

Physical distribution and commercial feasibility of hotels in Atlanta city, Georgia State, U.S.A.

Term project

Semester 001

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Outline:



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- ◆ **Problem statement**
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- ◆ **Analysis tool**
- ◆ **The available data**
- ◆ **The Analysis**
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Technology used

- ◆ **GIS** is a powerful information technology which has been defined and described in many ways as an integrated computer system for input, storage, analysis and output of spatially referenced data

Problem statement

- ◆ Hotels revenues and customer-loyalty were expected to be controlled by some geographic factors such as the adjacency to high ways, zip locations, and store sites as well as population.
- ◆ Spatial locations of the hotels in relation to other service units will be assessed and the interrelationships that might control and affect the profitability of these hotels were specified.

Objectives

- ◆ **The main purpose of the project is to measure the influence of the spatial relationships between the hotels and the nearby service and residential units on the commercial activity of these hotels.**

Analysis tool

- ◆ **ArcView 3.2 of ESRI, a powerful desktop GIS software, was the only analytical tool used in the execution of this project.**
- ◆ **With ArcView 3.2, any data linked to geographic locations can be loaded and displayed graphically as maps, charts, and tables.**

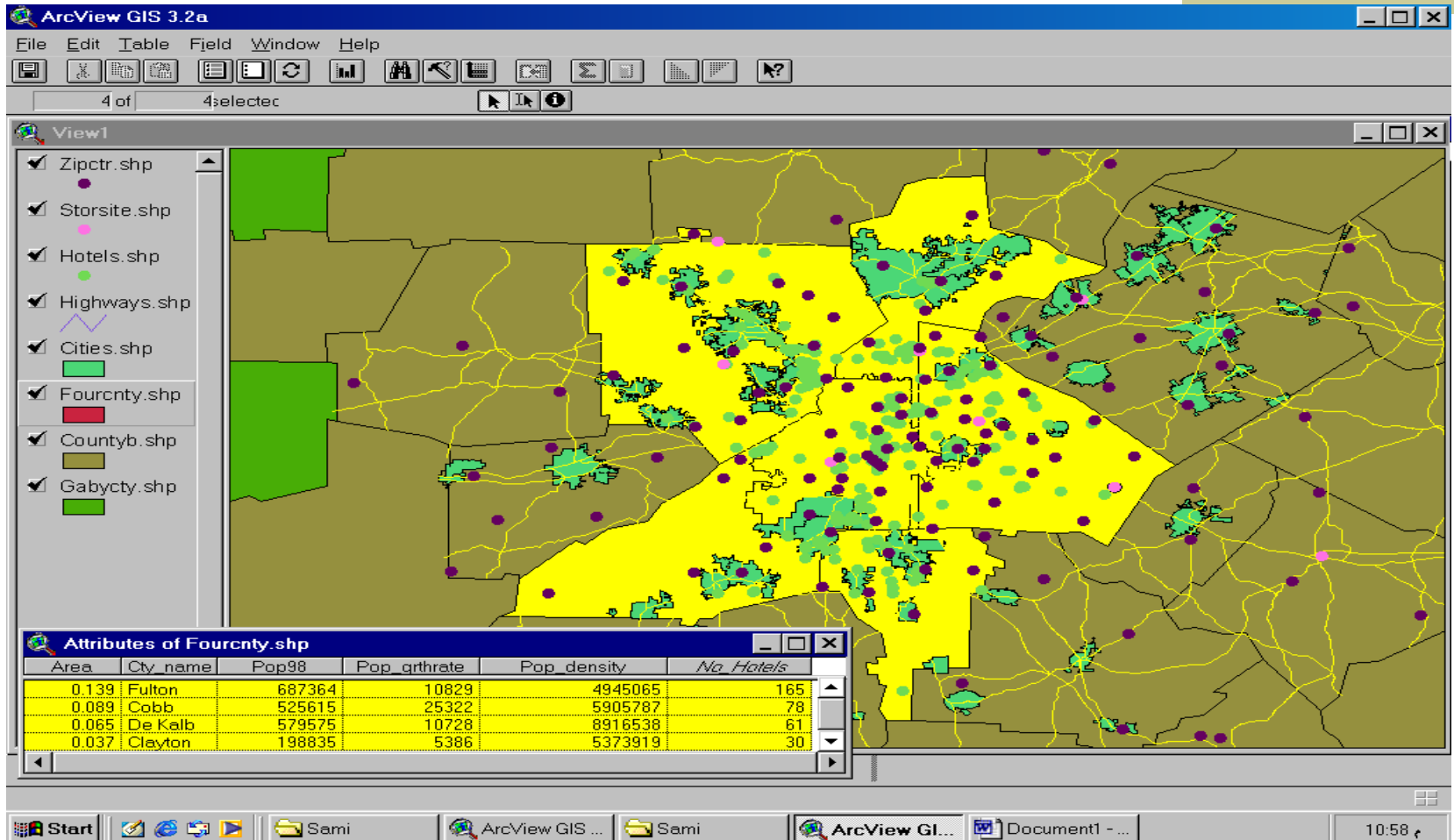
The available data

- ◆ Ready-to-use data in a shape file format, provided by ESRI, Inc. was used to execute this project.
- ◆ The available data contains themes for cities, counties, highways, hotels, store sites and zip centers in Atlanta city and the neighboring counties.

The Analysis

- ◆ **Step One:** The interrelationship between the distribution of hotels, population, and population density was studied.
 - The number of hotels in each county was calculated by joining attribute tables for hotels and counties.
 - The number of hotels increases proportionally with population. However, population density or the area of a county constrains this increase

Counties with higher population and lesser population density show higher numbers of hotels

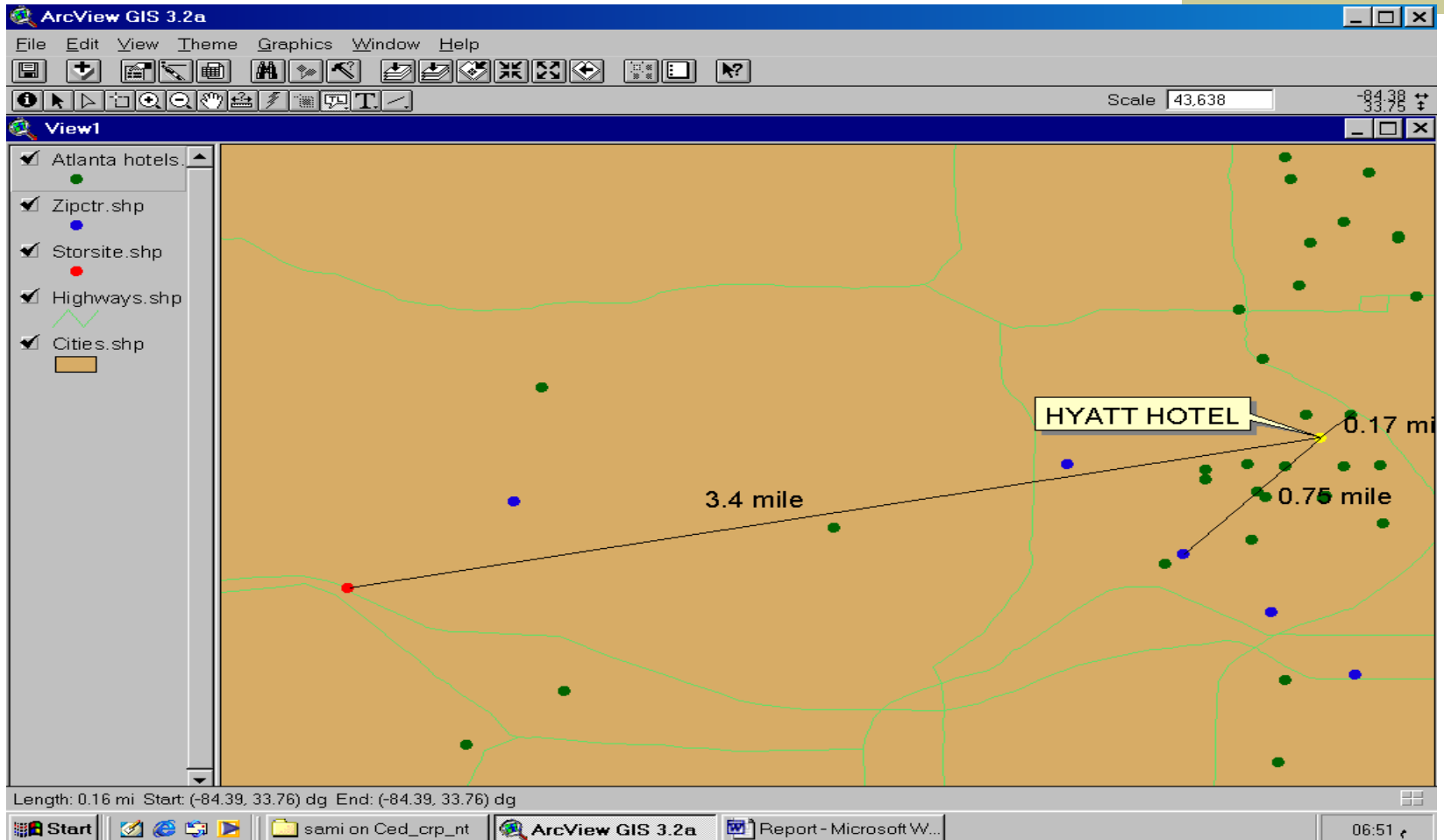


The Analysis

◆ **Step Two:**

- Hotels within Atlanta city were selected by using the Selected By Theme tool of the Theme menu.
- The spatial location of the highest-revenue hotel in the city, was objectively studied. The Measure tool was used to measure distances.
- The hotel is found to be noticeably much closer to the nearest service units than hotels with less revenue.

Spatial location of the highest-revenue hotel (Hyatt Hotel)



The Analysis

- ◆ **Step Three:** To study the relationship between hotels and the adjacent service units, some sort of spatial analysis was carried out.
 - This was achieved by applying hypothetical search criteria, implementing the Select By Theme tool.
 - Maximum distances of 0.5, 2.5, and 10 miles were assumed to be the separation distance between a hotel and the nearest highway, zip center, and store site respectively.
 - The analysis indicated that there might be a strong interconnectivity between the former service units and the distribution of hotels.

78 out of 86 hotels in Atlanta city matched the initial search criteria

ArcView GIS 3.2a

File Edit Table Field Window Help

78 of 86 selected

Attributes of Atlanta hotels.shp

| Perimeter | Hotels | Hotels_id | Hot_name | Number_emp | Sic1 | Sic_label | Sic2 | Revenue | Compny_type | Fips |
|-----------|--------|-----------|---------------------|------------|--------|-----------------|--------|----------|-------------|-------|
| 0.000 | 133 | 176 | SHADY REST MOTOR | 5 | 701100 | HOTELS & MOTELS | | 200000 | Private | 13089 |
| 0.000 | 136 | 179 | GRANADA HOTEL | 29 | 701100 | HOTELS & MOTELS | | 1200000 | Private | 13089 |
| 0.000 | 137 | 180 | MARRIOTT HOTELS IN | 129 | 701100 | HOTELS & MOTELS | | 5300000 | Private | 13089 |
| 0.000 | 138 | 181 | MARRIOTT-RESIDENC | 45 | 701100 | HOTELS & MOTELS | | 1900000 | Private | 13089 |
| 0.000 | 139 | 182 | QUALITY INN | 50 | 701100 | HOTELS & MOTELS | | 2100000 | Unknown | 13089 |
| 0.000 | 140 | 183 | RED CARPET INN | 29 | 701100 | HOTELS & MOTELS | 701101 | 1200000 | Private | 13089 |
| 0.000 | 141 | 184 | REGENCY SUITES HOT | 39 | 701100 | HOTELS & MOTELS | 738914 | 1600000 | Private | 13089 |
| 0.000 | 142 | 185 | TRAVE | | | | | 400000 | Private | 13089 |
| 0.000 | 143 | 186 | WYND | | | | 581266 | 3100000 | Private | 13089 |
| 0.000 | 144 | 187 | ATLAN | | | | | 200000 | Private | 13089 |
| 0.000 | 198 | 242 | CLARIC | | | | | 1200000 | Unknown | 13121 |
| 0.000 | 199 | 243 | COMFO | | | | | 700000 | Unknown | 13121 |
| 0.000 | 200 | 244 | COMFO | | | | | 100000 | Private | 13121 |
| 0.000 | 202 | 247 | HOWA | | | | | 100000 | Private | 13121 |
| 0.000 | 203 | 248 | HYATI | | | | 751400 | 36900000 | Unknown | 13121 |
| 0.000 | 204 | 251 | MITCH | | | | 581200 | 700000 | Private | 13121 |
| 0.000 | 205 | 252 | PALAM | | | | 738903 | 200000 | Private | 13121 |
| 0.000 | 206 | 253 | RADIS | | | | 581266 | 16200000 | Unknown | 13121 |
| 0.000 | 207 | 254 | RAMA | | | | | 12500000 | Unknown | 13121 |
| 0.000 | 208 | 256 | TRAVE | | | | | 1300000 | Private | 13121 |
| 0.000 | 209 | 257 | WEST | | | | 581266 | 34900000 | Private | 13121 |
| 0.000 | 210 | 258 | BEVER | | | | 701104 | 100000 | Private | 13121 |
| 0.000 | 211 | 259 | EMBASSY SUITES HOT | 129 | 701100 | HOTELS & MOTELS | 482203 | 5300000 | Private | 13121 |
| 0.000 | 212 | 260 | FIRST HOTEL INVESTN | 16 | 701100 | HOTELS & MOTELS | | 700000 | Private | 13121 |
| 0.000 | 213 | 261 | HAMPTON INN | 39 | 701100 | HOTELS & MOTELS | | 1600000 | Private | 13121 |
| 0.000 | 214 | 262 | RESIDENCE INN | 44 | 701100 | HOTELS & MOTELS | | 1800000 | Private | 13121 |
| 0.000 | 215 | 264 | SUMMERFIELD SUITES | 50 | 701100 | HOTELS & MOTELS | | 2100000 | Private | 13121 |
| 0.000 | 216 | 265 | ATLANTA MIDTOWN M | 3 | 701100 | HOTELS & MOTELS | 701103 | 100000 | Private | 13121 |
| 0.000 | 217 | 266 | BED & BREAKFAST INN | 4 | 701100 | HOTELS & MOTELS | | 200000 | Private | 13121 |
| 0.000 | 218 | 267 | BILTMORE INN | 20 | 701100 | HOTELS & MOTELS | 701104 | 800000 | Private | 13121 |
| 0.000 | 219 | 268 | DAYS INN ATLANTA | 74 | 701100 | HOTELS & MOTELS | 581266 | 3100000 | Unknown | 13121 |
| 0.000 | 220 | 269 | DAYS INN PEACHTREE | 46 | 701100 | HOTELS & MOTELS | | 1900000 | Private | 13121 |
| 0.000 | 221 | 270 | HOWARD JOHNSON | 34 | 701100 | HOTELS & MOTELS | | 1400000 | Private | 13121 |
| 0.000 | 222 | 272 | PEACHTREE EXECUTI | 13 | 701100 | HOTELS & MOTELS | | 600000 | Private | 13121 |
| 0.000 | 223 | 273 | QUALITY INN | 34 | 701100 | HOTELS & MOTELS | | 1400000 | Private | 13121 |

Statistics for Revenue field

Sum: 268700000
 Count: 78
 Mean: 3444872
 Maximum: 36900000
 Minimum: 100000
 Range: 36800000
 Variance: 51194973359973
 Standard Deviation: 7155066

OK

Start | ArcView GIS 3.2a | Report - Microsoft W... | Statistics for Rev... | 10:36

The Analysis

- ◆ **Step Four:** These initial findings necessitated deeper investigation to confirm the initial assumption of this study.
 - The Query Builder from the main menu was used to classify the revenue attribute of the hotels based on commercial viability criteria into:
 - 1) Hotels with revenues higher than the mean revenue.
 - 2) Hotels with revenues lower than the mean revenue

Hotels having revenues higher than the mean value

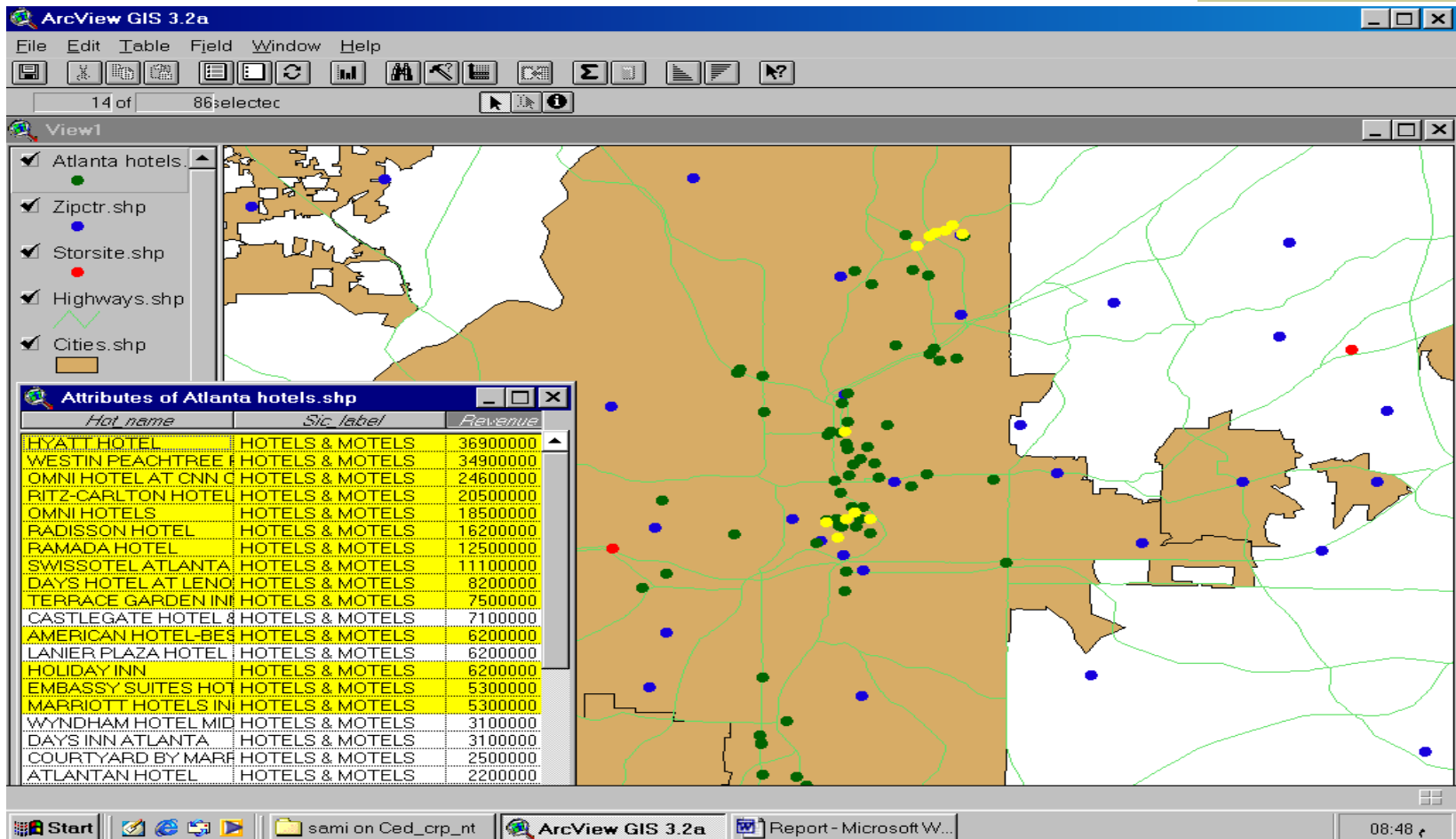
The screenshot displays the ArcView GIS 3.2a interface. The main window shows a map of Atlanta with several colored points representing hotels. A selection tool is active, showing a query: `([Revenue] > 3263953)`. The attribute table for the selected hotels is shown below.

| Hot_name | Sic_label | Revenue |
|---------------------|-----------------|----------|
| HYATT HOTEL | HOTELS & MOTELS | 36900000 |
| WESTIN PEACHTREE | HOTELS & MOTELS | 34900000 |
| OMNI HOTEL AT CNN C | HOTELS & MOTELS | 24600000 |
| RITZ-CARLTON HOTEL | HOTELS & MOTELS | 20500000 |
| OMNI HOTELS | HOTELS & MOTELS | 18500000 |
| RADISSON HOTEL | HOTELS & MOTELS | 16200000 |
| RAMADA HOTEL | HOTELS & MOTELS | 12500000 |
| SWISSOTEL ATLANTA | HOTELS & MOTELS | 11100000 |
| DAYS HOTEL AT LENO | HOTELS & MOTELS | 8200000 |
| TERRACE GARDEN INN | HOTELS & MOTELS | 7500000 |
| CASTLEGATE HOTEL & | HOTELS & MOTELS | 7100000 |
| AMERICAN HOTEL-BES | HOTELS & MOTELS | 6200000 |
| LANIER PLAZA HOTEL | HOTELS & MOTELS | 6200000 |
| HOLIDAY INN | HOTELS & MOTELS | 6200000 |
| EMBASSY SUITES HOT | HOTELS & MOTELS | 5300000 |
| MARRIOTT HOTELS IN | HOTELS & MOTELS | 5300000 |
| WYNDHAM HOTEL MID | HOTELS & MOTELS | 3100000 |
| DAYS INN ATLANTA | HOTELS & MOTELS | 3100000 |
| COURTYARD BY MAR | HOTELS & MOTELS | 2500000 |

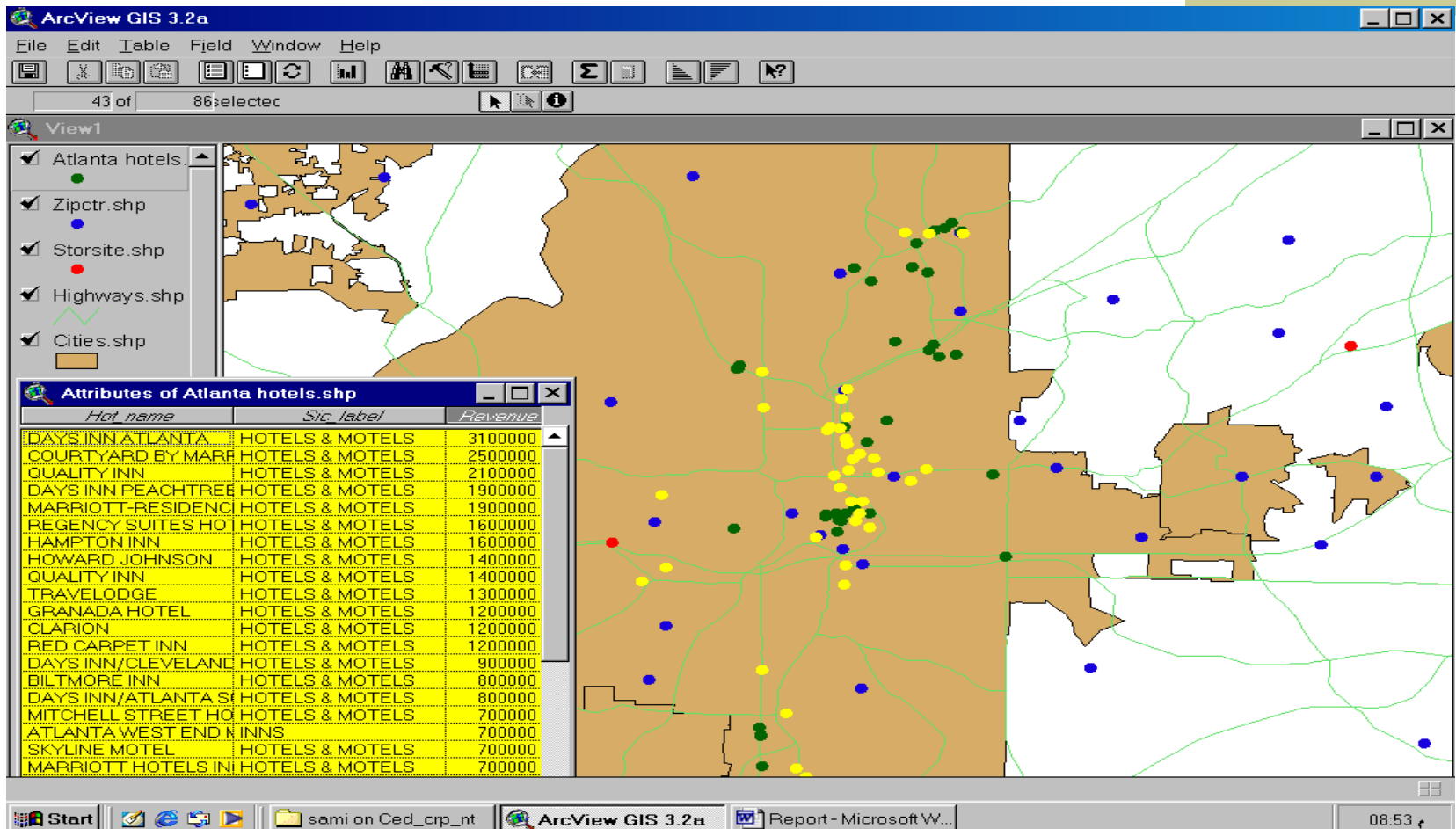
The Analysis

- ◆ **Step Five:** In order to measure the influence of juxtaposition between hotels and service units on the profitability of hotels, more precise search criteria, with lesser ranges were applied to both of the previously classified categories.
 - Distances of 0.45, 2, and 6 miles were assigned to be the separation distances between hotels and highways, zip centers, and store site respectively.

14 out of the 16 highest-revenue hotels met the latest search criteria (87%)



Only 43 out of the 70 lowest-revenue hotels met the search criteria (58%)



Conclusion

- ◆ The commercial competition of hotels in Atlanta city is controlled by the adjacency to the service units. However, the influence of other non-geographic factors should not be neglected.
- ◆ Time and lack of good knowledge in the field of business administration were real constraints to the work

Recommendations

- ◆ **The famous managerial function of revenue:**

$$f(R) = \acute{\alpha} + \beta_x + \beta y + \beta z$$

can be used for a future detailed study to reveal precisely and quantitatively the independent influence of the spatial distribution of each service unit on the revenues of these hotels.

Thanks for listening

Any Question?