

The Power of GeoAnalysis in Response to a Crisis



What is GeoAnalysis?

MRS (www.geodemographics.org.uk) says “GeoAnalysis is the analysis of data, e.g. demographic or customer data, by geographical area or other form of spatial referencing.”

(This definition is very similar to definitions from other sources and I think it is probably one of the most succinct.)



The world's leading research association

For the purpose of our topic, we would be analyzing data regarding where people work, where they live, and also the locations of facilities and other key assets to determine if they may have been impacted during a regional disaster.

Why would we want to do GeoAnalysis?

To know which of our employees may have been impacted *at work* by a regional crisis.

To know which of our employees may have been impacted *at home* by a regional crisis.

To know which of our facilities and other assets may have been impacted by a regional crisis.

To strategize our alternatives in response to a regional crisis.

To project *in advance* what the impacts could be in various regional crisis situations to enhance our preparedness planning.

What do I want you to take away today?

Conceptual GeoAnalysis *logic* that you can immediately apply toward the benefit of your own organizations.

GeoAnalysis *methodology* that you can immediately apply toward the benefit of your own organizations.

Tools that you can use, at virtually no cost, to use GeoAnalysis for disaster preparedness and response.

We will be covering those “tools” and you will receive a CD that contains usable samples of them at the end of this session.

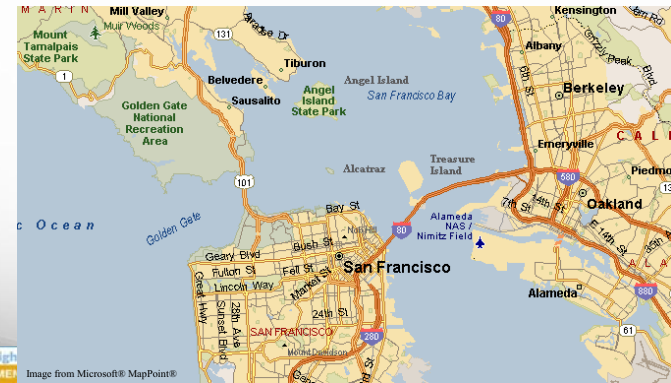


We have seen many types of crises including:

- Earthquakes
- Hurricanes
- Wild Fires
- Power Blackouts
- Pandemic Threats
- Terrorist Attacks

...and all of these have been “regional,” impacting people and facilities over a wide area.

If a geographic Region is impacted by a crisis, wouldn't you want to know the potential impact to your company?



If a geographic Region has been impacted by a crisis:



Wouldn't you want to know which of your employees WORK in that area?

Wouldn't you want to know which of your employees LIVE in that area?

Wouldn't you want to know which of your facilities and other assets may have been impacted?

The “logic” behind GeoAnalysis



In the United States, you can analyze most any data geographically if you can relate it to a ZIP code.

The first 3 digits of a ZIP code identify a geographic region.

94124

For instance, **941** identifies **San Francisco.**

441 would identify the city of **Cleveland, OH**

Expanding that range to **440-441** would identify the greater Cleveland area including:

			Euclid
		Lakewood	
Lorain	Rocky River		Shaker Heights
		Parma	
	Brook Park		Garfield Heights
Elyria		Etc.	
			Bedford

701 would identify the city of **New Orleans, LA**

Expanding that range to **700-701** would also include:

	Laplace		
Gramercy		Metairie	
	Kenner		Chalmette
Lutcher			
	Avondale		
South Vacherie		Marrero	
			Timberlane
Des Allemands		Etc.	

The “methodology” and “tools” for our GeoAnalysis



How do we learn which ZIP codes identify specific geographic areas?

There are ZIP code books and maps available that show which ZIP code 3-number prefixes fall into which geographic areas.

Many local phone books contain ZIP code location information, and some will even break down ZIP codes into more granular areas, like districts within a city.

ZIP code information is available from many web sites, often at no cost.

You may already have much of the information you need. For instance, you *know* where your employees and facilities are located and you *know* their ZIP codes.

Business people generally relate well to the logic and methodology within a spreadsheet so I will start with that.

Then I will show you a better way 😊

Don't get too hung up on the technical details....

There is documentation and there are also samples on the CD you will get at the end of the session.



There are ZIP codes for the addresses of Departments, Business Functions, Facilities, Employees at work and at home, etc. To relate them to an impacted *Region*, you only need the first three digits of a U.S. ZIP code and there are several ways to parse those out for analysis.

In a Microsoft® Excel® spreadsheet, you could use the function/formula "LEFT(*ZipCodeCellReference*,3)" to parse the ZIP code. For instance:

	B1	=	=LEFT(A1,3)
	A	B	C
1	94125	941	

Microsoft, Excel, MapPoint and Microsoft Access are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

You could also use the "Text to Columns" tool.

The screenshot shows the 'Convert Text to Columns Wizard - Step 2 of 3' dialog box. The 'Data preview' section shows the text '94125' being split into two columns: '941' and '25'. The 'Data' menu is open, and the 'Text to Columns...' option is selected.

In either case, you would end up with something like this.

C2	=	=LEFT(B2,3)	
1	A	B	C
2	Facility 1	10022	100
3	Facility 2	90701	907
4	Facility 3	92129	921
5	Facility 4	92660	926
6	Facility 5	92840	928
7	Facility 6	93711	937
8	Facility 7	94103	941
9	Facility 8	94621	946

So, let me move on to a “better way” to do this; a database.

Again, don't get too hung up on the technical details...
There is documentation and there are also samples on the CD you will get at the end of the session.



In a Microsoft® Access® database, the parsing syntax would be “Int(Left([ZipCode],3)).”

What that means is this:

Int(Left([ZipCode],3))

Int(
The result is to be an integer, a whole number with no decimal points.

Left(
You want a certain number of digits, starting from the left most digit in the number.

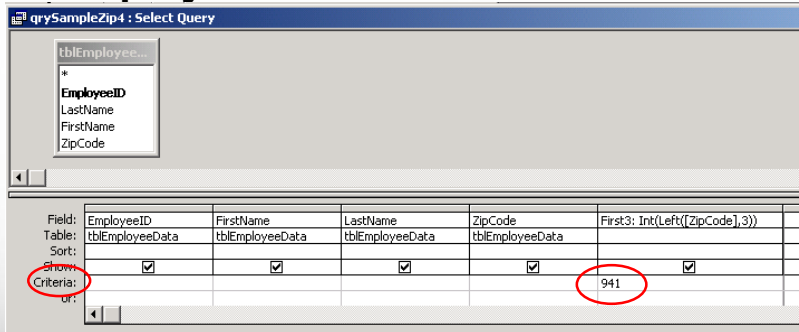
[Zip Code]
You want those digits to come from a data field named "Zip Code."

,3))
You want the first 3 digits from that number.

This is what that would look like in a query.

ZipCode	First3
90071	900
92821	928
92101	921
91755	917
90071	900
91755	917
91755	917
91755	917
92105	921
91755	917
91755	917
91755	917
91755	917
91755	917

Let's say that we have a file that includes employee data with the ZIP codes of employees at work and/or at home.



Note that we have specified that we only want to see employees with ZIP codes that have a 941 prefix.

We might end up with a list of employees in San Francisco that looks something like this:

ID	First Name	Last Name	Zip Code	First 3
014	Susan	Mario	94129	941
001	Tom	Jones	94123	941
005	Rowena	Aljjandro	94118	941
009	Jeremy	Smith	94123	941
012	Linda	Ortegos	94122	941
018	Robin	Warrens	94131	941
002	Henry	Wong	94123	941
007	Arthur	Iagos	94110	941
008	Henry	Wu	94110	941
011	Frank	Renaud	94123	941
015	Rosalyn	Kendle	94112	941
016	Yodanda	Green	94134	941
017	Arthur	Yee	94123	941
003	Alicia	Ferrer	94118	941
013	Brian	Fredericks	94112	941
010	John	Derere	94123	941
004	James	Porter	94129	941
006	Loretta	Brown	94118	941

But what if we only want to focus on employees in the San Francisco Marina District?

(Which was more heavily impacted than other areas of San Francisco by the 1989 Loma Prieta Earthquake.)

Then we could filter on all 5 digits of the ZIP code because 94123 is the ZIP code for the Marina District.

ID	First Name	Last Name	Zip Code	First 3
001	Tom	Jones	94123	941
009	Jeremy	Smith	94123	941
002	Henry	Wong	94123	941
011	Frank	Renaud	94123	941
017	Arthur	Yee	94123	941
010	John	Derere	94123	941

Think that your Human Resources Department might hesitate to give you employee addresses because of **privacy concerns?**

Stress that you don't want the employees' street addresses. You only want their ZIP codes.

For that matter, if you are only planning to do your analysis based on broad geographic REGIONS, you only need the first three digits of their ZIP codes.

HR still won't budge? Think that there is no way you'll be able to do a geographic analysis?

How about using phone numbers?!?

“415” is the area code for San Francisco and you could probably “drill down” to a smaller area by using the 3-digit phone number prefix (e.g., “330”) as well. (415) 330-XXXX.

At the very least, you probably already have employee work phone numbers available to you.

I still think that ZIP codes are the best way to go, because phone numbers will change more frequently than ZIP codes, but there is usually more than one way to meet a goal!

Having said all of that....

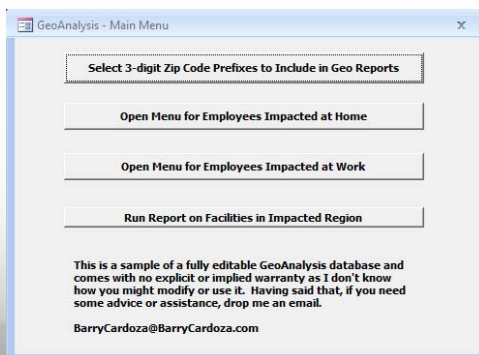
Let me give you a sample of a tool you can use, and modify as you like, and then actually *do* a GeoAnalysis.

The menu-driven sample database and reporting system is on the CD you will get at the end of the session.



GeoAnalysis Database and Reporting System Version 6

The latest version is greatly simplified in terms of setup. No more need to identify regions, etc. You can just import your employee and/or facility data and generate reports that show who and/or what may have been impacted by a regional crisis.



GeoAnalysis Database and Reporting System

Step 1:

Enter or import your employee and/or facility data into the “tblHREmpData” table and the “tblFacilities” tables.

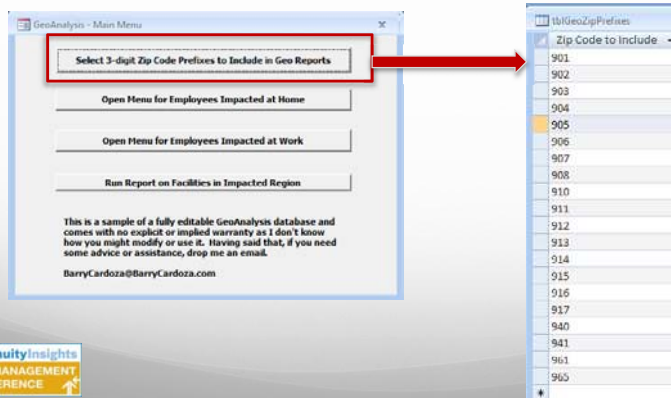
emp_id	empLastNam	empFirstNam	empDepNam	empSta	emp_d	empBldg	empFacCity	empStar	empEnd
1	Green	Joe	Legal	CA	94104	121	San Francisco	CA	94129
2	Red	Nancy	Marketing	CA	92821	122	Fresno	CA	93790
3	Brown	Tom	Marketing	CA	92361	123	Santa Paula	CA	93960
4	Cyan	Kita	Technology Svc	CA	91755	130	Glendale	CA	91201
5	Purple	Gloria	Investigation	CA	94104	121	San Francisco	CA	94116
6	Gray	Steven	Technology Svc	CA	91755	130	Riverside	CA	92501
7	Black	Joe	Technology Svc	CA	91755	131	Artesia	CA	90701
8	Rose	Tom	Technology Svc	CA	91755	124	San Diego	CA	92111
9	Chartruse	Vivian	Marketing	CA	92105	129	San Diego	CA	92105
10	Orange	Ronald	Technology Svc	CA	91755	133	San Francisco	CA	94621
11	Lavender	Stephanie	Technology Svc	CA	91755	130	San Francisco	CA	94621
12	Pink	Tom	IT Developer	CA	91755	131	San Francisco	CA	94621
13	Blue	Gene	Help Desk	CA	91755	132	San Francisco	CA	94621
14	Mauve	Eddie	Investigation	CA	94104	121	San Francisco	CA	94110
15	Off white	Marcha	Technology Svc	CA	91755	131	San Francisco	CA	94621
16	Beige	Brenda	Technology Svc	CA	91755	130	Brea	CA	92621
17	Mint	Robert	Help Desk	CA	91755	131	Brea	CA	92621
18	Maroon	Valerie	Technology Svc	CA	91755	132	Brea	CA	92621
19	Ruby	Tony	Technology Svc	CA	91755	132	Canyon Country	CA	91751
20	Crimson	Charlie	Investigation	CA	94104	140	San Francisco	CA	94114
21	Aquamarine	Alice	Investigation	CA	94104	143	San Francisco	CA	94124
22	Chestnut	Chevy	Legal Process	CA	94104	144	San Francisco	CA	94112

tblFacilities	tblCity	tblState	tblZip
121	Crystal Mall Location	San Francisco	CA 94104
122	Diamond Center Location	Brea	CA 92821
123	Pearl Building Location	Glendale	CA 91201
124	Ruby Skies Location	Monterey Park	CA 91755
125	Opal Mall Location	San Francisco	CA 94104
126	Topaz Market Location	Monterey Park	CA 91755
127	Aquamarine District Location	Monterey Park	CA 91755
128	Gipsy Building Location	Monterey Park	CA 91755
129	Amethyst Center Location	San Diego	CA 92105
130	Quartz Plaza Location	Monterey Park	CA 91755
131	Obsidian Center Location	Monterey Park	CA 91755
132	Bloodstone Plaza Location	Monterey Park	CA 91755
133	Carnelian Center Location	Monterey Park	CA 91755
134	Melanite District Location	San Francisco	CA 94104
135	Amber Strip Mall Location	Monterey Park	CA 91755
136	Moonstone Center Location	Monterey Park	CA 91755
137	Sapphire Showroom Location	Monterey Park	CA 91755
138	Zircon Zoo Location	Monterey Park	CA 91755
139	Turquoise Trail Location	Monterey Park	CA 91755
140	Garnet Gardens Location	San Francisco	CA 94104
141	Verdite Valley Location	San Francisco	CA 94104
142	Coral Cove Location	San Francisco	CA 94104
143	Sunstone Complex Location	San Francisco	CA 94104
144	Diopside Dome Location	San Francisco	CA 94104
145	Silica Industries Location	San Francisco	CA 94104
146	Jasper Junction Location	San Francisco	CA 94104

GeoAnalysis Database and Reporting System

Step 2:

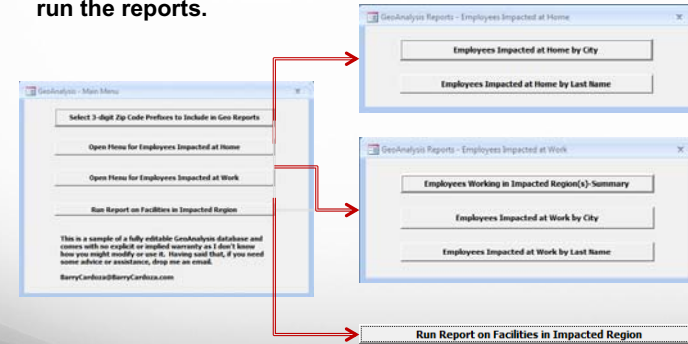
During a regional crisis, enter the 3-digit Zip Code prefixes for the impacted areas.



GeoAnalysis Database and Reporting System

Step 3:

Oh...there is no "Step 3." You have everything you need so you can just run the reports.



GeoAnalysis Reports

Facilities in Impacted Region(s)		Employees Living in Impacted Region(s)		Employees Working in Impacted Region(s)	
By Facility Name		By Employee Last Name		By City then Employee Last Name	
Amber Strip Mall Location	Building ID: 135	Amethyst, Corren	ID: 81	Monterey Park	91755
Aquamarine District Location	Building ID: 127	Amethyst, Ralaya	ID: 87	Amethyst, Corren	ID: 61
Bloodstone Plaza Location	Building ID: 132	Aquamarine, Alice	ID: 21	Azure, Rissa	ID: 84
Carnelian Center Location	Building ID: 133	Azure, Rissa	ID: 84	Beige, Brenda	ID: 16
Coral Cove Location	Building ID: 142	Black, Kevin	ID: 85	Black, Bob	ID: 56
Crystal Mall Location	Building ID: 121	Black, Bob	ID: 56	Black, Joe	ID: 7
Dipside Dome Location	Building ID: 144	Blaze, Fannie	ID: 55	Blue, Gene	ID: 13
Garnet Gardens Location	Building ID: 140	Blaze, Fannie	ID: 55	Brown, Sandy	ID: 89
		Blaze, Patice	ID: 82	Burgundy, Janice	ID: 61
		Bronze, Barry	ID: 59	Bronze, Barry	ID: 59
		Brown, Sandy	ID: 89	Cardinal, Tammy	ID: 66
		Butt, Jeffrey	ID: 70	Campan, Paul	ID: 43
		Burgundy, Janice	ID: 61		
		Cardinal, Tammy	ID: 66		
		Carnel, Elie	ID: 71		
		Celadon, Gloria	ID: 82		
		Celadon, Victoria	ID: 67		

International Application

Many countries have postal codes based on geographic area.

Canada, for instance, has a very logical and usable system. Their postal codes are based on latitude and longitude and fall within definable geographic Regions.

Similar to U.S. postal codes, the first digit defines which province or territory the code is within.

Including all of the first three digits allows you to identify a more granular area.

Canadian Example

IDENTIFY IMPACTED EMPLOYEES

Lookup an FSA

Identify Employees for an FSA

For this example we want to identify employees who work or live within an area that has been impacted by a crisis.

We have a table with descriptions of the various areas and the associated FSAs. (Just for Toronto in the example, but you would want to add those for any area where your employees might work or live.)

We have a table with all of our employees, and the postal codes where they work, as well as the postal codes where they live.

If an area is impacted by a crisis, we can look up the FSA for that area(s).

Then we can run a report to identify employees who may have been impacted.

For this example, East Toronto (The Danforth West / Riverdale, FSA M4K) has been impacted by a crisis.

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Canadian Example

torFSA	torDescription
M4P	Central Toronto (Davisville North)
M4S	Central Toronto (Davisville)
M5P	Central Toronto (Forest Hill North & West)
M4N	Central Toronto (Lawrence Park East)
M4T	Central Toronto (Moore Park / Summerhill East)
M4R	Central Toronto (North Toronto West)
M5N	Central Toronto (Roselawn)
M4V	Central Toronto (Summerhill West / Rathnelly / South Hi
M5R	Central Toronto (The Annex / North Midtown / Yorkville)
M3B	Don Mills North
M3C	Don Mills South (Flemingdon Park)
M3M	Downsview Central
M3K	Downsview East (CFB Toronto)
M3L	Downsview West
M5E	Downtown Toronto (Berczy Park)
M5G	Downtown Toronto (Central Bay Street)
M6G	Downtown Toronto (Christie)
M4Y	Downtown Toronto (Church and Wellesley)
M5V	Downtown Toronto (CN Tower / King and Spadina / Railw
M5L	Downtown Toronto (Commerce Court / Victoria Hotel)
M5J	Downtown Toronto (Harbourfront East / Union Station / T
M5T	Downtown Toronto (Kensington Market / Chinatown / Gr
M5A	Downtown Toronto (Regent Park / Port of Toronto)
M5H	Downtown Toronto (Richmond / Adelaide / King)
M4W	Downtown Toronto (Rosedale)
M5B	Downtown Toronto (Rverson)

EmployeeID	LastName	FirstName	ZipCodeAtWork	ZipCodeAtHome
31	Amethyst	Coreen	M4B 1B3	M4B 1B3
97	Amethyst	Ratanya	M4B 1B3	M4B 1B3
21	Aquamarine	Alice	M4B 1B3	M4K 2T5
84	Azure	Rissa	M4B 1B3	M4B 1B3
16	Beige	Brenda	M4K 3M1	M4B 1B3
95	Bistre	Kevin	M4B 1B3	M4B 1B3
56	Black	Bob	M4B 1B3	M4B 1B3
7	Black	Joe	M4B 1B3	M4B 1B3
53	Blaze	Fannie	M4B 1B3	M4B 1B3
13	Blue	Gene	M4K 2T4	M4B 1B3
83	Bondi	Koury	M4B 1B3	M4B 1B3
62	Brass	Patricia	M4B 1B3	M4B 1B3
59	Bronze	Barry	M4B 1B3	M4B 1B3
89	Brown	Sandy	M4B 1B3	M4B 1B3
3	Brown	Tom	M4B 1B3	M4K 2E8
79	Buff	Jeffrey	M4B 1B3	M4B 1B3
81	Burgundy	Janice	M4B 1B3	M4B 1B3
66	Cardinal	Tammy	M4B 1B3	M4B 1B3
43	Carmine	Paul	M4B 1B3	M4B 1B3
71	Carrot	Ellie	M4B 1B3	M4B 1B3
82	Celadon	Gloria	M4B 1B3	M4B 1B3
67	Celadon	Victoria	M4B 1B3	M4B 1B3
65	Cerise	Cherise	M4B 1B3	M4B 1B3
80	Con	Mar	M4B 1B3	M4B 1B3

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Canadian Example

IDENTIFY IMPACTED EMPLOYEES

Lookup an FSA

Identify Employees

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Canadian Example

EMPLOYEES WORKING IN THE IMPACTED AREA

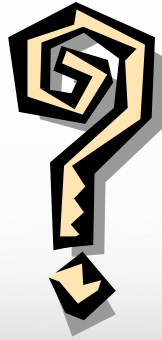
Beige, Brenda	M4K 3M1	East Toronto (The Danforth West / Riverdale)
Blue, Gene	M4K 2T4	East Toronto (The Danforth West / Riverdale)
Green, Joe	M4K 2R6	East Toronto (The Danforth West / Riverdale)
Lavender, Stephanie	M4K 2S5	East Toronto (The Danforth West / Riverdale)
Maroon, Valerie	M4K 3M3	East Toronto (The Danforth West / Riverdale)
Mauve, Eddie	M4K 2T3	East Toronto (The Danforth West / Riverdale)
Mist, Robert	M4K 3H7	East Toronto (The Danforth West / Riverdale)
Off-White, Marcha	M4K 3A8	East Toronto (The Danforth West / Riverdale)
Orange, Ronald	M4K 2R9	East Toronto (The Danforth West / Riverdale)
Pear, Kathy	M4K 2S1	East Toronto (The Danforth West / Riverdale)
Pink, Tom	M4K 2S4	East Toronto (The Danforth West / Riverdale)
Red, Nancy	M4K 3M6	East Toronto (The Danforth West / Riverdale)
Ruby, Tony	M4K 3M5	East Toronto (The Danforth West / Riverdale)

EMPLOYEES LIVING IN THE IMPACTED AREA

Aquamarine, Alice	M4K 2T5	East Toronto (The Danforth West / Riverdale)
Brown, Tom	M4K 2E8	East Toronto (The Danforth West / Riverdale)
Chestnut, Chevy	M4K 3A8	East Toronto (The Danforth West / Riverdale)
Copper, Teresa	M4K 3A9	East Toronto (The Danforth West / Riverdale)
Coral, Chauncy	M4K 3B1	East Toronto (The Danforth West / Riverdale)

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Questions?



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Financial Industry Resilience, Security, and Trustworthiness

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