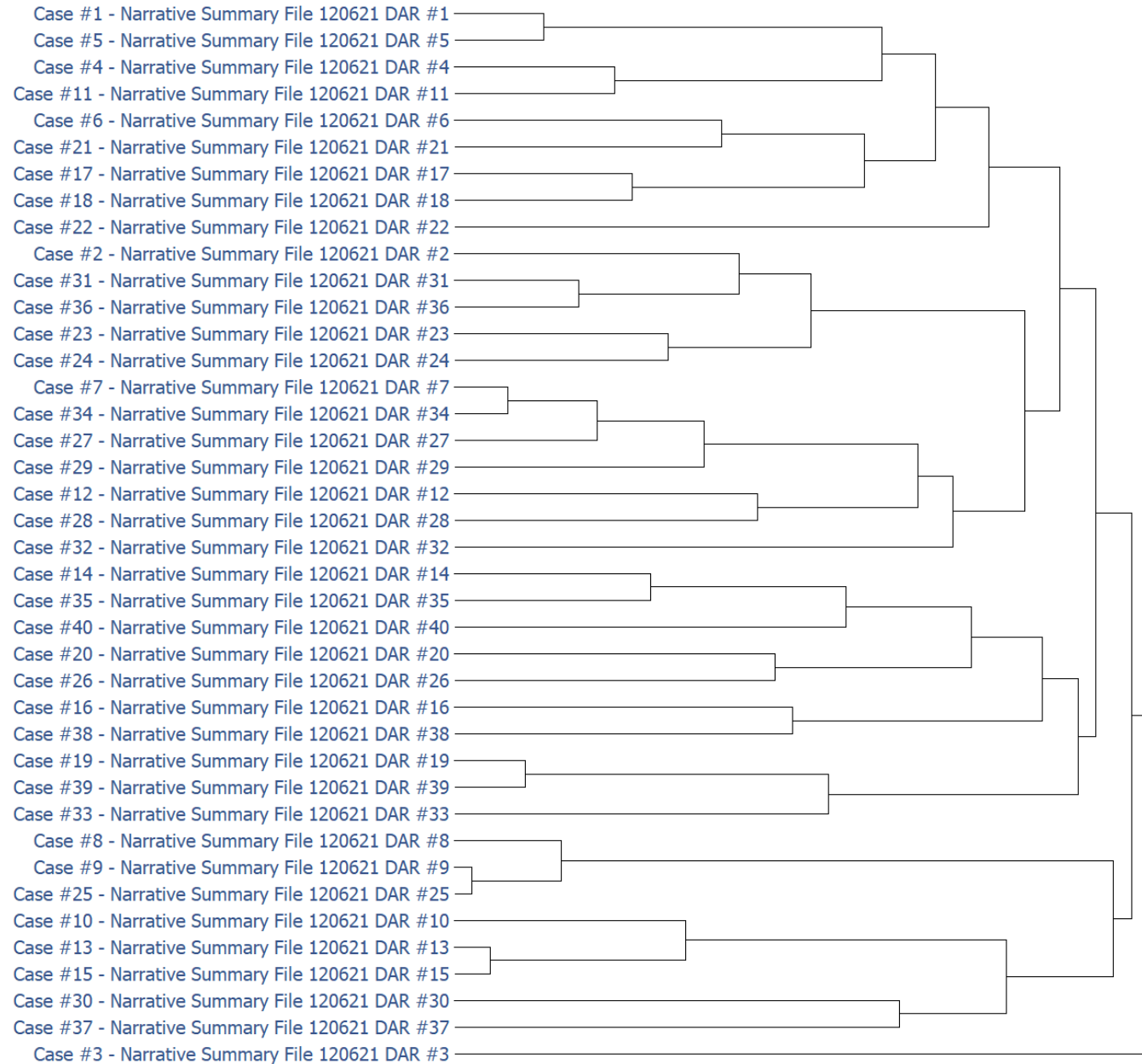
Bubble Chart
Phrases

- Concept Map

See How Cases Relate



Dendrogram



AGGLOMERATION ORDER: COSINE

Search for Keywords and Phrases



Key Word List

CASENO		KEYWORD		VARIABLE
32	V1 stated that she was driving south on Fraternity Village Dr. near California Ave.V1 stated that V2 was trying to back out of a parking spot on the side of the road and became stuck. V2 accelerated too quickly backwards and struck the passenger side rear wheel well ofV1.V1 stated that she told V2 that everything was okay and the two did not exchange information. V1 then decided to call the police just in case V2 tried to blame the accident on her. V1 was unable to provide me with a plate number or driver information.V1 stated that V2 was a black Ford Fusion driven by a female with a female	passenger	in the passenger seat. No citation was issued due to no suspect information.	DOCUMENT
17	V1 and V2 were traveling southeast on Fraternity Village Dr. V2 reported he was attempting to make a left turn into the parking lot off of Fraternity Village Dr. V2 reported that while he was attempting to make the turnV1 rear ended him. The passenger on V2 also reported that while V2 was attempting to turn into the parking lot he was rear ended by V1. The	passenger	of V2 reported that V2's blinker was on. V1 reported that he was behindV2 on Fraternity Village Dr. He stated that V2 was making a left turn, however, he was unable to stop in time and rear endedV2. Both vehicles sustained very minor damage. V1 was issued citation Z472572 for failing to stop within an assured and clear distance. I identified both drivers by	DOCUMENT

Keyword Retrieval

- [Case #27 VARIABLE = DOCUMENT]

- Driver of V1 stated he was traveling SB on Fraternity Village Dr. when he missed the driveway of his residence. He **stated** he attempted to turn the vehicle to loop around the traffic circle at the S end of Fraternity Village Dr. He stated he turned the wheel to the right but the vehicle continued straight ahead (understeer) and ran off the roadway, crashing into a fire hydrant located just off the roadway in the traffic circle. The vehicle struck the hydrant on the front right side, causing the vehicle to spin around, coming to rest facing NB. Driver admitted to having a couple of drinks two hours prior. After dexterity tests were conducted and PBT administered, the Driver was found not to be intoxicated. Citation #Z337816 issued to Driver of V1 for (1) driving with a suspended license, and (2) failing to use due care and caution causing an accident. DVR 1161-2 used.

- [Case #12 VARIABLE = DOCUMENT]

- Driver of V1 was stopped on the right side of Fraternity Village Dr. facing northbound. Driver of V1 stated V2 turned right onto Fraternity Dr. V2 then began driving in reverse. Driver of V1 then stated V2 hit his vehicle causing very minimal damage to the back driver side bumper of V1. Driver of V2 stated he was on Fraternity Village Dr. and drove his vehicle backwards. He did not hit V1 to his knowledge. Driver of V2 **stated** he may have been very close to V1, but does not recall hitting him. There was no damage on V2.

- [Case #29 VARIABLE = DOCUMENT]

- DVR 1163 V2 was southbound on California and stated he was unable to stop and slid into northbound vehicle (V1) on Fraternity Village Dr. D2 stated that he slid about halfway down the hill. Road conditions were extremely poor due to snowstorm upon arrival, but salt trucks came through while I was on scene. On this date, I noted vehicles not able to go uphill on nearby travel ways. No citation issued. D1 **stated** he saw D2's brakes locked up.

Search libraries



Narratives, references, social media, general
references

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Font



Alignment

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General

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Number




Conditional
Formatting ▾



Format as
Table ▾

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	A	B	C	D	E	F
1	CASENO		KEYWORD	VARIABLE		
2	38	V1 was traveling south on Fraternity Village Dr. into the circle roundabout. V2 was traveling out of the round about the	wrong	way. V1 was unable able to avoid hitting the V2 due to road conditions. V2 was issued a citation for drove without due care and caution- accident and no proof of insurance. Z322964.	DOCUMENT	
3	42	tory speed limits accounted for 15 percent of speeding-related fatalities (NHTSA, 2006). Of the speeding-related fatal crashes, 43 percent occurred in urban areas and 56 percent in rural areas. As an agency seeks to address speeding-related crashes, it may be necessary to coordinate implementation of strategies, especially education and enforcement strategies, with other agencies in neighboring jurisdictions or at a different governmental level. Historic Trend in All Fatalities That Are Speeding-Related Source: FARS data (NHTSA, 2006a) Year Percentage of Speeding-Related Fatalities most common cause of speeding-related fatalities on low speed-roads (11%), while rear-end collisions were the second most common cause of speeding-related fatalities on high-speed roads (10%). Non-Motorists 563 pedestrians were involved in speeding-related fatal crashes in 2006; 307 of these were on low-speed roadways, and 232 were on high-speed roadways. Fatal Speeding Crashes by Road Type and Speed Limit Source: FARS data (NHTSA, 2006a) Percenta e of Total g peedin -Related g peedin -Related g Road Type peed Limit Traffic Fatalitie Traffic Fatalitie Interstate Greater than 55 mph % Less than or equal to 55 mph Non-Interstate Low (40 mph or less) % High (45 mph or more) Unknown Unknown/No Statutory Limit % Total % Specific Attributes of the Problem Much of the problem associated with speeding is behavioral. Unfortunately, there are cultural barriers to producing safe driving behavior. Speed is marketed to car buyers. Cars today can accelerate faster, reach higher speeds and handle more impressively than they could a generation ago (Schneider, 2004). Advances in technology have allowed auto manufacturers to produce efficient high-performance engines and lightweight parts (e.g., carbon fiber) that result in high-performance vehicles. Speeding is a traffic violation that seems acceptable to today's society. Exposure to high speeds, extreme driving and illegal racing in the media	wrong	message to drivers, especially younger drivers. When such messages are combined with risks such as not wearing seatbelts, or driving under the influence of alcohol or drugs, the result can be deadly. This section reviews crash data and other research in order to better explain the nature of the speed- and speeding-related problems, and to help direct highway agencies' safety improvement efforts.	DOCUMENT	

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	A	B	C	D	E
1	CASE NO		KEYWORD		VARIABLE
2	8	V2 was	backing	down the icy hill on Fraternity Village Dr. because she was unable to make it up to W. Michigan.V1 was traveling north up the hill and V2 back into V1. Citation Z293235 was issued to V2 for improper backing causing an accident.	DOCUMENT
3	8	V2 was backing down the icy hill on Fraternity Village Dr. because she was unable to make it up to W. Michigan.V1 was traveling north up the hill and V2 back into V1. Citation Z293235 was issued to V2 for improper	backing	causing an accident.	DOCUMENT
4	9	V1 was	backing	out of a private drive while plowing snow and back into V2. V1 no damage, V2 damage to rear bumper. No tow or injury. V1 cited Z412726 for unsafe backing.	DOCUMENT
5	9	V1 was backing out of a private drive while plowing snow and back into V2. V1 no damage, V2 damage to rear bumper. No tow or injury. V1 cited Z412726 for unsafe	backing	.	DOCUMENT
6	25	V1 was parked on Fraternity Village Dr. The driver of V1 was not in vehicle at the time. V2 driver stated he thought the vehicle was in drive. V-2 slowly started to go backward when driver took his foot off the brake pedal. V2 driver stated he struck V1 when	backing	up. Only damage was to V1 front center of bumper. Damage was a very small scratch approximately 4 inches long. V1 driver stated she was not worried about the damage. V1 and V2 drivers exchanged information in case there was more damage seen in the morning. V1 driver was issued a citation for unsafe backing - Z414803.	DOCUMENT
7	25	V1 was parked on Fraternity Village Dr. The driver of V1 was not in vehicle at the time. V2 driver stated he thought the vehicle was in drive. V-2 slowly started to go backward when driver took his foot off the brake pedal. V2 driver stated he struck V1 when backing up. Only damage was to V1 front center of bumper. Damage was a very small scratch approximately 4 inches long. V1 driver stated she was not worried about the damage. V1 and V2 drivers exchanged information in case there was more damage seen in the morning. V1 driver was issued a citation for unsafe	backing	- Z414803.	DOCUMENT
8		it becomes law. In other states, local jurisdictions have enormous independence and indeed may operate as if the state legislature has virtually no authority over them. Often, legislative authority exists for a strategy (e.g., seizing and impounding a vehicle), but it is not implemented at a local level for various reasons (e.g., lack of support from the local district attorney). In such situations, coordinated local effort may enable implementation of the strategy. Precaution is required even when authority exists within an agency or a jurisdiction. State agencies are often reluctant to exercise existing authority. Express authorization is sought from state legislatures as a protection against potential criticism for new programs. This has been especially true in state driver-licensing agencies, when authority existed for imposing requirements on drivers but agency officials were unwilling to act in the absence of specific legislative direction. If new or additional legislative authority is desired, it is important to enlist the active		from local prosecutors and the courts. In this regard, the use of traffic courts is strongly recommended. When traffic cases are mixed in with burglaries, assaults, and other crimes, they are often considered of minimal importance and not treated seriously. In addition to the use of traffic courts, good communication with clear	DOCUMENT

Develop Some Useful Products

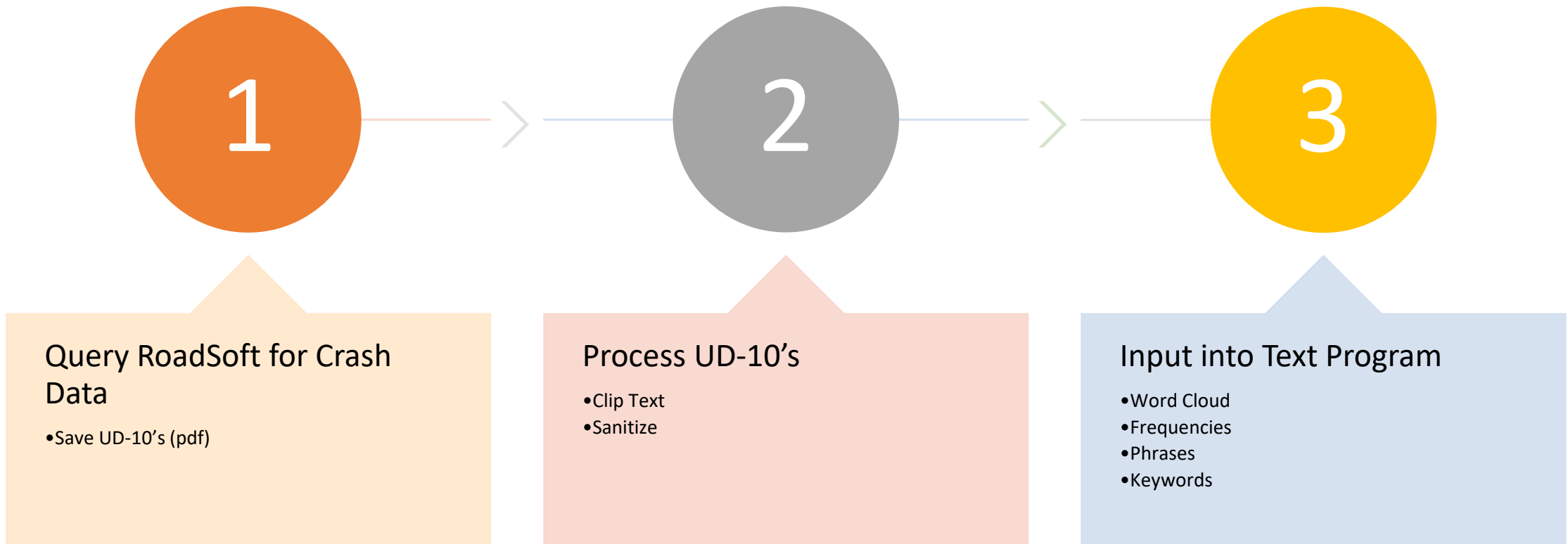


Narratives, references, social media, general
references

NARRATIVE	REVIEW COMMENT	POSSIBLE ACTIONS BY PUBLIC WORKS TO ADDRESS PROBLEM
1. Veh 1 lost control and hit an unoccupied parked Veh 2. Veh 1 advised he was unsure why he lost control, possible due to a medical condition. Veh 1 was treated on scene by Life and was being taken to Bronson by his wife. Veh 1 _	Driver impaired – possible medical problem	None
1. #2 stopped to talk with students along the road when rear ended by #1. #1 stated he looked to the side of the road also and when he looked up #2 had	Driver inattention	None
1. City of Kalamazoo workers were repairing a curb along the south side of Maple St. A white COK truck with yellow emergency lights activated was parked facing west along the south curb lane. The driver of vehicle 1 was traveling east on Maple St and informed me that as she was passing the white COK truck she thought she had enough clearance on her passenger side. The driver of vehicle 1 struck the white COK truck with her passenger side mirror. Vehicle 1 was cited	Poor driving skills – driver saw COK truck	None
1. Unit 1 was traveling eastbound on W Maple just east of Hudson. Unit 1 struck a manhole, which was missing it's cover. The driver did not notice that the manhole was uncovered. The driver of Unit 1 stated that the collision caused damage to the undercarriage of his vehicle. The vehicle remained drivable.	Missing manhole cover/ driver inattention	Install screw/lock-down cover
1. V2 WAS WB W MAPLE ST NEAR HUDSON ST. V1 WAS EB W MAPLE ST. V1 SUDDENLY VEERED INTO V2'S LANE AND	Hit and run – driver may have been speeding	None

1. Unit 1 was northbound on Stearns at W Maple. Unit 2 was east bound on W Maple at Stearns. Unit 1 failed to stop for the stop sign at Stearns and W Maple and collided with the rear of unit 2. Citation #Z358905 was issued to the driver	Failure to stop at STOP sign	None
1. VEH #1 SLID ON VERY SLIPPERY ICEY ROADS INTO A HYDRANT. THIS KICKED HER CAR INTO ROAD. DRIVER OF #1 GOT OUT OF CAR AND WATCHED ANOTHER UNKNOWN VEHICLE SLIDE ON ICEY ROADS HITTING CORNER OF VEH #1. DRIVER OF VEH #2 LEFT THE SCENE.	Ice/snow – speed too fast for conditions	None
1. Unit 2 was westbound on W Maple stopped for the stop sign at Brentwood. After Unit 2 arrived at the four way stop, unit 1 came to a stop east bound on W Maple at Brentwood. Unit 2 proceeded into the intersection to make the left turn, at which time unit 1 proceeded into the intersection and collided with unit 2. The driver of unit 1 admitted fault in the accident, and agreed that unit 2 had come to a complete stop at the intersection before him. Citation #Z362015 was issued	Failed to properly negotiate STOP sign – drivers both stopped for STOP sign	None
1. Unit 2 was westbound on Maple and got stuck in the intersection at Indiana due to icy brick road conditions. She was stuck on top of the hill when Unit 1 was eastbound and tried to slow for the stalled car in the intersection. Unit 1 slid when she tapped her brakes and came to a stop at an angle on a curb. While sitting there, Unit 2 tried to move out of the way and ended up sliding back down the hill and into Unit 1. They both were stuck together on the side until I was able to help	Ice/snow – speed too fast for conditions	None
1. Unit 1 was east on W Maple at Indiana. Unit 1 was run off the road by a pickup who overtook their lane. Unit 1 swerved to avoid the	Hit and run – possible	None

Process





Thank you!

Questions?