



Edition: 2.0

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Overall Crash Hotspots

Understanding the Layer:

This layer was created by querying SHA Maryland's Crash Dataset (collected by MSP and processed by SHA) and breaking it down into the individual jurisdiction level. With each jurisdiction subset of crash data, a kernel density tool was used to produce hotspots. The hotspots illustrate low to high ranges of crashes occurring inside of that area.

Type of Data: Crashes

Source of Data: Maryland State Police (MSP) State Highway Administration (SHA) Baltimore City Department of Transportation (Limited Data Use)

Year Ranges of Data (each year represents a separate data layer):

2013 to 2015 2014 to 2016 2013 to 2017

Values/Visualization of Data:

A kernel density tool was used to calculate the standard distance and weighted mean in a neighborhood around each crash location to display hotspots. These hotspots identify low, medium, and high densities of crashes.

Crash Hotspots



See legend for more details.

Overall Crash Road Segments

Understanding the Layer:

This layer was created by querying SHA Maryland's Crash Dataset (collected by MSP and processed by SHA) and breaking it down into the individual jurisdiction level. With each jurisdiction subset of crash data, a spatial join was used on the crash data points and Maryland road segments. The road segments that are generated illustrate low to high ranges of crashes broken into one-mile road segments.

<u>Type of Data:</u> Crashes Maryland Road Segments

Source of Data: Maryland State Police (MSP) State Highway Administration (SHA) Baltimore City Department of Transportation (Limited Data Use)

Year Ranges of Data (each year represents a separate data layer): 2013 to 2015 2014 to 2016 2013 to 2017

Values/Visualization of Data:

For each of the colors below, a value range will be displayed. These values are the total number of crashes that occurred on that road segment.

Crash Road Segments

- Low: (Range of Crash Values)
- Medium: (Range of Crash Values)
- High: (Range of Crash Values)

Overall Crash Hexagon Bin Analysis

Understanding the Layer:

This layer was created by querying SHA Maryland's Crash Dataset (collected by MSP and processed by SHA) and breaking it down to individual jurisdiction level. With each jurisdiction's subset of crash data, the data was summarized within a tessellation grid of five square mile hexagon bins. The hexagon bins illustrate low to high ranges of crashes occurring inside of that area.

<u>Type of Data:</u> Crashes

Source of Data: Maryland State Police (MSP) State Highway Administration (SHA) Baltimore City Department of Transportation (Limited Data Use)

Year Ranges of Data: 2013 to 2017

Values/Visualization of Data:

For each of the colors below, a value range will be displayed. These values are the total number of crashes that occurred in that five square mile hexagon bin.

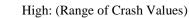
Crash Hexagon Bins



Low: (Range of Crash Values)



Medium: (Range of Crash Values)



ETIX Hotspots

Understanding the Layer:

This layer was created by querying Maryland's ETIX citation dataset and breaking it down to individual jurisdiction level. With each jurisdiction subset of citation data, a kernel density tool was used to produce hotspots. The hotspots illustrate low to high ranges of citations occurring inside of that area.

Type of Data: Citation

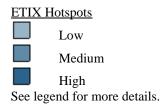
Source of Data:

The Maryland Judiciary and District Courts Web Portal (jPortal)

Year Range of Data: 2013 to 2015

Values/Visualization of Data:

A kernel density tool was used to calculate the standard distance and weighted mean in a neighborhood around each citation location to display hotspots. These hotspots identify low, medium, and high densities of citation.



ETIX Road Segments

Understanding the Layer:

This layer was created by querying Maryland's ETIX citation dataset and breaking it down to individual jurisdiction level. With each jurisdiction subset of citation data, a spatial join was used on the citation data points and Maryland road segments. The road segments that are generated illustrate low to high ranges of citations broken into one-mile road segments. No corrections were made to the citation data.

Type of Data: Citation

Source of Data: The Maryland Judiciary and District Courts Web Portal (jPortal)

Year Range of Data: 2013 to 2015

Values/Visualization of Data:

For each of the colors below, a value range will be displayed. These values are the total number of citations that occurred on that road segment.

ETIX Road Segments

- Low: (Range of Citation Values)
- Medium: (Range of Citation Values)
 - High: (Range of Citation Values)

Injury, Severe, and Fatal Crash Hotspots

Understanding the Layer:

This layer was created by querying SHA Maryland's Crash Dataset (collected by MSP and processed by SHA) and breaking it down to individual jurisdiction level. With each jurisdiction subset of crash data, a kernel density tool was used to produce hotspots. The hotspots illustrate low to high ranges of injury, severe, and fatal crashes occurring inside of that area.

<u>Type of Data:</u> Crash Severity

Data queried:

A crash that is labeled to be either an injury, severe, or fatal crash will have one of the following ACC_SEVER code seen below.

Crash Severity (ACC_SEVER or ACCIDENT_S)

- 05 = Fatal
- 04 = Suspected Serious Injury*
- 03 = Suspected Minor Injury** *Prior to 2015, when ACRS was implemented, 04 Disabled (Incapacitating) **Prior to 2015, when ACRS was implemented, 03 was Injury (Not Incapacitating)

Source of Data: Maryland State Police (MSP) State Highway Administration (SHA) Baltimore City Department of Transportation (Limited Data Use)

Year Range of Data: 2013 to 2015

Values/Visualization of Data:

A kernel density tool was used to calculate the standard distance and weighted mean in a neighborhood around each crash location to display hotspots. These hotspots identify low, medium, and high densities of crashes.

Crash Hotspots



High

See legend for more details.

Impaired Crash Hotspots

Understanding the Layer:

This layer was created by querying SHA Maryland's Crash Dataset (collected by MSP and processed by SHA) and breaking it down to individual jurisdiction level. With each jurisdiction subset of crash data, a kernel density tool was used to produce hotspots. The hotspots illustrate low to high ranges of impaired crashes occurring inside of that area.

<u>Type of Data:</u> Alcohol and/or Drug Related Crashes

<u>Data queried:</u> A crash that is labeled to be alcohol and/or drug related will have the following queries:

Query for 2013 and 2014 crash data: ACC_COND IN ('A', 'B', 'D')

Query for 2015 crash data:

PERSON_TYPE = 'D' AND CONDITION_CODE IN ('02', '03', '10.03') OR SUBST_USE_CODE IN ('21', '22', '23', '24') OR CONTRIB_CODE1 IN (1, 2, 3, 4) OR CONTRIB_CODE2 IN (1, 2, 3, 4) OR CONTRIB_CODE3 IN (1, 2, 3, 4) OR CONTRIB_CODE4 IN (1, 2, 3, 4)

Explanation of Queries: Condition of the Driver (ACC_COND) A = Alcohol

B = Both Alcohol and Drugs D = Drugs

 $\frac{Person_Type}{D' = Driver}$

<u>Condition Code</u> '02' = Had Been Drinking '03' = Using Drugs '10' = Influenced by medications and/or drugs and/or alcohol <u>Subst Use Code</u>

'21' = Alcohol Contributed
'22' = Illegal Drugs Contributed
'23' = Medication Contributed
'24' = Combination Contributed

Contrib_Code (1, 2, 3, and 4)

1' =Under the Influence of Drugs

'2' = Under the Influence of Alcohol

3' =Under the Influence of Medication

'4' = Under Combined Influence

Source of Data: Maryland State Police (MSP) State Highway Administration (SHA) Baltimore City Department of Transportation (Limited Data Use)

Year Range of Data: 2013 to 2015 2014 to 2016

Values/Visualization of Data:

A kernel density tool was used to calculate the standard distance and weighted mean in a neighborhood around each crash location to display hotspots. These hotspots identify low, medium, and high densities of crashes.

Crash Hotspots



See legend for more details.

Impaired Crash Road Segments

Understanding the Layer:

This layer was created by querying SHA Maryland's Crash Dataset (collected by MSP and processed by SHA) and breaking it down to individual jurisdiction level. With each jurisdiction subset of impaired crash data, a spatial join was used on the impaired crash data points and Maryland road segments. The road segments that are generated illustrate low to high ranges of crashes broken into one-mile road segments.

<u>Type of Data:</u> Alcohol and/or Drug Related Crashes Maryland Road Segments

<u>Data queried:</u> A crash that is labeled to be alcohol and/or drug related will have the following queries:

Query for 2013 and 2014 crash data: ACC_COND IN ('A', 'B', 'D')

Query for 2015 and 2016 crash data: PERSON_TYPE = 'D' AND CONDITION_CODE IN ('02', '03', '10.03') OR SUBST_USE_CODE IN ('21', '22', '23', '24') OR CONTRIB_CODE1 IN (1, 2, 3, 4) OR CONTRIB_CODE2 IN (1, 2, 3, 4) OR CONTRIB_CODE3 IN (1, 2, 3, 4) OR CONTRIB_CODE4 IN (1, 2, 3, 4)

Explanation of Queries: Condition of the Driver (ACC_COND)

A = Alcohol B = Both Alcohol and Drugs D = Drugs

<u>Person_Type</u> 'D' = Driver <u>Condition_Code</u> '02' = Had Been Drinking '03' = Using Drugs '10' = Influenced by medications and/or drugs and/or alcohol <u>Subst_Use_Code</u>

'21' = Alcohol Contributed
 '22' = Illegal Drugs Contributed
 '23' = Medication Contributed
 '24' = Combination Contributed

Contrib_Code (1, 2, 3, and 4)

- '1' = Under the Influence of Drugs
- '2' = Under the Influence of Alcohol
- 3' =Under the Influence of Medication
- '4' = Under Combined Influence

Source of Data: Maryland State Police (MSP) State Highway Administration (SHA) Baltimore City Department of Transportation (Limited Data Use)

Year Ranges of Data (each year represents a separate data layer): 2013 to 2015 2014 to 2016

Values/Visualization of Data:

For each of the colors below, a value range will be displayed. These values are the total number of alcohol and/or drug related crashes that occurred on that road segment.

Crash Road Segments

- Low (Range of Crash Values)
- Medium (Range of Crash Values)
- High (Range of Crash Values)

Aggressive Driving Crash Hotspots

Understanding the Layer:

This layer was created by querying SHA Maryland's Crash Dataset (collected by MSP and processed by SHA) and breaking it down to individual jurisdiction level. With each jurisdiction subset of crash data, a kernel density tool was used to produce hotspots. The hotspots illustrate low to high ranges of crashes occurring inside of that area.

<u>Type of Data:</u> Aggressive Driving Crash

Data queried:

A crash that is labeled to be aggressive driving has one of the contributing factors below in each of the contributing factor fields, CONTRIB_V1 and CONTRIB_V2.

Contributing Factors (CONTRIB_V1 and CONTRIB_V2)

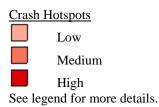
'11' - Failed to Yield Right of Way'22' - Followed Too Closely'12' - Failed to Obey Stop Sign'24' - Improper Lane Change'13' - Failed to Obey Traffic Signal'26' - Improper Passing'14' - Failed to Obey other Traffic Control'40.88' - Failure to Obey Traffic Signs Signals or Officer'15' - Failed to Keep Right of Center'68.88' - Disregarded Other Road Markings'16' - Failed to Stop for School Bus'70.88' - Other Improper Action'18' - Exceeded the Speed Limit'75.88' - Operated Motor Vehicle in Erratic Reckless Manner'21' - Too Fast for Conditions'75.88' - Operated Motor Vehicle in Erratic Reckless Manner

Source of Data: Maryland State Police (MSP) State Highway Administration (SHA) Baltimore City Department of Transportation (Limited Data Use)

Year Ranges of Data (each year represents a separate data layer): 2013 to 2015 2014 to 2016

Values/Visualization of Data:

A kernel density tool was used to calculate the standard distance and weighted mean in a neighborhood around each crash location to display hotspots. These hotspots identify low, medium, and high densities of crashes.



Aggressive Driving Crash Road Segments

Understanding the Layer:

This layer was created by querying SHA Maryland's Crash Dataset (collected by MSP and processed by SHA) and breaking it down to individual jurisdiction level. With each jurisdiction subset of crash data, a spatial join was ran on the crash data points and Maryland road segments. The road segments that are generated illustrate low to high ranges of crashes broken into one-mile road segments.

<u>Type of Data:</u> Aggressive Driving Crash Maryland Road Segments

Data queried:

A crash that is label to be aggressive driving has one of the contributing factors below in each of the contributing factor fields, CONTRIB_V1 and CONTRIB_V2.

Contributing Factors (CONTRIB_V1 and CONTRIB_V2)

'11' – Failed to Yield Right of Way	'22' – Followed Too Closely
'12' – Failed to Obey Stop Sign	'24' – Improper Lane Change
'13' – Failed to Obey Traffic Signal	'26' – Improper Passing
'14' – Failed to Obey other Traffic Control	'40.88' – Failure to Obey Traffic Signs Signals or Officer
'15' – Failed to Keep Right of Center	'68.88' – Disregarded Other Road Markings
'16' – Failed to Stop for School Bus	'70.88' – Other Improper Action
'18' – Exceeded the Speed Limit	'75.88' - Operated Motor Vehicle in Erratic Reckless Manner
'21' - Too Fast for Conditions	

Source of Data: Maryland State Police (MSP) State Highway Administration (SHA) Baltimore City Department of Transportation (Limited Data Use)

Year Ranges of Data (each year represents a separate data layer): 2013 to 2015

2014 to 2016

Values/Visualization of Data:

Inside of each of the color below, a value range will be displayed. These values are the total number of aggressive driving crashes that occurred on that road segment.

Crash Road Segments

- Low: (Range of Crash Values)
- Medium: (Range of Crash Values)
 - High: (Range of Crash Values)

Aggressive Driving (ADAPT): HVE Wave

Understanding the Layer:

This layer was created by querying SHA Maryland's Crash Dataset (collected by MSP and processed by SHA) and breaking it down to individual jurisdiction level. With each jurisdiction subset of crash data, a kernel density tool was used to produce hotspots. The hotspots illustrate low to high ranges of crashes occurring inside of that area. The data used in this layer on focuses on nine areas (Anne Arundel County, Baltimore City, Baltimore County, Charles County, Harford County, Howard County, Montgomery County, Prince George's, and Salisbury) that received Aggressive Driving Enforcement Funds for FFY2017.

Disclaimer: Data may have been removed from certain areas to give those nine areas unique areas of focus.

Type of Data: Aggressive Driving Crash Behavior

Data queried:

The data that was queried was one of the contributing factor fields (CONTRIB_V1 and/or CONTRIB_V2) that can be considered to be a behavior of aggressive driving. Only one of the CONTRIB V1 or CONTRIB V2 is needed to be label as an aggressive driving behavior. By looking at the aggressive driving behaviors, it provides a larger dataset to review and analyze for the use of the HVE Waves.

Contributing Factors (CONTRIB V1 and/or CONTRIB V2)

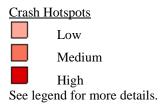
- '11' Failed to Yield Right of Way '22' - Followed Too Closely '12' - Failed to Obey Stop Sign '24' – Improper Lane Change '13' – Failed to Obey Traffic Signal '26' – Improper Passing '14' – Failed to Obey other Traffic Control '40.88' - Failure to Obey Traffic Signs Signals or Officer '68.88' - Disregarded Other Road Markings
- '15' Failed to Keep Right of Center
- '16' Failed to Stop for School Bus
- '18' Exceeded the Speed Limit
- '21' Too Fast for Conditions
- '70.88' Other Improper Action
- '75.88' Operated Motor Vehicle in Erratic Reckless Manner

Source of Data: Maryland State Police (MSP) State Highway Administration (SHA) Baltimore Police Department (Limited Data Use)

Year Ranges of Data (each year represents a separate data layer): 2013 to 2015 2014 to 2016

Values/Visualization of Data:

A kernel density tool was used to calculate the standard distance and weighted mean in a neighborhood around each crash location to display hotspots. These hotspots identify low, medium, and high densities of crashes.



Crash Road Segments

- Low: (Range of Crash Values)
- Medium: (Range of Crash Values)
- High: (Range of Crash Values)

Distracted Driving Crash Hotspots

Understanding the Layer:

This layer was created by querying SHA Maryland's Crash Dataset (collected by MSP and processed by SHA) and breaking it down to individual jurisdiction level. With each jurisdiction subset of crash data, a kernel density tool was used to produce hotspots. The hotspots illustrate low to high ranges of crashes occurring inside of that area.

<u>Type of Data:</u> Distracted Driving Crash

Data queried:

A crash that is labeled to be distracted driving will have the following ContribCode (from the Contributing Circumstances table) query:

ContribCode_1 IN (7, 19, 60.88) OR ContribCode_2 IN (7, 19, 60.88) OR ContribCode_3 IN (7, 19, 60.88) OR ContribCode_4 IN (7, 19, 60.88) OR DISTRACTED_BY_CODE IN ('01', '02', '03', '04', '05', '06', '07', '09', '10', '12', '13', '14', '15', '16', '17', '18', '88')

Contributing Factors (ContribCode_1 or ContribCode2 or ContribCode_3 or ContribCode_4) '7' – "Failed to Give Full Time and Attention '60.88' – "Inattentive" '19' – "Operator Using Cellular Phone"

Source of Data: Maryland State Police (MSP) State Highway Administration (SHA) Baltimore City Department of Transportation (Limited Data Use)

Year Ranges of Data (each year represents a separate data layer): 2013 to 2015 2014 to 2016

Values/Visualization of Data:

A kernel density tool was used to calculate the standard distance and weighted mean in a neighborhood around each crash location to display hotspots. These hotspots identify low, medium, and high densities of crashes.

Crash Hotspots Low Medium High See legend for more details.

Distracted Driving Crash Road Segments

Understanding the Layer:

This layer was created by querying SHA Maryland's Crash Dataset (collected by MSP and processed by SHA) and breaking it down to individual jurisdiction level. With each jurisdiction subset of crash data, a spatial join was ran on the crash data points and Maryland road segments. The road segments that are generated illustrate low to high ranges of crashes broken into one-mile road segments.

<u>Type of Data:</u> Distracted Driving Crash Maryland Road Segments

Data queried:

A crash that is labeled to be distracted driving will have the following ContribCode (from the Contributing Circumstances table) query:

ContribCode_1 IN (7, 19, 60.88) OR ContribCode_2 IN (7, 19, 60.88) OR ContribCode_3 IN (7, 19, 60.88) OR ContribCode_4 IN (7, 19, 60.88) OR DISTRACTED_BY_CODE IN ('01', '02', '03', '04', '05', '06', '07', '09', '10', '12', '13', '14', '15', '16', '17', '18', '88')

Contributing Factors (ContribCode_1 or ContribCode2 or ContribCode_3 or ContribCode_4) '7' – "Failed to Give Full Time and Attention '60.88' – "Inattentive" '19' – "Operator Using Cellular Phone"

Source of Data: Maryland State Police (MSP) State Highway Administration (SHA) Baltimore City Department of Transportation (Limited Data Use)

Year Ranges of Data (each year represents a separate data layer): 2013 to 2015 2014 to 2016

Values/Visualization of Data:.

Inside of each of the color below, a value range will be displayed. These values are the total number of distracted driving crashes that occurred on that road segment.

Crash Road Segments

- Low: (Range of Crash Values)
- Medium: (Range of Crash Values)
- High: (Range of Crash Values)

Unrestrained Occupants Crash Hotspots

Understanding the Layer:

This layer was created by querying SHA Maryland's Crash Dataset (collected by MSP and processed by SHA) and breaking it down to individual jurisdiction level. With each jurisdiction subset of crash data, a

kernel density tool was used to produce hotspots. The hotspots illustrate low to high ranges of crashes occurring inside of that area.

<u>Type of Data:</u> Unrestrained Occupants Crash

Data queried: A crash that is labeled to be an unrestrained occupant will have the following query:

BOD_TYP_V1 NOT IN ('01', '19') AND BODY_TYP_V NOT IN ('01', '19') AND PERSON_TYPE IN ('D', 'O') AND SAF_EQUIP_CODE IN ('01', '12', '31')

Explanation of Query Codes:

BOD_TYP_V1	PERSON_TYPE	SA
'01' – Motorcycle	'D' – Driver	' 0
'19' – Moped	'O' – Occupant	'1

SAF_EQUIP_CODE '01' - None '12' – Shoulder Belt Only '31' – Air Bag (Only)

Source of Data: Maryland State Police (MSP) State Highway Administration (SHA) Baltimore City Department of Transportation (Limited Data Use)

Year Range of Data: 2013 to 2015 2014 to 2016

Values/Visualization of Data:

A kernel density tool was used to calculate the standard distance and weighted mean in a neighborhood around each crash location to display hotspots. These hotspots identify low, medium, and high densities of crashes.

Crash Hotspots Low Medium High See legend for more details.

Unrestrained Occupants Crash Road Segments

Understanding the Layer:

This layer was created by querying SHA Maryland's Crash Dataset (collected by MSP and processed by SHA) and breaking it down to individual jurisdiction level. With each jurisdiction subset of crash data, a spatial join was ran on the crash data points and Maryland road segments. The road segments that are generated illustrate low to high ranges of crashes broken into one-mile road segments.

<u>Type of Data:</u> Unrestrained Occupants Crash Maryland Road Segments

Data queried:

A crash that is labeled to be an unrestrained occupant will have the following query:

BOD_TYP_V1 NOT IN ('01', '19') AND BODY_TYP_V NOT IN ('01', '19') AND PERSON_TYPE IN ('D', 'O') AND SAF_EQUIP_CODE IN ('01', '12', '31')

Explanation of Query Codes:

BOD	TYP V1
' 01 ' –	Motorcycle
' 19' –	Moped

PERSON TYPES'D' - Driver''O' - Occupant'

SAF EQUIP CODE '01' - None '12' – Shoulder Belt Only '31' – Air Bag (Only)

Source of Data: Maryland State Police (MSP) State Highway Administration (SHA) Baltimore City Department of Transportation (Limited Data Use)

Year Ranges of Data (each year represents a separate data layer): 2013 to 2015 2014 to 2016

Values/Visualization of Data:.

Inside of each of the color below, a value range will be displayed. These values are the total number of unrestrained occupant crashes that occurred on that road segment.

Crash Road Segments

- Low: (Range of Crash Values)
- Medium: (Range of Crash Values)
- High: (Range of Crash Values)

Unrestrained Occupants Citations (ETIX) Hotspots

Understanding the Layer:

This layer was created by querying Maryland's ETIX citation dataset and breaking it down to individual jurisdiction level. With each jurisdiction subset of citation data, a kernel density tool was used to produce hotspots. The hotspots illustrate low to high ranges of unrestrained occupant citations occurring inside of that area.

Type of Data: Citation

Source of Data: The Maryland Judiciary and District Courts Web Portal (jPortal)

Data Queried: writtenCharge LIKE '%SEATBELT%'

Which selects the following charge codes:

- MR 11-392.16 Operator failure to properly use seat belt
- TA 22-412(A) Failure to have required front seat belts on registered motor vehicle

- TA 22-412(B) - Failure to have required rear seat belts on registered motor vehicle

- TA 22-412.2(E) - Failure to transport child under 16 in (child safety seat per instructions, a seat belt)

- TA 22-412.2(G) - Using a (child safety seat, seatbelt) to (restrain, seat, positions) more than one

individual

- TA 22-412.3(B) - Operating motor vehicle with (operator, occupant under 16) not restrained by (seat belt, child safety seat)

- TA 22-412.3(C2) - Passenger age 16 or more in outboard front seat of motor vehicle w/o seat belt restraint

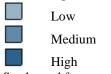
- TA 22-412.3(C3) - Passenger age 16 or more in rear seat of motor vehicle w/o seat belt restraint (Secondary Action)

Year Range of Data: 2013 to 2015

Values/Visualization of Data:

A kernel density tool was used to calculate the standard distance and weighted mean in a neighborhood around each citation location to display hotspots. These hotspots identify low, medium, and high densities of citation.

ETIX Hotspots



See legend for more details.

Unrestrained Occupants Citations (ETIX) Road Segments

Understanding the Layer:

This layer was created by querying Maryland's ETIX citation dataset and breaking it down to individual jurisdiction level. With each jurisdiction subset of citation data, a spatial join was used on the citation data points and Maryland road segments. The road segments that are generated illustrate low to high ranges of citations broken into one-mile road segments. No corrections were made to the citation data.

<u>Type of Data:</u> Unrestrained Occupant Citation

Source of Data: The Maryland Judiciary and District Courts Web Portal (jPortal)

Data Queried: writtenCharge LIKE '%SEATBELT%'

Which selects the following charge codes:

- MR 11-392.16 - Operator failure to properly use seat belt

- TA 22-412(A) - Failure to have required front seat belts on registered motor vehicle

- TA 22-412(B) - Failure to have required rear seat belts on registered motor vehicle

- TA 22-412.2(E) - Failure to transport child under 16 in (child safety seat per instructions, a seat belt)

- TA 22-412.2(G) - Using a (child safety seat, seatbelt) to (restrain, seat, positions) more than one individual

- TA 22-412.3(B) - Operating motor vehicle with (operator, occupant under 16) not restrained by (seat belt, child safety seat)

- TA 22-412.3(C2) - Passenger age 16 or more in outboard front seat of motor vehicle w/o seat belt restraint

- TA 22-412.3(C3) - Passenger age 16 or more in rear seat of motor vehicle w/o seat belt restraint (Secondary Action)

Year Range of Data: 2013 to 2015

Values/Visualization of Data:

For each of the colors below, a value range will be displayed. These values are the total number of citations that occurred on that road segment.

ETIX Road Segments

- Low: (Range of Citation Values)
- Medium: (Range of Citation Values)
- High: (Range of Citation Values)

Pedestrian Crash Hotspots

Understanding the Layer:

This layer was created by querying SHA Maryland's Crash Dataset (collected by MSP and processed by SHA) and breaking it down to individual jurisdiction level. With each jurisdiction subset of crash data, a kernel density tool was used to produce hotspots. The hotspots illustrate low to high ranges of crashes occurring inside of that area.

Type of Data: Crashes

Source of Data: Maryland State Police (MSP) State Highway Administration (SHA) Baltimore City Department of Transportation (Limited Data Use)

<u>Data Queried:</u> PERSON_TYPE = 'P' AND PED_TYPE = '01'.

Explanation of Query Codes: 'P' – PERSON 01 - PEDESTRIAN ON FOOT.

Year Ranges of Data: 2013 to 2015 2014 to 2016

Values/Visualization of Data:

A kernel density tool was used to calculate the standard distance and weighted mean in a neighborhood around each crash location to display hotspots. These hotspots identify low, medium, and high densities of crashes.

Crash Hotspots



See legend for more details.

Pedestrian Crash Road Segments

Understanding the Layer:

This layer was created by querying SHA Maryland's Crash Dataset (collected by MSP and processed by SHA) and breaking it down to individual jurisdiction level. With each jurisdiction subset of crash data, a spatial join was ran on the crash data points and Maryland road segments. The road segments that are generated illustrate low to high ranges of crashes broken into one-mile road segments.

<u>Type of Data:</u> Crashes Maryland Road Segments

Source of Data: Maryland State Police (MSP) State Highway Administration (SHA) Baltimore City Department of Transportation (Limited Data Use)

<u>Data Queried:</u> PERSON_TYPE = 'P' AND PED_TYPE = '01'.

Explanation of Query Codes: 'P' – PERSON 01 - PEDESTRIAN ON FOOT.

Year Ranges of Data (each year represents a separate data layer): 2013 to 2015 2014 to 2016

Values/Visualization of Data:

For each of the colors below, a value range will be displayed. These values are the total number of crashes that occurred on that road segment.

Crash Road Segments

- Low: (Range of Crash Values)
- Medium: (Range of Crash Values)
- High: (Range of Crash Values)

Bicycle Crash Hotspots

Understanding the Layer:

This layer was created by querying SHA Maryland's Crash Dataset (collected by MSP and processed by SHA) and breaking it down to individual jurisdiction level. With each jurisdiction's subset of crash data, a kernel density tool was used to produce hotspots. The hotspots illustrate low to high ranges of crashes occurring inside of that area.

Type of Data: Crashes

Source of Data: Maryland State Police (MSP) State Highway Administration (SHA) Baltimore City Department of Transportation (Limited Data Use)

<u>Data Queried:</u> PERSON_TYPE = 'P' AND PED_TYPE IN ('02', '03')

Explanation of Query Codes: 'P' – PERSON '02' – BICYCLIST '03' – OTHER PEDALCYCLIST

Year Ranges of Data (each year represents a separate data layer): 2013 to 2015 2014 to 2016

Values/Visualization of Data:

A kernel density tool was used to calculate the standard distance and weighted mean in a neighborhood around each crash location to display hotspots. These hotspots identify low, medium, and high densities of crashes.

Crash Hotspots



See legend for more details.

Bicycle Crash Road Segments

Understanding the Layer:

This layer was created by querying SHA Maryland's Crash Dataset (collected by MSP and processed by SHA) and breaking it down to individual jurisdiction level. With each jurisdiction's subset of crash data, a spatial join was ran on the crash data points and Maryland road segments. The road segments that are generated illustrate low to high ranges of crashes broken into one-mile road segments.

<u>Type of Data:</u> Crashes Maryland Road Segments

Source of Data: Maryland State Police (MSP) State Highway Administration (SHA) Baltimore City Department of Transportation (Limited Data Use)

Data Queried:

PERSON_TYPE = 'P' AND PED_TYPE IN ('02', '03')

Explanation of Query Codes: 'P' – PERSON '02' – BICYCLIST '03' – OTHER PEDALCYCLIST

Year Ranges of Data (each year represents a separate data layer): 2013 to 2015 2014 to 2016

Values/Visualization of Data:

For each of the colors below, a value range will be displayed. These values are the total number of crashes that occurred on that road segment.

Crash Road Segments

- Low: (Range of Crash Values)
- Medium: (Range of Crash Values)
- High: (Range of Crash Values)

Motorcycle Crash Hotspots

Understanding the Layer:

This layer was created by querying SHA Maryland's Crash Dataset (collected by MSP and processed by SHA) and breaking it down to individual jurisdiction level. With each jurisdiction's subset of crash data, a kernel density tool was used to produce hotspots. The hotspots illustrate low to high ranges of crashes occurring inside of that area.

Type of Data: Crashes

Source of Data: Maryland State Police (MSP) State Highway Administration (SHA) Baltimore City Department of Transportation (Limited Data Use)

Data Queried: BODY_TYP_1 = '01' OR BODY_TYP_2 = '01'

Explanation of Query Codes: '01' – MOTORCYCLE

Year Ranges of Data (each year represents a separate data layer): 2014 to 2016

Values/Visualization of Data:

A kernel density tool was used to calculate the standard distance and weighted mean in a neighborhood around each crash location to display hotspots. These hotspots identify low, medium, and high densities of crashes.

Crash Hotspots		
	Low	
	Medium	
	High	

See legend for more details.

Motorcycle Crash Road Segments

Understanding the Layer:

This layer was created by querying SHA Maryland's Crash Dataset (collected by MSP and processed by SHA) and breaking it down to individual jurisdiction level. With each jurisdiction's subset of crash data, a spatial join was ran on the crash data points and Maryland road segments. The road segments that are generated illustrate low to high ranges of crashes broken into one-mile road segments.

<u>Type of Data:</u> Crashes Maryland Road Segments

Source of Data: Maryland State Police (MSP) State Highway Administration (SHA) Baltimore City Department of Transportation (Limited Data Use)

Data Queried: BODY_TYP_1 = '01' OR BODY_TYP_2 = '01'

Explanation of Query Codes: '01' – MOTORCYCLE

Year Ranges of Data (each year represents a separate data layer): 2014 to 2016

Values/Visualization of Data:

For each of the colors below, a value range will be displayed. These values are the total number of crashes that occurred on that road segment.

Crash Road Segments

- Low: (Range of Crash Values)
- Medium: (Range of Crash Values)
- High: (Range of Crash Values)

Nighttime Crash Hexagon Bin Analysis

Understanding the Layer:

This layer was created by querying SHA Maryland's Crash Dataset (collected by MSP and processed by SHA) and breaking it down to individual jurisdiction level. With each jurisdiction's subset of crash data, the data was summarized within a tessellation grid of five square mile hexagon bins. The hexagon bins illustrate low to high ranges of crashes occurring inside of that area.

<u>Type of Data:</u> Crashes

Source of Data: Maryland State Police (MSP) State Highway Administration (SHA) Baltimore City Department of Transportation (Limited Data Use)

Data Queried for **Overall** Crashes: ACC_TIME >= 2100 AND ACC_TIME <=0459

Explanation of Query Codes: Only crashes that occurred from 2100 (9:00PM) to 0459 (4:59AM) were used in this analysis.

Data Queried for State Crashes: (ACC_TIME >= 2100 AND ACC_TIME <=0459) AND (ROUTE_TYPE IN ('IS', 'US', or 'MD').

Explanation of Query Codes:

Only crashes that occurred from 2100 (9:00PM) to 0459 (4:59AM) on state routes were used in this analysis.

Data Queried for Local Crashes: (ACC_TIME >= 2100 AND ACC_TIME <=0459) AND (ROUTE_TYPE NOT IN ('IS', 'US', or 'MD').

Explanation of Query Codes:

Only crashes that occurred from 2100 (9:00PM) to 0459 (4:59AM) on local routes were used in this analysis.

Year Ranges of Data: 2014 to 2016

Values/Visualization of Data:

For each of the colors below, a value range will be displayed. These values are the total number of crashes that occurred in that five square mile hexagon bin.

Crash Hexagon Bins

Low: (Range of Crash Values)



Medium: (Range of Crash Values)

High: (Range of Crash Values)

Seatbelt Observation Sites 2016

Understanding the Layer:

This layer displays the location of seatbelt observation sites throughout the state of Maryland in 2016. The locations are NHTSA and Non-NHTSA selected locations. Each location contains the site location, the jurisdiction, jurisdiction type (whether the location is NHTSA or Non-NHTSA), weighted/unweighted combined usage by site 2015/2016.

<u>Type of Data:</u> Seatbelt Observation Sites

<u>Source of Data:</u> National Highway Traffic Safety Administration (NHTSA) Maryland Highway Safety Office (MHSO) University of Maryland School of Medicine National Study Center for Trauma and Emergency Medical Systems (NSC)

Year Range of Data: 2014 to 2016

Values/Visualization of Data:

Seatbelt observation sites are displayed with a black circle containing a person who is wearing a seatbelt.



Seatbelt Observation Sites 2017

Understanding the Layer:

This layer displays the location of seatbelt observation sites throughout the state of Maryland in 2017. The locations are all 130 NHTSA observation sites. Starting in 2017, the seatbelt observation will change location and will differ from the Seatbelt Observation Sites 2016 layer. Each location contains the jurisdiction, site road name, road type, weighted usage rate, and number of drivers.

<u>Type of Data:</u> Seatbelt Observation Sites

<u>Source of Data:</u> National Highway Traffic Safety Administration (NHTSA) Maryland Highway Safety Office (MHSO) University of Maryland School of Medicine National Study Center for Trauma and Emergency Medical Systems (NSC)

Year Range of Data: 2017

<u>Values/Visualization of Data:</u> Seatbelt observation sites are displayed with a maroon circle containing a person who is wearing a seatbelt.



NHTSA Primary Roads 2017

<u>Type of Data:</u> Primary Roads

<u>Source of Data:</u> National Highway Traffic Safety Administration (NHTSA)

Year Range of Data: 2014 to 2017

Values/Visualization of Data:

NHTSA Seat Belt Rate 2017

<u>Understanding the Layer:</u> This layer displays the observed seat belt rate for all NHTSA counties in Maryland.

<u>Type of Data:</u> County Seat Belt Rate

<u>Source of Data:</u> National Highway Traffic Safety Administration (NHTSA)

Year Range of Data: 2014 to 2017

Values/Visualization of Data:

	9
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94.0% to 98.0% 92.0% to 93.9% 90.0% to 91.9% Below 90.0% Non-NHTSA County



94.0% to 98.0%
92.0% to 93.9%
90.0% to 91.9%
Below 90.0%
No Primary Rate Available
Non-NHTSA County

NHTSA Secondary Roads 2017

<u>Type of Data:</u> Secondary Roads

Source of Data:

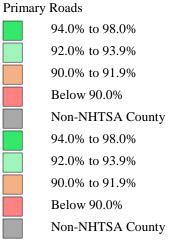
National Highway Traffic Safety Administration (NHTSA)

Year Range of Data: 2014 to 2017

Values/Visualization of Data:

NHTSA Local Roads 2017

Type of Data:



<u>Source of Data:</u> National Highway Traffic Safety Administration (NHTSA)

Year Range of Data: 2014 to 2017

Values/Visualization of Data:

Non-NHTSA Seat Belt Rate 2017

<u>Type of Data:</u> Primary Roads

Source of Data: National Highway Traffic Safety Administration (NHTSA)

Year Range of Data: 2014 to 2017

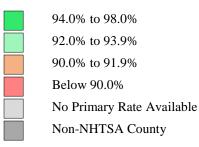
Values/Visualization of Data:

NHTSA vs Non-NHTSA 2017

<u>Type of Data:</u> Primary Roads

<u>Source of Data:</u> National Highway Traffic Safety Administration (NHTSA)

Year Range of Data: 2014 to 2017



Values/Visualization of Data:

Liquor License Locations

Understanding the Layer:

This layer displays liquor license locations in Maryland and Washington DC. Each point contains the name of the establishment, type of sale (1-On, 2-Off, 3-On/Off, and 4-Unknown), and the city that the establishment is located in.

<u>Type of Data:</u> Liquor License Establishment Locations

Source of Data: Maryland Highway Safety Office (MHSO) Washington College GIS Program Worcester County Liquor Board DC Open Portal Various Liquor Boards in Maryland Open Source Data

Year Range of Data: 2014 to 2017

Value/Visualization of Data:

The liquor license data is displayed in two different ways. The first way the liquor license data is displayed is by the use of data clustering. The size of the circle shows the total number of liquor license establishments in that region. The larger the circle, the more establishments. The smaller the circle, the lower number of establishments. Each color represents the total number of liquor license establishments that are located inside that region. With both the size and color, a grid is created over the state of Maryland to display the liquor license establishment totals. These points can be seen when the map is inside a 1:500,000 scale view or higher.

	424 - 1172
\bigcirc	264 - 423
\bigcirc	138 - 263
\bigcirc	89 - 137
\bigcirc	57 - 88
\bigcirc	34 - 56
\bigcirc	20 - 33
0	11 - 19
•	5 - 10
•	1 - 4

Maryland Boundaries

Understanding the Layer:

This layer displays a variety of boundaries in Maryland: County, Town, Congressional, Legislative, and Census Data.

Type of Data: Boundary

Source of Data: Maryland GIS Open Portal

Year Range of Data: 2014 to 2017

<u>Values/Visualization of Data:</u> Datasets each display a different color or outline surrounding the boundary that is selected.

Maryland School Locations

<u>Understanding the Layer:</u> This layer displays the locations of colleges and public school K-12 in Maryland.

<u>Type of Data:</u> Points

Source of Data: Maryland GIS Open Portal

Year Range of Data: 2013-2018

<u>Values/Visualization of Data:</u> Datasets each display a different color or point to represent a particular type of school.

School Locations:

Maryland Colleges:

- Public Two Year Colleges
- Public Four Year Colleges
- Private Two Year Colleges
- Private Four Year Colleges

Public School K-12:

Alternate

- Career/Tech
- Elementary
- Elementary/Middle
- Environmental Education
- High
- Middle
- Middle/High
- PreK-8
- Science
- Special Education

Public K-12 ¼ Mile Buffer:

• ¹/₄ buffer around school location

Maryland Traffic Volume

Understanding the Layer:

This layer displays the annual average daily traffic (AADT) and annual average weekday traffic (AAWDT) counts by segment.

<u>Type of Data:</u> Road Segments

Source of Data: State Highway Administration (SHA)

Year Range of Data: 2015

Values/Visualization of Data:

For each of the colors below, a value range will be displayed. These values are the total average daily traffic that occurs on that road segment annually.

Crash Road Segments

- Low: (Range of Traffic Values)
- Medium: (Range of Traffic Values)
 - High: (Range of Traffic Values)

Special Projects: Route 13 AADT

Understanding the Layer:

This layer displays the annual average daily traffic (AADT) counts by segment for route 13.

Type of Data: Road Segments

Source of Data: State Highway Administration (SHA)

Year Range of Data: 2015

Values/Visualization of Data:

For each of the colors below, a value range will be displayed. These values are the total average daily traffic that occurs on that road segment annually.

Crash Road Segments

- Low: (Range of Traffic Values)
- Mid-Low: (Range of Traffic Values)
- Medium: (Range of Traffic Values)
- Mid-High: (Range of Traffic Values)
 - High: (Range of Traffic Values)

Special Projects: Route 13 Impaired Crash Hotspots

Understanding the Layer:

This layer was created by using a kernel density tool to produce hotspots. The hotspots illustrate low to high ranges of impaired crashes occurring along Route 13.

<u>Type of Data:</u> Alcohol and/or Drug Related Crashes

<u>Data queried:</u> A crash that is labeled to be alcohol and/or drug related will have the following queries:

Query for 2013 and 2014 crash data: ACC_COND IN ('A', 'B', 'D')

Query for 2015 crash data:

F I .. (0 ..

PERSON_TYPE = 'D' AND CONDITION_CODE IN ('02', '03', '10.03') OR SUBST_USE_CODE IN ('21', '22', '23', '24') OR CONTRIB_CODE1 IN (1, 2, 3, 4) OR CONTRIB_CODE2 IN (1, 2, 3, 4) OR CONTRIB_CODE3 IN (1, 2, 3, 4) OR CONTRIB_CODE4 IN (1, 2, 3, 4)

Explanation of Queries:		
Condition of the Driver (ACC_COND)	Condition_Code	Contrib_Code (1, 2, 3, and 4)
A = Alcohol	'02' = Had Been Drinking	'1' = Under the Influence of Drugs
B = Both Alcohol and Drugs	'03' = Using Drugs	2' = Under the Influence of Alcohol
D = Drugs	'10' = Influenced by medications	3' = Under the Influence of Medication
-	and/or drugs and/or alcohol	'4' = Under Combined Influence
Person_Type	Subst_Use_Code	
'D' = Driver	'21' = Alcohol Contributed	
	'22' = Illegal Drugs Contributed	
	'23' = Medication Contributed	
	'24' = Combination Contributed	

Source of Data:

Maryland State Police (MSP) State Highway Administration (SHA)

Year Range of Data: 2013 to 2015 2014 to 2016

Values/Visualization of Data:

A kernel density tool was used to calculate the standard distance and weighted mean in a neighborhood around each crash location to display hotspots. These hotspots identify low, medium, and high densities of crashes.

Crash Hotspots



Special Project: Route 13 Impaired Crash Road Segments

Understanding the Layer:

This layer was created by completing a spatial join on the impaired crash data points and Maryland road segments. The road segments that are generated illustrate low to high ranges of crashes broken into onemile road segments.

Type of Data: Alcohol and/or Drug Related Crashes Maryland Road Segments

Data queried:

A crash that is labeled to be alcohol and/or drug related will have the following queries:

Query for 2013 and 2014 crash data: ACC_COND IN ('A', 'B', 'D')

Query for 2015 and 2016 crash data:

PERSON TYPE = 'D' AND CONDITION CODE IN ('02', '03', '10.03') OR SUBST USE CODE IN ('21', '22', '23', '24') OR CONTRIB CODE1 IN (1, 2, 3, 4) OR CONTRIB CODE2 IN (1, 2, 3, 4) OR CONTRIB_CODE3 IN (1, 2, 3, 4) OR CONTRIB_CODE4 IN (1, 2, 3, 4)

Explanation of Queries:		
Condition of the Driver (ACC_COND)	Condition_Code	Contrib_Code (1, 2, 3, and 4)
A = Alcohol	'02' = Had Been Drinking	1' = Under the Influence of Drugs
B = Both Alcohol and Drugs	'03' = Using Drugs	2' = Under the Influence of Alcohol
D = Drugs	'10' = Influenced by medications	'3' = Under the Influence of Medication
	and/or drugs and/or alcohol	'4' = Under Combined Influence
Person_Type	Subst_Use_Code	
'D' = Driver	'21' = Alcohol Contributed	
	'22' = Illegal Drugs Contributed	
	'23' = Medication Contributed	
	'24' = Combination Contributed	

Source of Data: Maryland State Police (MSP)

State Highway Administration (SHA)

Year Ranges of Data (each year represents a separate data layer): 2013 to 2015 2014 to 2016

Values/Visualization of Data:

For each of the colors below, a value range will be displayed. These values are the total number of alcohol and/or drug related crashes that occurred on that road segment.

Crash Road Segments

- Low (Range of Crash Values)
- Medium (Range of Crash Values)
- High (Range of Crash Values)

Special Project: Route 13 ETIX Hotspots

Understanding the Layer:

This layer was created by querying Maryland's ETIX citation dataset and breaking it down to Route 13 crashes. A kernel density tool was used to produce hotspots. The hotspots illustrate low to high ranges of citations occurring along Route 13.

Type of Data: Citation

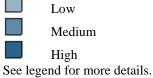
Source of Data: The Maryland Judiciary and District Courts Web Portal (jPortal)

Year Range of Data: 2013 to 2017

Values/Visualization of Data:

A kernel density tool was used to calculate the standard distance and weighted mean in a neighborhood around each citation location to display hotspots. These hotspots identify low, medium, and high densities of citation.





Special Project: Route 13 ETIX Road Segments

Understanding the Layer:

This layer was created by querying Maryland's ETIX citation dataset and breaking it down to Route 13 crashes. A spatial join was used on the citation data points and Maryland road segments. The road segments that are generated illustrate low to high ranges of citations broken into one-mile road segments. No corrections were made to the citation data.

<u>Type of Data:</u> Citation

Source of Data: The Maryland Judiciary and District Courts Web Portal (jPortal)

Year Range of Data: 2013 to 2017

Values/Visualization of Data:

For each of the colors below, a value range will be displayed. These values are the total number of citations that occurred on that road segment.

ETIX Road Segments

- Low: (Range of Citation Values)
- Medium: (Range of Citation Values)
- High: (Range of Citation Values)

Special Project: Route 13 St. Patrick's Day Events

Understanding the Layer:

This layer shows different local establishments that hosted St. Patrick's Day Events pertaining to Route 13. When the map is zoomed into the points, it will display the establishments name.

Type of Data: Citation

Source of Data: Washington College GIS Lab

Year Range of Data: 2018

Values/Visualization of Data:

St. Patrick's Day events pertaining to Route 13 are symbolized with a green triangle at each local establishment.



Special Projects: Bay to Beach | Route 50

Fort Meade Crashes

Understanding the Layer:

This layer was created using a kernel density tool to produce hotspots. The hotspots illustrate low to high ranges of crashes occurring inside of that area.

<u>Type of Data:</u> Crashes

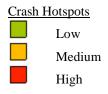
Source of Data: ZeeMaps

Year Ranges of Data (each year represents a separate data layer): 2016 2017

2016 to 2017

Values/Visualization of Data:

A kernel density tool was used to calculate the standard distance and weighted mean in a neighborhood around each crash location to display hotspots. These hotspots identify low, medium, and high densities of crashes.



Shading Layers

Understanding the Layer:

This layer shades in the selected county and the surrounding states including Washington D.C. for a better understanding of the data from that specific county.

<u>Type of Data:</u> County Outline

Source of Data: State Highway Administration (SHA)

Year Range of Data: N/A

<u>Values/Visualization of Data:</u> For each selected county, it will be shaded in white with a black background.

Pilot Data

This area is used for testing purposes for Washington College. Please contact us for more information on the layer in question in this area. wc_mhso@washcoll.edu