LAB 3: ODU SPRING 2019 CS411 TEAM SILVER PROJECT Crime HotSpot Test Plan

CS411W Spring 2019 Team Silver

Professor: Thomas Kennedy

Authors: Thom Loftin, Raphael J. Sandor, David Hall, G-Man Ghahramani, Vairon Mendoza Nunez, Stephanie Zeil, Kenneth Watson, Kevin Chahine, & Kayla Halsey

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4. Test Procedures

The test cases in this document will test the functionality of the system with regards to the Software Requirements Specification (SRS) for the CS411W Spring 2019 Team Silver prototype, known as Crime HotSpot. Each requirement in the SRS will be tested in at least one of the test cases. The results of the test cases will be recorded, and deficiencies resolved. A summary of the requirements traceability can be found in section five.

4.1 Homepage

Case	Name:	Sea	Kevin Chahine ☐ Stephanie Zeil ☐ Shayan Ghahramani ☐ Requirements Fulfilled , 3.1.1.3, 3.1.1.4, 3.1.1.5, 3.1.1.6, 3.1.1.7, 3.1.1.8, 3.1.1.9 Setup Conditions: pogle Chrome web browser.									
Descr	iption:	Add	Address search bar and drawer menu test for first time visits. The test case tests that the search bar brings the user to the inputted address and populates map with data for the area for a first-time visit. Raphael J. Test Sandor Category: 1 Test Case: 1.1 Test Case: 1.1 Test Case: 1.0 Test Case: 1.1 Test Case: 1.1 Test Case: 1.0 Test Case Case: 1.0 Test Case:									
Dur	pose:	The	test case 1	tests that	the sea	rch	bar bring	gs the user to	o the inputted addre	SS		
ı uı	posc.	and	populates	map witl	that the search bar brings the user to the inputted address with data for the area for a first-time visit. Sest							
Writt	en By:		-			[1.1	Version:	1.0		
			Sandor		•	_						
								a □				
								ıni 🗵				
	Requirements Fulfilled											
3.1.1.1	3.1.1.1, 3.1.1.2., 3.1.1.3, 3.1.1.4, 3.1.1.5, 3.1.1.6, 3.1.1.7, 3.1.1.8, 3.1.1.9											
1.	1. Open Google Chrome web browser.											
2.	Clear c	ookie	es.									
3.	Naviga	te to	http://128	.82.11.12	6:3000	•						
]	Test Ca	se .	Activity					
Step		1	Action		Pass			Ex	pected			
1	Provide	e an a	ddress for	Old					*			
1	Domin	ion U	Iniversity.			re	placed v	vith the user	's provided address	•		
								-				
	Click tl	ne sea	arch butto	1.		m	ap then	loads the we	ighted crime data fi	rom		
2						О	ld Domi	nion Police	department.			
_			alid addre			T	he applic	cation provid	les an invalid addre	SS		
3	Click tl	ne sea	arch butto	1.		eı	rror.					
					1							

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11115	aica	1111	CHUOL	iaiiv	ICIL	U	ann	۸

Step	Action	Pass	Expected
4	Click on the Crime HotSpot Logo.	П	The drawer menu opens toward the right, remains in the top left corner of the page, and turns opaque.
•			The menu should display links to go to other pages including the "Team Website URL", and the analytics page.
5	Click the search button.		Provide address search.
6	Enter address and click submit.		The desired address is displayed on the map.
7	Move mouse over map and examine location.		Drawer Menu turns transparent. Heatmap should reflect area change.
		Con	nments

Case	Name:											
Descr	intion:							ior when the	e user interacts with	the		
		side	bar, such	as openir	ng and	clos	sing.					
Pur	Description: Side bar navigation should have set behavior when the user interacts with the side bar, such as opening and closing. Purpose: This test case ensures that the side bar is behaving as to be expected. Written By: Raphael J. Sandor Test Category: 1 Test Case: 1.2 Version: 1.0 Contributing Authors Thom Loftin □ Kenneth Watson □ Raphael Sandor ⋈ Vairon Mendoza □ Dave Hall □ Kevin Chahine □ Stephanie Zeil □ Shayan Ghahramani □ Requirements Fulfilled											
Writt	en By:				y:	1		1.2	Version:	1.0		
				Co	ntrib	ıtinş	g Author	·s				
Thon	n Loftin		Kenneth	Watson		Ra	phael Sa	ndor ⊠	Vairon Mendoza	. 🗆		
Dav	e Hall		Kevin (Chahine [ם	S	tephanie	Zeil 🗆	Shayan Ghahrama	ni 🗆		
	Requirements Fulfilled											
3.1.1.1	3.1.1.10, 3.1.1.11, 3.1.1.12, 3.1.1.13											
2.	2. Navigate to http://128.82.11.126:3000.											
G.	Test Case Activity											
Step			Action	1 0.1	Pass	_	• 1 •		pected	.1		
			e to left sid	ie of the			Side navigation bar opens to the right from the left edge of the page revealing several icons					
1	web pa	ge.				representing the crimes. Text above						
							reads the type of crime.					
_	Click a	crim	e filter.			_		* *	down and map chan	ges		
2							reflect f	-		_		
	Move t	he mo	ouse to rig	ht,		T	he side b	ar closes.				
3	away fi	om tl	he side ba	r								
	navigat	ion n	nenu.									
					Co	mm	ents					

Case 1	Name:	Cri	me Profile	e Selectio	n						
Description: Verifies that the crime profile button in side navigation bar updates heatmap.											
Purj	pose:	To desc	verify that	upon clic	king a	a spe	cific crir	ne profile bi	utton, any other prof	file is	
Writt	en By:	7	Vairon Iendoza	Test Categor	y:	1	Test Case:	1.3	Version:	1.0	
			,	Co	ntribu	outing Authors					
Thon	n Loftin		Kenneth	Watson		Ra	phael Sa	ndor □	Vairon Mendoza		
Dav	e Hall □		Kevin (Chahine []	St	tephanie	Zeil 🗆	Shayan Ghahrama	ni 🗆	
				Reg	uiren	nent	s Fulfille	ed			
3.1.1.14, 3.1.1.15, 3.1.1.16											
	Setup Conditions:										
 Open Google Chrome web browser. Navigate to http://128.82.11.126:3000. 											
	Test Case Activity										
Step			Action		Pass						
1	navigat	ion b	oar.			op	displays Pu Pro Cr	the following the following the control of the following t	ng crime profile but es st Person		
2	Click o profile			erify that upon clicking a specific crime profile button, any other profile is ected. The heatmap should also be refreshed with the appropriate crime le data. Airon							

This area	a inte	entiona	11v	1eft	bla	nk

Step	Action	Pass	Expected
	Click on a selected crime profile button.		The clicked crime profile button is released.
3			The map is refreshed displaying the updated heatmap with the crime weights from the clicked crime profile removed.
			The side navigation bar remains opened.
4	Hover mouse outside sidebar.		Side navigation bar slides left, hiding all crime profile buttons, and turns transparent.
		Com	uments

4.2 Heatmap

Case 1	Name:	Heatmap Up	date							
Descr	iption:	Heatmap show for that area.	ıld update	when	a us	ser chang	ges location	to reflect the crime	data	
Pur	pose:	This test case	ensures th	nat the	hea	tmap is ı	updating on	address changes.		
Writt	en By:	Raphael J. Sandor	Test Categor		2	Test Case:	2.1	Version:	1.0	
			Coi	ntribu	ting	Author	·s			
Thon	n Loftin	☐ Kenneth	Watson [Ra	phael Sa	ndor 🗵	Vairon Mendoza	a 🗆	
Day	⁄e Hall □] Kevin (Chahine □]	St	ephanie	Zeil 🗆	Shayan Ghahrama	ıni 🗆	
						_		J		
Requirements Fulfilled 3.1.2.8, 3.1.5.1										
			S	etup C	Con	ditions:				
1. 2. 3. 4.	 Open Google Chrome web browser. Clear cookies. Navigate to http://128.82.11.126:3000. 									
Test Case Activity										
Step		Action		Pass				pected		
1	Click o	n the map.			T	he score llowing a le im a c by	detail toolti information ocalized Saf mediate are ount of the	ppears at cursor local p window contains to a cursor local p window contains to a cursor of the a surrounding the cursor incidents, ground factored into the	the irsor.	
2	Close d	letail tip tool.			D	etail tip	closes.			
3	Click th	ne crime HotSpop left of the	ot menu		M	lenu ope	ns to the lef	t.		
4	Select '	'Search Addres from the menu.			O	pens an	address sear	rch.		
5	Enter a submit.	ddress and clic	k		M	lap upda	tes to location	on and heat map cha	inges.	
6		n same area of a ivated before c	1				-	ne safety score and new address.		

Comments

Test step 1 and 6 are to show that the address change will likely to return different detail tip results. This of course depends on how far apart the new address is from the previous selected address.

Case	Name:	Hea	tmap Loa	ading								
Doson	intion	Loa	d the page	and ensu	ire the l	eatmap	is displayi	ng co	rrectly and respond	ing		
Purp Writte Thom Dave 3.1.2.2	ipuon:	to cl	hanges in	user inpu	t.							
							-		correct time with th			
Pur	pose:					-			nd update according	to to		
		the o	changes in			ation or		the lo	ocation of interest.			
Writt	en By:	Dav	vid Hall	Test Categor		2	2 Test Case: 2.2 Version:					
				Co	ntribut	ing Aut	hors					
Thon	n Loftin		Kenneth	Watson		Raphael	Sandor 🗵	3	Vairon Mendoza			
Dav	⁄e Hall 🗵	3	Kevin (Chahine []	Stepha	nie Zeil 🗆		Shayan Ghahrama	ni 🗆		
Req						ents Ful	filled	•				
3.1.2.2	2-7, 3.1.2	2.9-10)									
						onditior	ıs:					
		_	e Chrome									
2. Navigate to http://128.11.126:3000.												
	Tost Coso Activity											
Sten	Test Case Activity Step Action Pass Expected											
-	Load th		e page. The heatmap will load at the same time as or									
1	within 1 second of the bas map											
	Using t	Jsing the mouse, move the										
2							-		•	ic		
2	Zoom	area of the base map The heatmap colors and intensity will not										
3					The heatmap colors and intensity will not change							
4	Zoom i	n to n	naximum.			The he	atmap col	ors an	d intensity will not			
4					Ц		, opacity 1					
5	Reload	page	•				-		t map will set to the			
3									n and information			
			crime cate	gory				-	date the data provid			
							-	the h	eat map will reload	to		
							this data					
Select a new location of The base map and the heat map will reload												
7	focus.								cation, displaying the	he		
							informati	on for	the new location			
					Com	ments						

Case	Name:	Cri	me Safety	Score U _l	pdating						
Dogan	intion	Who	en the user	changes	the we	ights a	nd flt	ers of crime	es and clicks apply,	the	
Descr	iption:	Crir	ne SafetyS	core sho	uld upd	ate to	reflec	t the change	es.		
		This	s test case	is meant	to see it	the C	rime	SafetyScore	e changes when the	user	
		chai	nges the cr	ime weig	ghts and	filters	and	clicks apply	. The Crime Safetys	Score	
Pur	pose:	ı	_	_					erefore must be teste		
		ı	•					-			
comparing the pixels clicked with the SafetyScore returned. Written By: Kevin Chahine Category: 2 Test Case: 2.3 Version: 1											
Writt	en By:	C	hahine	Categor	ry: 2			2.3	Version:	1.0	
			·		ntribut	ing Au	thor	s:			
Thon	n Loftin		Kenneth					ndor 🗆	Vairon Mendoza	ı 🗆	
Day	e Hall □	1	Kevin (Chahine D	ব			Zeil 🗆	Shayan Ghahrama		
Requirements Fulfilled:											
3.1.1.1	3.1.1.14, 3.1.1.16, 3.1.1.18										
	Setup Conditions:										
1.	•										
2.											
	Test Case Activity:										
Step		A	Action Pass Expected								
	**					The s	side n	avigation ba	ar slides right displa	ying	
1	Hover mouse over side					-		filters and adjustable	e		
	navigation bar a crime profile, crime filters and adjustable crime weights.										
	Adinst	crime	e filter that			Fach	chart	t undates to	reflect the change is	<u> </u>	
2					п			i upuaies io	refrect the change h	1	
_	Adjust crime filter that specifies date range of occurrence. Each chart updates to reflect the change in location.										
_			e filter that		_	Time	of oc	ccurrence fi	lter will be set.		
3			e of occur								
	Select	check	boxes for	crime		Days	of w	eek checkbo	oxes will be set.		
4	filter th	at sp	ecifies day	s of							
	week.										
5			e weights f	or each		Crim	e wei	ight for each	n category will be se	t.	
	crime c										
_			to update (Crime	_	1			on map SafetyScor		
6	6 SafetyScore of hover values will suit the newly updated weights and								s and		
	functio	n.			<u> </u>	filter					
					Con	ment	8				

4.3 Analytics Page

Case												
Description: Test the base functionality of the Analytics section of the application.												
		This case tests	s the abili	ty of t	he a	pplication	n to display	an analytics page vi	ew			
Pur	pose:	that provides	a series o	fchart	s, ca	lculated	from the dat	aset representing th	e			
Test the base functionality of the Analytics section of the application. This case tests the ability of the application to display an analytics page view that provides a series of charts, calculated from the dataset representing the user's chosen location and date/time range. Written By: Kenneth Test Watson Category: 3 Test Case: 3.1 Version: 1.0 Contributing Authors: Category: 3 Test Case: 3.1 Version: 1.0 Dave Hall Kenneth Watson Raphael Sandor Vairon Mendoza Shayan Ghahramanı Stephanic Zeil Shayan Ghahramanı Stephanic Zeil Shayan Ghahramanı 3.1.4.1, 3.1.4.2, 3.1.4.3, 3.1.4.4, 3.1.4.5, 3.1.4.6, 3.1.4.7, 3.1.4.8, 3.1.4.9, 3.1.4.10, 3.1.4.11, 3.1.4.12 Setup Conditions: Setup Condition												
Writt	Test the base functionality of the Analytics section of the application. This case tests the ability of the application to display an analytics page view that provides a series of charts, calculated from the dataset representing the user's chosen location and date/time range. Version: 1.0 Test Watson Test Watson Category: 3 Test Case: 3.1 Version: 1.0											
**1166	ch by.	Watson	Categor	y:		Case:	3.1	v ci sion.	1.0			
			Coi	ntribu	ting	Author	s:					
Thon	n Loftin	☐ Kenneth	Watson	\boxtimes	Raphael Sandor Vairon Mendoza							
Dav	e Hall [] Kevin (Chahine []	St	tephanie	Zeil 🗆	Shayan Ghahrama	ni 🗆			
			Req	uirem	ents	Fulfille	d:	-				
3.1.4.1	, 3.1.4.2	2, 3.1.4.3, 3.1.4	.4, 3.1.4.5	3.1.4	.6, 3	3.1.4.7, 3	.1.4.8, 3.1.4	.9, 3.1.4.10, 3.1.4.1	$\overline{1,}$			
	-		,			,	ŕ		,			
Setup Conditions:												
3.	Open C	Google Chrome	web brow	vser.								
4. Navigate to http://128.82.11.126:3000.												
5.												
		Test Case Activity:										
Step		Action										
1	in the h	eader and then			cl in	narts, usinterest and hese charens a constant a constan	ng data from d date range rts include: hart compar- coss the curre- hart compar- currence acre- hart compar- ch crime cate taset. hart compar- month or w	in the current location, as entered on the residual crime categories and dataset. ing time of day of cost the current datasing top crimes across egory of the current datasing number of incide eek across the current	n of map. s set ss lents,			
2	new loo search	analytics page, cation into the l field and click	location the			ach chartocation.	t updates to	reflect the change in	1			

Step	Action	Pass	Expected
3	On the analytics page, enter a new start and end date into the date fields by manually typing the dates in mm:dd:yyyy format. Click the Query button to submit.		Each chart updates to reflect the change in date range.
4	On the analytics page, clear the start and end date fields by backspacing on the keyboard. Then, by using the calendar widget located next to each date field, enter in the same dates as in step 5. Click the Query button to submit.		The content of the charts does not change in any way from step 5.
5	On the analytics page, enter in 11:00am – 5:00pm into the hour field. Click the Query button to submit.		The contents of the charts do not change, and an alert pop up appears informing the user of an invalid date format (hour field).
6	On the analytics page, enter in 1100 – 1700 into the hour field. Click the Query button to submit.		The charts update to reflect the change in time range.
7	Pick two charts of the same type. Click a data attribute from each chart's legend. Click the Query button to submit.		A new chart is added to the analytics page that is of the same type as the two input charts but differs in the data that it reflects. The new chart combines the two attributes as a result of the query.
8	Repeat step 7 for each type of chart on the analytics page.		A new chart is added for each type that complies with the expected result in step 7.
		Com	nments

This area intentionally left blank

4.4 Score Detail Tooltip

Case	Name:	Score Detail	Tooltip					
Descr	iption:	Test the func	tionality of	the Sc	ore Detail	tooltip.		
Pur	pose:						ific SafetyScore	
ı uı	pose.			lay a po		ip with locali	zed crime informat	ion.
Writt	en By:	Kenneth Watson	Test Category	y: 4	Test Case:	4.1	Version:	1.0
			Con	tributi	ng Author	·s:		
Thon	n Loftin	☐ Kennetl	n Watson ⊠		Raphael Sa	andor 🗆	Vairon Mendoza	. 🗆
Dav	e Hall [] Kevin	Chahine □		Stephanie	Zeil □	Shayan Ghahrama	ni 🗆
		,	Requ	iireme	nts Fulfille	ed:		
3.1.5.1	1, 3.1.5.2	2, 3.1.5.3	-					
					onditions:			
1.		a Google Chro						
2.	Naviga	ate to http://12						
			Te		e Activity:			
Step		Action		Pass			ected	
1		n the map, in a			A Localiz trends tow (unsafe) An Avera value will purposes A list of co	ge Crime Rate serve as an upof the test caserime categoria.	the following result ore value is shown to range of values ting is shown. This apper bound for the sec. ies appears with at land-zero number of	hat
2		on the X icon in orner of the pop	- 1		The pop-u	ıp tooltip sho	uld close.	
3		n the map, in a			A Localiz trends tow An Avera value will purposes lower than A list of co	yard the lower ge Crime Rate serve as a low of the test case the value in the value	the following result or value is shown to range of values (sting is shown. This wer bound for the se. The value should step 1. ites appears with at land-zero number of	hat afer) I be

Step	Action	Pass	Expected
4	Without directly closing the pop up, click on the map, in an area with a heat intensity between the chosen intensities in steps 1 and 3.		A pop up appears with the following results: A Localized SafetyScore value is shown that is between the expected values in steps 1 and 3. An Average Crime Rating is shown. The value should be between the values in steps 1 and 3. A list of crime categories appears with at least one category listing a non-zero number of incidents.
5	Click on the map, in an area far outside the range of the crime dataset.		A pop up appears with the following results: A Localized SafetyScore value of 0 is shown. An Average Crime Rating value of 0 is shown. A list of crime categories appears with all categories listing zero number of incidents.
		Com	nments

Purpose: This test should confirm that map clicks outside of Crime HotSpot's supported regions will open a detail tool tip that will render that there is no data for the region. Written By: Raphael J. Test Category: Contributing Authors Thom Loftin □ Kenneth Watson □ Raphael Sandor ☒ Vairon Mendoza □ Stephanie Zeil □ Shayan Ghahramani □ Requirements Fulfilled 3.1.5.3 Setup Conditions: 1. Open Google Chrome web browser. 2. Clear cookies. 3. Navigate to http://128.82.11.126:3000 4. Enter the address "Centralia, Pennsylvania". Test Case Activity Step Action Pass Expected Click on the map. 1 □ Comments Comments Comments Comments Comments Comments Comments Comments Comments Contralia, Pennsylvania was selected for this test case as there is not an acting law agency in this ghost town that had its zip code revoked in 1992 and has a population of ten (10). It is highly unlikely that Crime HotSpot will sponsor crime data from this location in the foreseeable future. In such an event, this test case will be rewritten.	Case	Name:	Det	ail Tool T	ip Out of D	atase	et				
Purpose: regions will open a detail tool tip that will render that there is no data for the region. Written By: Raphael J. Sandor Category: 4 Test Case: 4.2 Version: 1.0 Contributing Authors	Descr	iption:	The	tool tip in	forms a use	r that	an area is	out of suppo	orted region.		
Raphael J. Sandor Category: 4	n										
Written By: Raphael J. Sandor Test Category: 4 Test Case: 4.2 Version: 1.0 Contributing Authors Thom Loftin □ Kenneth Watson □ Raphael Sandor ☒ Vairon Mendoza □ Dave Hall □ Kevin Chahine □ Stephanie Zeil □ Shayan Ghahramani □ Requirements Fulfilled 3.1.5.3 Setup Conditions: 1. Open Google Chrome web browser. 2. Clear cookies. 3. Navigate to http://128.82.11.126:3000 4. Enter the address "Centralia, Pennsylvania". Test Case Activity Step Action Pass Expected Click on the map. Detail tool tip opens and displays a message reading that no crime data is provided for this location. Comments Centralia, Pennsylvania was selected for this test case as there is not an acting law agency in this ghost town that had its zip code revoked in 1992 and has a population of ten (10). It is highly unlikely that Crime HotSpot will sponsor crime data from this location in the	Pur	pose:									
Thom Loftin □ Kenneth Watson □ Raphael Sandor ☒ Vairon Mendoza □ Dave Hall □ Kevin Chahine □ Stephanie Zeil □ Shayan Ghahramani □ Requirements Fulfilled 3.1.5.3 Setup Conditions: 1. Open Google Chrome web browser. 2. Clear cookies. 3. Navigate to http://128.82.11.126:3000 4. Enter the address "Centralia, Pennsylvania". Test Case Activity Step Action Pass Expected Click on the map. Click on the map. Centralia, Pennsylvania was selected for this test case as there is not an acting law agency in this ghost town that had its zip code revoked in 1992 and has a population of ten (10). It is highly unlikely that Crime HotSpot will sponsor crime data from this location in the			_		Т4		T4	1			
Thom Loftin □ Kenneth Watson □ Raphael Sandor ☒ Vairon Mendoza □ Dave Hall □ Kevin Chahine □ Stephanie Zeil □ Shayan Ghahramani □ Requirements Fulfilled 3.1.5.3 Setup Conditions: 1. Open Google Chrome web browser. 2. Clear cookies. 3. Navigate to http://128.82.11.126:3000 4. Enter the address "Centralia, Pennsylvania". Test Case Activity Step Action Pass Expected Click on the map. □ Detail tool tip opens and displays a message reading that no crime data is provided for this location. Comments Centralia, Pennsylvania was selected for this test case as there is not an acting law agency in this ghost town that had its zip code revoked in 1992 and has a population of ten (10). It is highly unlikely that Crime HotSpot will sponsor crime data from this location in the	Writt	ten By:				4		4.2	Version:	1.0	
Stephanie Zeil					Cont	ributi	ng Autho	rs			
Setup Conditions:	Thon	n Loftin		Kenneth	Watson □		Raphael Sa	andor 🗵	Vairon Mendoza	ι 🗆	
Setup Conditions: 1. Open Google Chrome web browser. 2. Clear cookies. 3. Navigate to http://128.82.11.126:3000 4. Enter the address "Centralia, Pennsylvania". Test Case Activity Step	Dav	ve Hall [Kevin (Chahine □		Stephanie	Zeil 🗆	Shayan Ghahrama	ni 🗆	
Setup Conditions: 1. Open Google Chrome web browser. 2. Clear cookies. 3. Navigate to http://128.82.11.126:3000 4. Enter the address "Centralia, Pennsylvania". Test Case Activity Step					Requi	reme	nts Fulfill	ed			
1. Open Google Chrome web browser. 2. Clear cookies. 3. Navigate to http://128.82.11.126:3000 4. Enter the address "Centralia, Pennsylvania". Test Case Activity Step Action Pass Expected Click on the map. Detail tool tip opens and displays a message reading that no crime data is provided for this location. Comments Centralia, Pennsylvania was selected for this test case as there is not an acting law agency in this ghost town that had its zip code revoked in 1992 and has a population of ten (10). It is highly unlikely that Crime HotSpot will sponsor crime data from this location in the	3.1.5.3	3									
2. Clear cookies. 3. Navigate to http://128.82.11.126:3000 4. Enter the address "Centralia, Pennsylvania". Test Case Activity Step					Set	up C	onditions:				
3. Navigate to http://128.82.11.126:3000 4. Enter the address "Centralia, Pennsylvania". Test Case Activity Step	1.				web brows	er.					
4. Enter the address "Centralia, Pennsylvania". Test Case Activity Step											
Test Case Activity Step		_		-							
Step Action Pass Expected Click on the map. Detail tool tip opens and displays a message reading that no crime data is provided for this location. Comments Centralia, Pennsylvania was selected for this test case as there is not an acting law agency in this ghost town that had its zip code revoked in 1992 and has a population of ten (10). It is highly unlikely that Crime HotSpot will sponsor crime data from this location in the	4.	Enter the	ne ad	dress "Cei	•						
Click on the map. Detail tool tip opens and displays a message reading that no crime data is provided for this location. Comments Centralia, Pennsylvania was selected for this test case as there is not an acting law agency in this ghost town that had its zip code revoked in 1992 and has a population of ten (10). It is highly unlikely that Crime HotSpot will sponsor crime data from this location in the	~ :	I					e Activity				
reading that no crime data is provided for this location. Comments Centralia, Pennsylvania was selected for this test case as there is not an acting law agency in this ghost town that had its zip code revoked in 1992 and has a population of ten (10). It is highly unlikely that Crime HotSpot will sponsor crime data from this location in the	Step	~1! 1			ŀ	ass	- ··				
Comments Centralia, Pennsylvania was selected for this test case as there is not an acting law agency in this ghost town that had its zip code revoked in 1992 and has a population of ten (10). It is highly unlikely that Crime HotSpot will sponsor crime data from this location in the		Click o	n the	map.		_					
Comments Centralia, Pennsylvania was selected for this test case as there is not an acting law agency in this ghost town that had its zip code revoked in 1992 and has a population of ten (10). It is highly unlikely that Crime HotSpot will sponsor crime data from this location in the	1					ᅵ	_	nat no crime	data is provided for	this	
Centralia, Pennsylvania was selected for this test case as there is not an acting law agency in this ghost town that had its zip code revoked in 1992 and has a population of ten (10). It is highly unlikely that Crime HotSpot will sponsor crime data from this location in the						<u>C</u>					
this ghost town that had its zip code revoked in 1992 and has a population of ten (10). It is highly unlikely that Crime HotSpot will sponsor crime data from this location in the	G .	1' D	1	•	1 , 1 C				1	•	
highly unlikely that Crime HotSpot will sponsor crime data from this location in the			-								
	_								` ,	3	
1010sceaule future. In such an event, this test case will be rewritten.									iocation in the		
	Torese	cavie Iul	ule.	iii sucii ali	eveni, uns	esi ca	se will be	rewritten.			

4.5 Mobile Application

Case	Name:	: GPS Location and Location Permissions									
Descr	iption:						application.				
Pur	pose:						n location an	d location permission	ns in		
			mobile vei		rime H				I		
Writt	en By:	Ste	ephanie Zeil	Test	4	Test	5.1	Version:	1.0		
			Zeli	Categor	•	Case:	l c				
Thor	n I oftin	ΠТ	Vannath				Raphael Sandor Vairon Mendoza				
	Thom Loftin ☐ Kenneth Watson Dave Hall ☐ Kevin Chahine					Stephanie		Shayan Ghahrama			
Dav	е пап ц		Keviii C			ents Fulfill		Shayan Ghamama	111 🗀		
3161	1, 3.1.6.2	3 1	6.5	Ket	uirein	ents ruinn	eu				
3.1.0.1	1, 3.1.0.2	, 5.1.	0.5	S	Setun C	onditions:					
1.	Start A	ndroi	d device e				ot mobile apr	olication installed.			
2.						_	-76.30522) to				
3.			services			,	,				
4.	Set Cri	me H	otSpot app	olication	permiss	sions to disa	abled.				
				Γ	est Ca	se Activity					
Step			Action		Pass			pected			
	Start th	e app	lication.					. Map and data disp	lays		
1						1		log box appears			
	T A 11	1						to access location.			
2	Tap Al	low.				Dialog box disappears. New dialog box appears prompting to allow the device to turn					
<u> </u>						on location service.					
	Tap Ok	ζ.				Map centers on Old Dominion University.					
3	l sup or					_		pdates to reflect the			
					_	safety level at the location.					
	Send a	new	GPS locat	ion		Map shift	s northward.	SafetyScore number	er		
4	(36.888	354, -	76.30522)	using		updates.					
	the GPS										
			GPS locat					lantic Ocean.			
5	(0,0) us	ing t	he GPS en	nulator.		SafetyScore shows "no data" placeholder.					
						Warning text appears stating the user's location is outside the available the data.					
	Disable	GDS	services of	on the				Dialog box appears	·		
6	device.		SCIVICCS (on the		_	_		•		
U	device.					prompting to allow the device to turn on location service.					
7	Tap Ca	ncel.				No chang					
	1		w GPS loc	ation	_	No chang					
8		•	S emulato								

Comments
This area intentionally left blank

Case	Name:	Rela	tive Risk	Levels	-						
Desar	intion	The	applicatio	n needs t	o be ab	le to display	y how day of	f the week and time	of		
Descr	iption:	day i	impact ris	ks associ	ated wi	th a given le	ocation.				
Duran	noso							ay analytical data fo			
Fur	pose:	area	to inform	a user of	danger	s associated	l with a loca	tion for a given time	е.		
Writt	en By:	Ra	aphael	Test	5	Test	5.2	Version:	1.0		
VV I ILL	CH By.	Sa	andor	Categor	y:	Case:	3.2	v Ci Siuli.	1.0		
				Co	ntribut	ing Author	`S				
Thon	n Loftin		Kenneth	Watson l		Raphael Sa	ndor 🗵	Vairon Mendoza			
Dav	e Hall □		Kevin C	Chahine []	Stephanie	Zeil 🗵	Shayan Ghahrama	ni 🗆		
						ents Fulfille		·			
3.1.6.3	3										
				S	etup C	onditions:					
1.	Start A	ndroid	d device e				t mobile app	olication installed.			
2.						_	76.30522) to				
3.			services of				,				
4.	Set Cri	me Ho	otSpot app	olication 1	<u>permis</u> s	ions to disa	bled.				
				T	est Ca	se Activity					
Step		A	Action Pass Expected								
~ ttp	Start the application.							Jeeteu			
гор	Start th	e appl					cation opens	. Map and data displ	ays		
1	Start th	e appl				remain at	cation opens. default. Dial	. Map and data displog box appears	ays		
						remain at requesting	cation opens default. Dial permission	. Map and data displog box appears to access location.	ays		
1	Start th Tap All					remain at requesting Dialog bo	cation opens default. Dial permission x disappears	. Map and data displog box appears to access location New dialog box			
						remain at requesting Dialog bo appears pr	cation opens default. Dial permission x disappears compting to a	. Map and data displog box appears to access location.			
1	Tap All	low.				remain at requesting Dialog bo appears pron locatio	cation opens default. Dial permission x disappears compting to a n service.	. Map and data displog box appears to access location New dialog box allow the device to t	urn		
2		low.				remain at requesting Dialog bo appears pron location Map center	cation opens default. Dial g permission x disappears compting to a n service. ers on Old D	Map and data displog box appears to access location. New dialog box allow the device to to to minion University.	urn		
1	Tap All	low.				remain at requesting Dialog bo appears pron location Map center SafetySco	cation opens default. Dial permission x disappears compting to a n service. ers on Old D re number u	Map and data displog box appears to access location. New dialog box allow the device to to to minion University. pdates to reflect the	urn		
2	Tap All	low.	lication.			remain at requesting Dialog bo appears pron location Map center SafetyScosafety level	cation opens default. Dial permission at disappears compting to a n service. Ers on Old Dere number uel at the loca	Map and data displog box appears to access location. New dialog box allow the device to to to minion University. pdates to reflect the tion.	urn		
2	Tap All Tap Ok	low.	lication.			remain at requesting Dialog bo appears pron location Map center SafetyScosafety lever The heatm	cation opens default. Dial permission x disappears compting to a n service. ers on Old D re number uel at the local pap should u	Map and data displog box appears to access location. New dialog box allow the device to to to minion University. pdates to reflect the tion. pdate the map to cur	urn		
2	Tap All Tap Ok	low.	lication.			remain at requesting Dialog bo appears pron location Map center SafetyScosafety lever The heatmarisk associations.	cation opens default. Dial permission x disappears compting to a n service. ers on Old D re number uel at the local pap should u	Map and data displog box appears to access location. New dialog box allow the device to to to minion University. pdates to reflect the tion.	urn		
2	Tap All Tap Ok	low.	lication.			remain at requesting Dialog bo appears pron location Map center SafetyScosafety lever The heatm	cation opens default. Dial permission x disappears compting to a n service. ers on Old D re number uel at the local pap should u	Map and data displog box appears to access location. New dialog box allow the device to to to minion University. pdates to reflect the tion. pdate the map to cur	urn		
2	Tap All Tap Ok	low.	lication.			remain at requesting Dialog bo appears pron location Map center SafetyScosafety lever The heatmarisk associations.	cation opens default. Dial permission x disappears compting to a n service. ers on Old D re number uel at the local pap should u	Map and data displog box appears to access location. New dialog box allow the device to to to minion University. pdates to reflect the tion. pdate the map to cur	urn		
2	Tap All Tap Ok	low.	lication.			remain at requesting Dialog bo appears pron location Map center SafetyScosafety lever The heatmarisk associations.	cation opens default. Dial permission x disappears compting to a n service. ers on Old D re number uel at the local pap should u	Map and data displog box appears to access location. New dialog box allow the device to to to minion University. pdates to reflect the tion. pdate the map to cur	urn		
2	Tap All Tap Ok	low.	lication.			remain at requesting Dialog bo appears pron location Map center SafetyScosafety lever The heatmarisk associations.	cation opens default. Dial permission x disappears compting to a n service. ers on Old D re number uel at the local pap should u	Map and data displog box appears to access location. New dialog box allow the device to to to minion University. pdates to reflect the tion. pdate the map to cur	urn		
2 3	Tap All Tap Ok	low.	lication.			remain at requesting Dialog bo appears pron location Map center SafetyScosafety lever The heatmarisk associations.	cation opens default. Dial permission x disappears compting to a n service. ers on Old D re number uel at the local pap should u	Map and data displog box appears to access location. New dialog box allow the device to to to minion University. pdates to reflect the tion. pdate the map to cur	urn		
2	Tap All Tap Ok	low.	lication.			remain at requesting Dialog bo appears pron location Map center SafetyScosafety lever The heatmarisk associations.	cation opens default. Dial permission x disappears compting to a n service. ers on Old D re number uel at the local pap should u	Map and data displog box appears to access location. New dialog box allow the device to to to minion University. pdates to reflect the tion. pdate the map to cur	urn		

Case	Name:	Sea	rch in Mo	bile App	licatio	n					
Descr	iption:		t searching				ication.				
Pur	pose:							he mobile ve	ersion of Crime Hot	Spot.	
Writt	Written By: Stephan Zeil			Test Categor		5	Test Case:	5.3	Version:	1.0	
				Co	ntribu	ting	Author	rs			
Thon	n Loftin		Kenneth	Watson		Ra	phael Sa	ndor 🗆	Vairon Mendoza	ı 🗆	
Dav	⁄e Hall □		Kevin (Chahine [St	ephanie	Zeil 🗵	Shayan Ghahrama	ni 🗆	
				Rec	quirem	ent	s Fulfille	ed			
3.1.6.4	1, 3.1.6.6)									
							ditions:				
							HotSpo	t mobile app	olication installed.		
2.			HotSpot n			n.					
3.	Grant a	II rec	quests for p			~ ~	A -4!!4				
Step		Test Case Activity Action Pass Expected									
1	Tan sea	search bar.				K	eyboard		pecieu		
1	-		dress and s	uhmit				-	centers on new add	Iracc	
2	Linci a	ii auc	iicss aiiu s	uomm.	Keyboard closes. Map centers on new aSafetyScore updates to reflect the safety						
_							determined at that center point.				
3	Tap sea	rch l	oar.			_	Keyboard opens.				
4	Enter a	stree	et intersect	ion and		K	eyboard	closes. Map	centers on intersec	tion.	
4	submit.					1	•	re updates.			
5	Tap sea	ırch l	oar.			K	eyboard	opens.			
6	Enter a	zip o	code and si	ıbmit.					centers in zip code	•	
U					Ц			re updates.			
7		Cur	rent Locat	ion		1			last detected location	on.	
,	button.							re updates.			
					Con	nmo	ents				

4.6 Web Application Service

Case	Name:	Sca	Scale Crimes by Age										
Descr	iption:	App	oly various	steps to	test the	different sc	alar options	used to scale crime	s.				
Pur	pose:							ply a scalar to a crin					
1 ui	posc.	sev	erity accor	ding to th	e date	of the crime	in relation 1	to the period of inter	est.				
Writt	en By:		Thom	Test		Test	6.1	Version:	1.0				
***************************************	CH By.		Loftin	Categor	y:	Case:		v ci sion.	1.0				
						ting Author							
Thon	n Loftin	\boxtimes	Kenneth	Watson		Raphael Sa	ndor 🗆	Vairon Mendoza	ι 🗆				
Dav	re Hall □		Kevin C	Chahine []	Stephanie	Zeil □	Shayan Ghahrama	ni 🗆				
				Rec	uirem	ents Fulfille	ed						
3.1.2.2	2, 3.1.3.1	3.1.	3.2, 3.1.3.3	3, 3.1.3.4	3.1.7.	4, 3.1.8.1, 3.	1.8.2, 3.1.8.	3, 3.1.8.4, 3.1.8.5,					
3.1.8.6	5, 3.1.8.7	, 3.1	.8.8, 3.1.8.	9									
						Conditions:							
1.	-	_	le Chrome										
2.	Naviga	ate to	http://128										
	<u> </u>			Т		se Activity							
Step			Action		Pass			pected					
1						A pop-up will open displaying the following:							
	Click o	Click on a colored section of the heatmap.				A safety score that is between 0.0 and 10.0 The number of crimes int each category within							
	the hea							int each category with the click that are of					
						1		the click that are of	а				
2	Moyo	nirco:	r to the sid	obor			iter than 0.0 ar will open						
<u> </u>			of the crime			THE SIGEO	ai wiii open.	•					
3			ff and click			The heatm	nap will disa	ppear.					
4			r to the sid			The sideh	ar will open.						
7			of the crime				nap will disa						
5			ff and click			1 IIC IICatii	iap wiii disa	рреаг.					
6			r to the sid			The sideba	ar will open.						
			Date field s		<u> </u>		ar will close						
7			5/12/31 and			1		ppear as all crimes a	are				
-	apply,				_	after the end date.							
0		he cu	rsor to the			T1 1 . 1.							
8	sidebar					The sideba	ar will open						
						The sideba	ar will close						
9	Set the	End	Date to			The heat map will reappear depicting the							
	2017/12	2/31	and click a	pply.		scaled crime levels of all crime in police							
		_				report.							
10			ırsor to the			The sideh	ar will open.						
-0	sidebar					1112 514300	op o n	-					

Step	Action	Pass	Expected
11	Set the Start Date to 2017/12/31 and click apply.		The sidebar will close. There will be a heatmap with a small subset of crimes each at a full score as any crimes on the End Date get a scalar of 1.
12	Move the cursor to the sidebar.		The sidebar will open.
13	Set the End Date to 2018/06/01		The sidebar will close. The heatmap will remain but the colors representing the crimes will fade down the scale because as crimes age they become less relevant an there is no new crime data after 2017/12/31.
14	Move the cursor to the sidebar.		The sidebar will open.
15	Set the Start Date to 2018/01/2 and click apply.		The heatmap will disappear as all crimes before the Start Date get a scalar of 0. Text appears alerting that no data is available for the selected date range.
		Con	nments

4.7 User Preferences

Case	Name:	Sup	port for (Color Bli	ndn	ess						
Descr	iption:	Tes	t the funct	ionality o	f the	heatr	nap coloi	r schemes fo	or accessibility.			
Dur	pose:	Thi	s case tests	the abili	ty of	f the u	ser interf	face to upda	te the heatmap color	s to		
1 ui	pose.	a di	a different color scheme in support of color blindness.									
Writt	en By:	K	enneth	Test		7	Test	7.1	Version: 1	1.0		
**1100	CH Dy.	V	Vatson	Categor	ry:		Case:	7.1	V CI SIOII.	1.0		
Contributing Authors:												
Thon	n Loftin		Kenneth	Watson	\boxtimes	Ra	phael Sa	ndor 🗆	Vairon Mendoza	. 🗆		
Dav	ve Hall □		Kevin (Chahine [S	tephanie	Zeil 🗆	Shayan Ghahrama	ni 🗆		
				Req	uire	ment	s Fulfille	ed:				
3.1.7.2	2											
				S	Setuj	o Con	ditions:					
1.	Open (Goog	le Chrome	web bro	wseı	ſ.						
2.	Naviga	ate to	http://128	.82.11.12	26:30	000.						
				T	est (Case A	Activity:					
Step			Action		Pa	SS	Expected					
	Open th	ne sic	lebar by h	overing		T	The heatmap options appear.					
1	the mo	use to	the left o	f the]						
	map.											
	l		w heatmap					-	mmediately alter its			
2			n under the	2			-		scale at the bottom	of		
	Access	ibilit	y options.					nould reflect	the change as well.			
					C	omme	ents:					

Case Name:		Search with Date and Time Filters										
Descr	iption:	Test the user's ability to search the map and filter by date and time.										
Purpose:		This case tests that users can search locations by address, intersection, and zip										
i ui pose.		cod	code, and filter these results by date and time.									
Written By:		St	ephanie	Test		7	Test	7.2	Version:	1.0		
			Zeil	Categor	ry:	y: '	Case:	1.2	v et sion.	1.0		
				Co	ntrik	outing	g Author	·s				
Thon	n Loftin	☐ Kenneth Watson				Ra	Raphael Sandor Vairon Mendoza					
Dav	e Hall □	☐ Kevin Chahine ☐				Stephanie Zeil ⊠ Shayan Ghahram				ni 🗆		
				Rec	quire	ment	ts Fulfille	ed				
3.1.7.1	, 3.1.7.3	, 3.1	.7.6									
				S	Setup	Con	ditions:					
1.	Open C	ioogl	le Chrome	web brov	vser.							
2.	Naviga	te to	http://128.	82.11.12	6:300	00.						
				Τ	est (Case .	Activity					
Step			Action		Pas	SS		Exp	oected			
	Enter a	n ado	dress in the	search		T	The map centers on the address. SafetyScore					
1	bar. Click the search button.					i1	information for this location is represented as a					
							heatmap overlay.					
	Enter an intersection in the						The map centers on the intersection.					
2	2 search bar. Click the search			earch			-		on for this location:	is		
	button.						d as a heatm					
	Enter a zip code in the search						The map centers in the zip code. SafetyScore					
3	bar. Cli	bar. Click the search button.					information for this location is represented as a					
	G11 1	1					heatmap overlay.					
4			tion on the					Score information appears as a tooltip.				
5	Move cursor to sidebar.				T	he sideba	ar will open.					
	Set the start date to a date					T	The heatmap will update to reflect only crimes					
6	between 2017/01/02 and								Point intensities w			
U	2017/12	2/31. Set the end date				S	scaled based on their recency relative to the					
			er the start				nd date.					
	Set the start time to an hour							ap will upda	ate and display fewe	er		
7			0am and			_l p	points.					
,	_	11:00pm. Set the end time to				'						
some hour after the start time.												
Comments												
					•			-	date and time. It			
									and unexpected inp	uts		
are har	are handled in other test cases focused on the behavior of individual features.											

Case Name:		User-Weighted Crime Types									
Description:		Test the user's ability to filter crimes by type.									
Purpose:		This case tests that users can filter their search by crime type and apply									
1 ui	pose.	weig	hts to eac	h of these	e types.						
Written By:		Step	phanie	Test		Test	7.3	Version:	1.0		
VV FILE	ен Бу.	7	Zeil	Categor	:y: /	Case:	7.3	version:	1.0		
	Contributing Authors										
Thor	n Loftin		Kenneth	Watson		☐ Raphael Sandor ☐ Vairon Mendoza ☐					
Dav	ve Hall □		Kevin (Chahine [1					
						ents Fulfill					
3.1.7.5	5, 3.1.7.7	, 3.1.7	'.8								
	,	,		S	etup C	onditions:					
1.	Open C	oogle	Chrome	web brow							
2.				82.11.12							
	-					se Activity					
Step		A	ction		Pass		Ex	pected			
1			to the sid			The heatmap intensity lessens as only crimes					
1			category		Ш		of the category selected are shown.				
	Hover of	on the	crime car	tegory.		The section of the sidebar expands to provide					
2						additional information on the category and a					
					severity slider set at value 1.0.						
3	Slide the slider to the				The heatmap intensity increases as the value of						
		most position, value 2.0.				each poin		.1 1 0.1			
4				eftmost				rs as the value of al	.1		
	position, value 0.				-	equal to 0.					
	Move cursor away from sidebar. Return cursor to				The heatmap reappears with a different distribution of points than in step 1.						
5		and click a crime y not selected in step				distribution of points than in step 1.					
3											
	1.		пзюр								
		on the	crime ca	tegory.		The section	on of the side	ebar expands to prov	vide		
6						additional information on the category and a					
						severity slider set at value 1.0.					
7	Slide the slider to the				The heatmap intensity increases as the value of						
/	rightmo	ghtmost position, value 2.0.				each curre	ently display	ed point doubles.			
		Nove cursor away from						more points are ad			
		sidebar. Return cursor to				Newly added points have a lower intensity					
8						than those which were already visible.					
	1	y not selected in step 1									
	or 5.	.1	•			TD1	0.1 11	1 1 .	• 1		
	Hover	er on the crime category.						ebar expands to prov			
9								on the category and	a a		
<u> </u>	C1; d a 41-	الداد م	er to the				lider set at va		lua af		
10				uo 2 0			-	increases as the val			
	Lugnunc	ısı pos	ition, val	u€ ∠.U.		i an dispiay	eu pomis ar	e double the default	·•		

Step	Action	Pass	Expected
11	Slide the slider to the leftmost position, value 0.		The heatmap appears the same as it did after step 7.
12	Move cursor away from sidebar. Return cursor to sidebar and click a crime category not selected in step 1, 5, or 8.		The heatmap grows as more points are added. Newly added points have a lower intensity than those which were already visible.
13	Hover on the crime category.		The section of the sidebar expands to provide additional information on the category and a severity slider set at value 1.0.
14	Slide the slider to a middle-right position, between values 1.0 and 2.0.		The heatmap intensity increases slightly.
15	Slide the slider to a middle-left position, between values 0 and 1.0.		The heatmap intensity lessens to a visual between the results of steps 11 and 12.
		Com	nments

4.8 Page Load Time

Name:	Loading Time								
iption:	The time to load the page.								
pose:	This test case ensures that pages are loading fast enough.								
Written By:			Test Category	y: 8	3	Test Case:	8.1	Version:	1.0
Contributing Authors									
n Loftin		Kenneth	Watson [Raphael Sandor ⊠ Vairon Mendoza □				
ve Hall [Kevin (Chahine 🗆		Stephanie Zeil □			Shayan Ghahramani 🗆	
			Req	uirem	ent	s Fulfille	ed		
1									
			Se	etup C	Con	ditions:			
Open C	ioogl	e Chrome	web brow	ser.					
2. Start stopwatch.									
3. Navigate to http://128.82.11.126:3000.									
			To		se A	Activity			
	Action			Pass					
Page opens, stopwatch stops.				P	age loads	s in less thar	1 5 seconds.		
Comments									
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5. Traceability to Requirements

The following table lists the requirements in the SRS and the name of the test case that proves the requirement.

SRS REQ	Test Case Name
	Homepage
3.1.1.1	Search Addresses
3.1.1.2	Search Addresses
3.1.1.3	Search Addresses
3.1.1.4	Search Addresses
3.1.1.5	Search Addresses
3.1.1.6	Search Addresses
3.1.1.7	Search Addresses
3.1.1.8	Search Addresses
3.1.1.9	Search Addresses
3.1.1.10	Side Navigation Bar User Interface
3.1.1.11	Side Navigation Bar User Interface
3.1.1.12	Side Navigation Bar User Interface
3.1.1.13	Side Navigation Bar User Interface
3.1.1.14	Crime Profile Selection
3.1.1.15	Crime Profile Selection
3.1.1.16	Crime Profile Selection
	Heatmap
3.1.2.1	Side Navigation Bar User Interface
3.1.2.2	Search Addresses
3.1.2.3	Heatmap Loading
3.1.2.4	Heatmap Loading
3.1.2.5	Heatmap Loading
3.1.2.6	Heatmap Loading
3.1.2.7	Heatmap Loading
3.1.2.8	Heatmap Update
3.1.2.9	Heatmap Loading
3.1.2.10	Heatmap Loading
	Safety Score
3.1.3.1	Scale Crimes by Age
3.1.3.2	Scale Crimes by Age
3.1.3.3	Scale Crimes by Age
3.1.3.4	Scale Crimes by Age

	Analytics Page					
3.1.4.1	Analytics Charts: Base Functionality					
3.1.4.2	Analytics Charts: Base Functionality					
3.1.4.3	Analytics Charts: Base Functionality					
3.1.4.4	Analytics Charts: Base Functionality					
3.1.4.5	Analytics Charts: Base Functionality					
3.1.4.6	Analytics Charts: Base Functionality					
3.1.4.7	Analytics Charts: Base Functionality					
3.1.4.8	Analytics Charts: Base Functionality					
3.1.4.9	Analytics Charts: Base Functionality					
3.1.4.10	Analytics Charts: Base Functionality					
3.1.4.11	Analytics Charts: Base Functionality					
3.1.4.12	Analytics Charts: Base Functionality					
	Score Detail Tooltip					
3.1.5.1	Heatmap Update					
3.1.5.2	Heatmap Update					
3.1.5.3	Detail Tool Tip Out of Dataset					
Mobile Application						
3.1.6.1	GPS Location and Location Permissions					
3.1.6.2	GPS Location and Location Permissions					
3.1.6.3	Relative Risk Levels					
3.1.6.4	Search in Mobile ApplicationSearch					
3.1.6.5	GPS Location and Location Permissions					
3.1.6.6	Search in Mobile ApplicationSearch					
	User Preferences					
3.1.7.1	Search with Date and Time Filters					
3.1.7.2	Support for Color Blindness					
3.1.7.3	Search with Date and Time Filters					
3.1.7.4	Scale Crimes by Age					
3.1.7.5	User-Weighted Crime Types					
3.1.7.6	Search with Date and Time Filters					
3.1.7.7	User-Weighted Crime Types					
3.1.7.8	User-Weighted Crime Types					

Web Application Service					
3.1.8.1	Scale Crimes by Age				
3.1.8.2	Scale Crimes by Age				
3.1.8.3	Scale Crimes by Age				
3.1.8.4	Scale Crimes by Age				
3.1.8.5	Scale Crimes by Age				
3.1.8.6	Scale Crimes by Age				
3.1.8.7	Scale Crimes by Age				
3.1.8.8	Scale Crimes by Age				
3.1.8.9	Scale Crimes by Age				
Page Load Time					
3.2.1.1	Loading Time				