

Assignment Two

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A question

Spatially, to store its equipment, preparing working space and remaining lots for client parking, automobile repair business requires large land. As the result, it usually locates in an area with cheaper land price. The question here is if the distribution of automobile repair business is co-related with low land value.

Representation

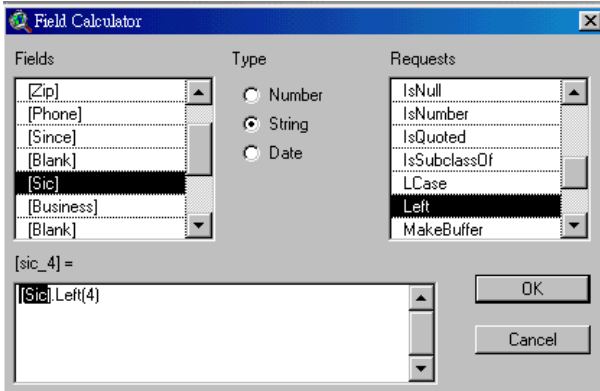
Automobile repair business is defined by SIC code as category 75, “Automotive repair, services, and parking”. It will include all the sub categories under it. Low land value parcels could be known when comparing with average land value.

Steps

1. The first step I made is add “al_bri_biz.dbf” into the project, start editing it and add a new field called “sic_4”, which will be put in the first four digits of “Sic” column from the original table.

Business	Blank	Latitude	Longitude	Zero	Usa	Fips_cnty	Fips_city	sic_4
B		42.375360	-71.112840	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	
B		42.350280	-71.130900	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	
B		42.364140	-71.128440	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	
B		42.352560	-71.129220	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	
B		42.363480	-71.125920	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	
B		42.352680	-71.128740	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	
B		42.354600	-71.135040	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	
B		42.351660	-71.131740	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	
B		42.351780	-71.131740	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	
B		42.352800	-71.129880	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	
B		42.353040	-71.131680	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	
B		42.352680	-71.128800	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	
B		42.363360	-71.127420	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	
B		42.353700	-71.136100	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	
B		42.363120	-71.130240	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	
B		42.350400	-71.130420	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	
B		42.363360	-71.127420	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	
B		42.356460	-71.136340	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	
B		42.355680	-71.118180	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	
B		42.350580	-71.129640	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	

2. Used field calculator tool to grab the four digits from “Sic” column.



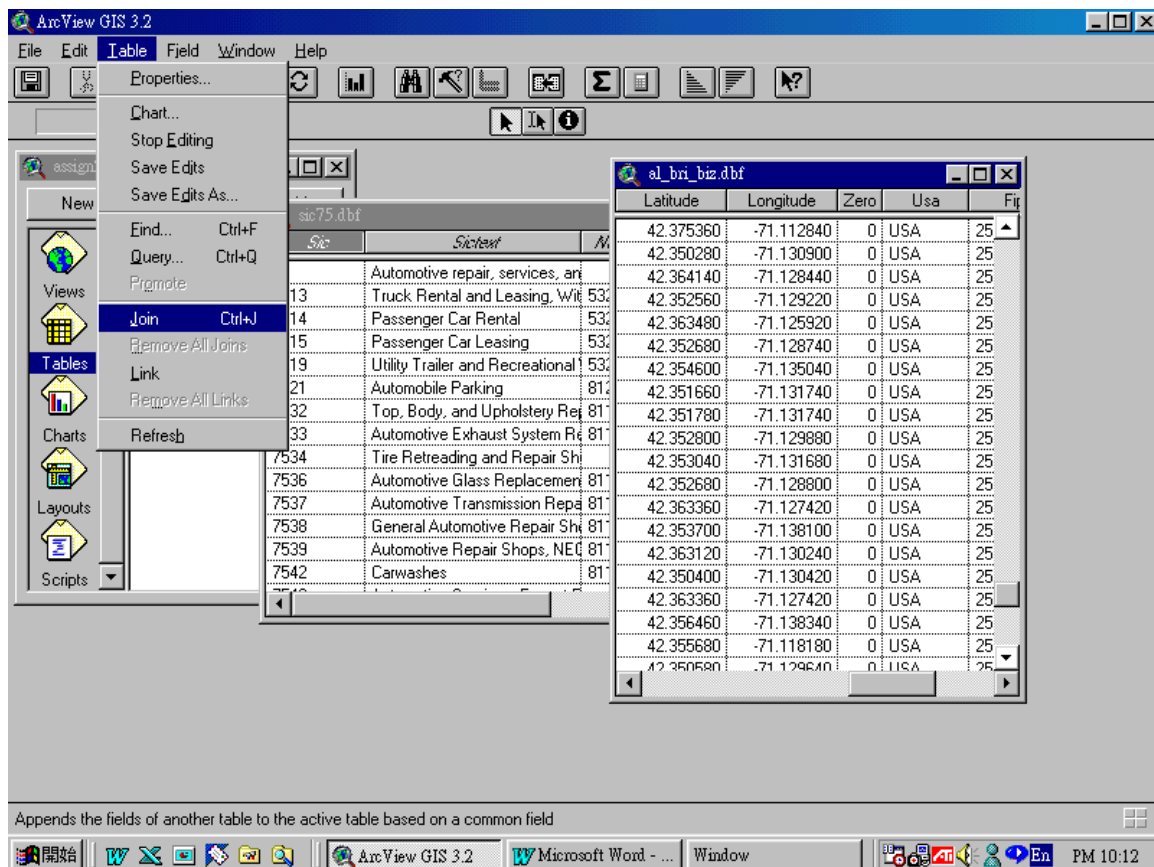
Business	Blank	Latitude	Longitude	Zero	Usa	Fips_cnty	Fips_city	sic_4
B		42.375360	-71.112840	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	8299
B		42.350280	-71.130900	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	7513
B		42.364140	-71.128440	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	6035
B		42.352560	-71.129220	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	7538
B		42.363480	-71.125920	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	3585
B		42.352680	-71.128740	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	4212
B		42.354600	-71.135040	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	5713
B		42.351660	-71.131740	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	5999
B		42.351780	-71.131740	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	8721
B		42.352800	-71.129880	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	5812
B		42.353040	-71.131680	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	7384
B		42.352680	-71.128800	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	5932
B		42.363360	-71.127420	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	7812
B		42.353700	-71.138100	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	5812
B		42.363120	-71.130240	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	5812
B		42.350400	-71.130420	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	5812
B		42.363360	-71.127420	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	7379
B		42.356460	-71.138340	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	7532
B		42.355680	-71.118180	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	7359
B		42.350580	-71.129640	0	USA	25025 - Suffolk	1120 - Boston, MA-NH	7231

3. Added “naicstb2.dbf” table into the project.

4. Selected all the business types with sic code starts as “75”. Exported the data as a new table, called “sic75.dbf”.

Sic	Nname	Naicstext
7383	News Syndicates	
7384	Photofinishing Laboratories	
7389	Business Services, NEC	
75	Automotive repair, services, and parking	
7513	Truck Rental and Leasing, Without Drivers	53212 Truck, Utility Trailer, and RV (P
7514	Passenger Car Rental	53211 Passenger Car Rental
7515	Passenger Car Leasing	53212 Passenger Car Leasing
7519	Utility Trailer and Recreational Vehicle Rental	53212 Truck, Utility Trailer, and RV (P
7521	Automobile Parking	81293 Parking Lots and Garages (pl
7532	Top, Body, and Upholstery Repair Shops and Paint Shops	811121 Automotive Body, Paint, and In
7533	Automotive Exhaust System Repair Shops	811112 Automotive Exhaust System Rep
7534	Tire Retreading and Repair Shops	
7536	Automotive Glass Replacement Shops	811122 Automotive Glass Replacement
7537	Automotive Transmission Repair Shops	811113 Automotive Transmission Reps
7538	General Automotive Repair Shops	811111 General Automotive Repair
7539	Automotive Repair Shops, NEC	811118 Other Automotive Mechanical
7542	Carwashes	811192 Car Washes
7549	Automotive Services, Except Repair and Carwashes	
76	Miscellaneous repair services	
7622	Radio and Television Repair Shops	
7623	Refrigeration and Air-Conditioning Services and Repair Sho	
7629	Electrical and Electronic Repair Shops, NEC	

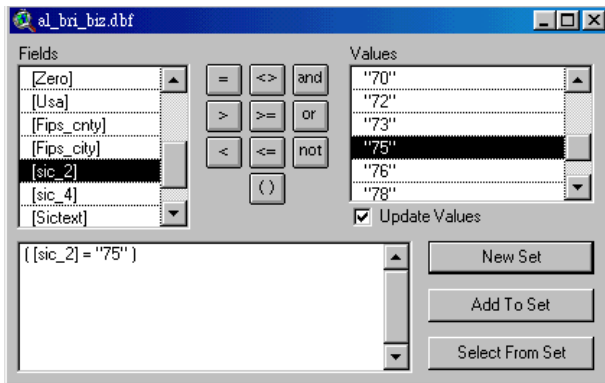
- Added “sic75.dbf” into the project. And join it with the “al_bri_biz.dbf” table by the column “sic_4”



- The joined table will then have description on each automobile repair business. The following step I want to export the data which contains only business in category 75. The fast way to do it is to add a new field called “sic_2”, and put in the first two digits from “sic” column. In the case, I can query the table by calling out all the business in category 75. (Instead of picking up every 75XX manually.)

Usa	Fips_cnty	Fips_city	sic_2	sic_4	Sicstext	Naics	Naicstext
USA	25025 - Suffolk	1120 - Boston, MA-NH	82	8299			
USA	25025 - Suffolk	1120 - Boston, MA-NH	75	7513	Truck Rental and Leasing, Wit	53212	Truck, Utility Trailer, and RV (I
USA	25025 - Suffolk	1120 - Boston, MA-NH	60	6035			
USA	25025 - Suffolk	1120 - Boston, MA-NH	75	7538	General Automotive Repair Shi	811111	General Automotive Repair
USA	25025 - Suffolk	1120 - Boston, MA-NH	35	3585			
USA	25025 - Suffolk	1120 - Boston, MA-NH	42	4212			
USA	25025 - Suffolk	1120 - Boston, MA-NH	57	5713			
USA	25025 - Suffolk	1120 - Boston, MA-NH	59	5999			
USA	25025 - Suffolk	1120 - Boston, MA-NH	87	8721			
USA	25025 - Suffolk	1120 - Boston, MA-NH	58	5812			
USA	25025 - Suffolk	1120 - Boston, MA-NH	73	7384			
USA	25025 - Suffolk	1120 - Boston, MA-NH	59	5932			

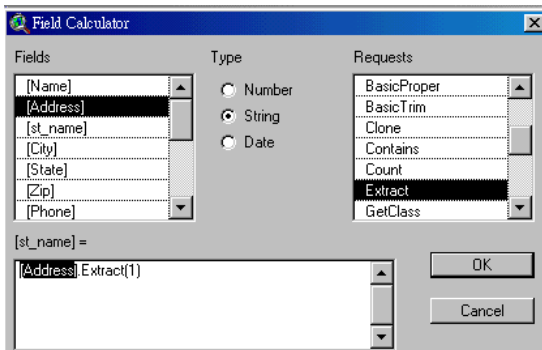
7. Query the table by “sic_2”. Selected all the data with “sic_2”=75, which indicates auto repair.



8. Export the selected data as a new table, called “al_bri_biz_75.dbf”.
9. Summarizing the table by column “sic2text” gives us some information of the sub-category. They are mostly general repair shops, body and paint shops, and car rental.

Sic2text	Count
Automobile Parking	1
Automotive Exhaust System Repair Shops	1
Automotive Repair Shops, NEC	3
Automotive Services, Except Repair and Carwashes	9
Automotive Transmission Repair Shops	1
Carwashes	4
General Automotive Repair Shops	39
Passenger Car Rental	12
Top, Body, and Upholstery Repair Shops and Paint Shops	22
Truck Rental and Leasing, Without Drivers	3

10. The next step is to know how this information could relate to land value. Latitude and Longitude would be helpful if we could relate it to a map with correct coordinate. Here, address might be more useful. So, what I did was break down the address information into street names.



- Added in “albripar99.dbf” table. Make a new column called “st_name” and insert the data broke down from the “str_name” column. (It would help later when join tables together.) Summarized the table with the average land value field been added to it.

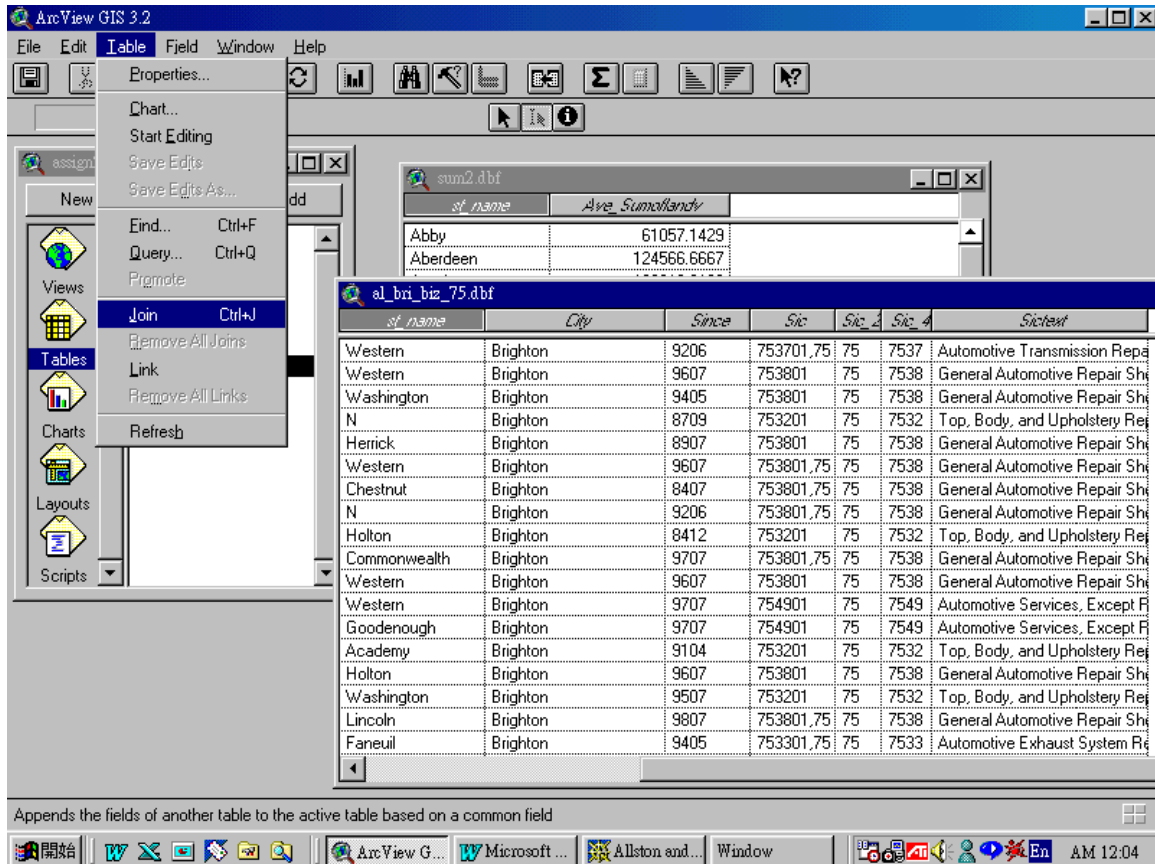
Str_name	st_name	City_st_zi	Owner
WESTERN AV	WESTERN	BRIGHTON MA 02135	COMMWLTH O
SOLDIERS FIELD RD	SOLDIERS	BRIGHTON MA 02135	COMMWLTH O
		BRIGHTON MA 02135	COMMONWLTH
N HARVARD ST	N	BRIGHTON MA 02135	HARVARD COL
WESTERN AV	WESTERN	ALLSTON MA 02134	CITY OF BOSTC
SOLDIERS FIELD RD	SOLDIERS	BRIGHTON MA 02135	HARVARD COL
SOLDIERS FIELD RD	SOLDIERS	ALLSTON MA 02134	WESTNGHSE E
SOLDIERS FIELD RD	SOLDIERS	ALLSTON MA 02134	WESTNGHSE E
WESTERN AV	WESTERN	BRIGHTON MA 02135	HARVARD COL
WESTERN AV	WESTERN	BRIGHTON MA 02135	HARVARD COL
SOLDIERS FIELD RD	SOLDIERS	ALLSTON MA 02134	ZORIN LPS
HEFFERAN ST	HEFFERAN	BRIGHTON MA 02135	HARVARD COL
WESTERN AV	WESTERN	ALLSTON MA 02134	SKATING CLUB
WESTERN AV	WESTERN	BRIGHTON MA 02135	HARVARD COL
WESTERN AV	WESTERN	ALLSTON MA 02134	SKATING CLUB
WESTERN AV	WESTERN	ALLSTON MA 02134	COMMWLTH O
WESTERN AV	WESTERN	ALLSTON MA 02134	SKATING CLUB
SPEEDWAY AV	SPEEDWAY	ALLSTON MA 02134	MOLDNEY LES

st_name	Count	Ave_Sumoflandv
	4	1793250.0000
ABBY	7	61057.1429
ABERDEEN	9	124566.6667
ACADEMY	37	132018.9189
ADAIR	9	83577.7778
ADAMSON	40	80185.0000
ADELLA	2	87400.0000
ALCOTT	14	64421.4286
ALDIE	37	71345.9459
ALLEN	3	98866.6667
ALLSTON	55	252300.0000
AMBOY	4	63400.0000
ANTWERP	29	84403.4483

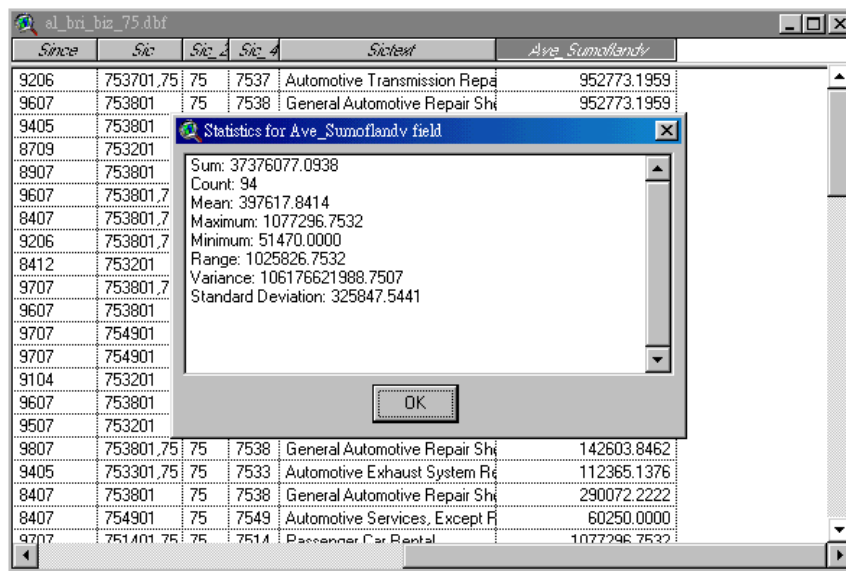
- There is one thing need to be aware of is: the summary table contains an entity without street name, which will be a problem when calculating the table. The record needs to be deleted before joining the table.

st_name	Count	Ave_Sumoflandv
	4	1793250.0000
ABBY	7	61057.1429
ABERDEEN	9	124566.6667
ACADEMY	37	132018.9189
ADAIR	9	83577.7778
ADAMSON	40	80185.0000
ADELLA	2	87400.0000
ALCOTT	14	64421.4286
ALDIE	37	71345.9459
ALLEN	3	98866.6667
ALLSTON	55	252300.0000
AMBOY	4	63400.0000
ANTWERP	29	84403.4483

13. Change the records in the st_name column of “sum2.dbf” into lower case. (so that I could join this table with “al_bri_biz_75.dbf” table.
14. Joined the summarized table with the “al_bri_biz_75.dbf” table.



15. By using the statistic tool to exam the “Ave_Sumoflandv” column, we will get an overall idea of what kind of land these auto repair shops are located in, in terms of the land value.

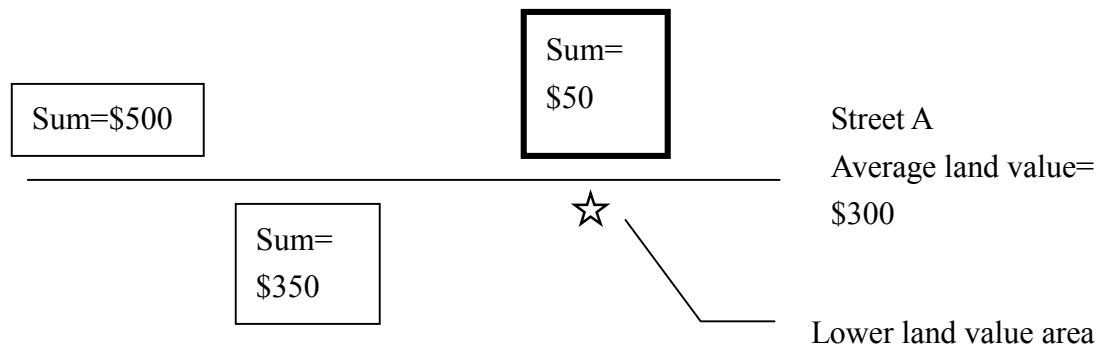


Conclusion

In short, for the parcels around the auto repair shops (based on street), the average value is \$397,617 of a parcel. If compared to the average land value of the whole area (\$234,159), it is actually higher. The hypothesis of “the distribution of automobile repair business is co-related with low land value” is not sustained.

Commentary

1. The representation of land value is based on the data called “sum of land value all properties in a given parcel”, which does not present the average value of each land parcel. *(Maybe there should be a new field added to the table, and is the sum data divided by lot_size.)*
2. Also, the way the ave_sumoflandv colmun in sum2.dbe table is built up is taking all the parcels on street A, using its summary land value, and average the summary. Spatially, these parcels might be far way from each other, while the differences of land value among might be average out.



3. There is a step that I need to translate the street name in sum2.dbe table into lower case. It is not a good way to treat the data. You might miss-keyin wrong information.
4. Pulling out street name from a table field will help joining two tables. However, in reading a street name called “western” is not clear if it means “Western Av.” or “Western St.”, which might exists at the same time.