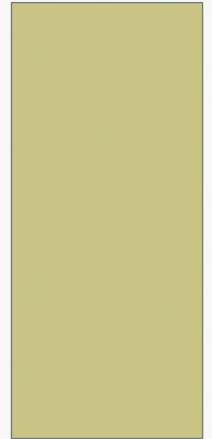


# NOISE MAPPING USING GIS

AHMAD JARADAH 200132730



# OUTLINE

- Introduction
- Noise Mapping
- Techniques
- Case Studies
- Conclusion

# INTRODUCTION

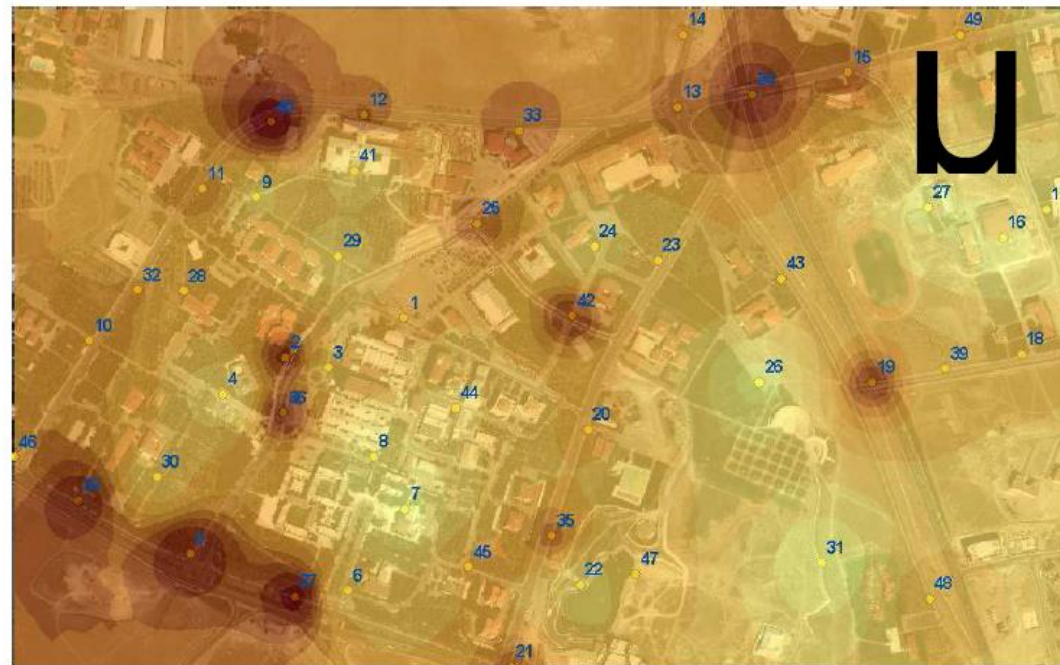
- Noise can be defined simply as the disturbance evoked by sound.
- Noise can represent 1 type of environmental pollution. (NOISE POLLUTION).
- Noise in some cases can cause harm to human ears. In addition, it can have psychological effects on human performance.

# INTRODUCTION

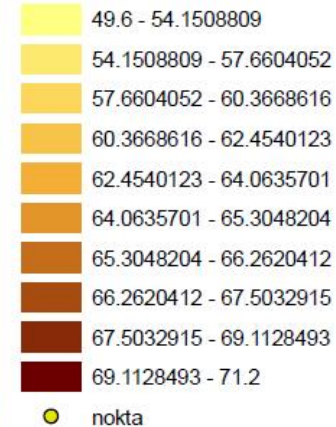
- Noise pollution is currently increasing at an alarming rate.
- Reasons include:
  - Increased population
  - Concentration in major cities
  - Increased traffic
- Many countries around the world are enforcing laws and directives to control noise pollution
- Reflecting noise levels on maps is the easiest way to represent the problem

# NOISE MAPPING

- Noise map is a map that shows noise levels in a geographical area in a certain period of time (i.e. between 7:00am and 5:00pm)



## LEGEND



0 145 290 580 Meters

# NOISE MAPPING

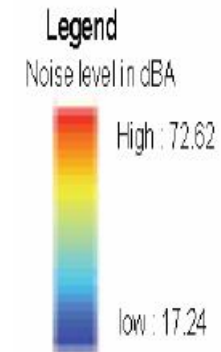
- European law states that cities with population of over 250,000 are required to have a noise map.
- This issue encouraged the use of GIS in creating such maps.
- The power of GIS provides:
  - Central Database management
  - Visual presentation

# TECHNIQUES

- There are 2 types of data in noise mapping:
  - Field Measured Data
  - Modeling (predicted) Data
- Many techniques are used in noise mapping, and this includes:
  - 2D noise maps
  - 2 ½D noise maps
  - 3D noise maps

# TECHNIQUES

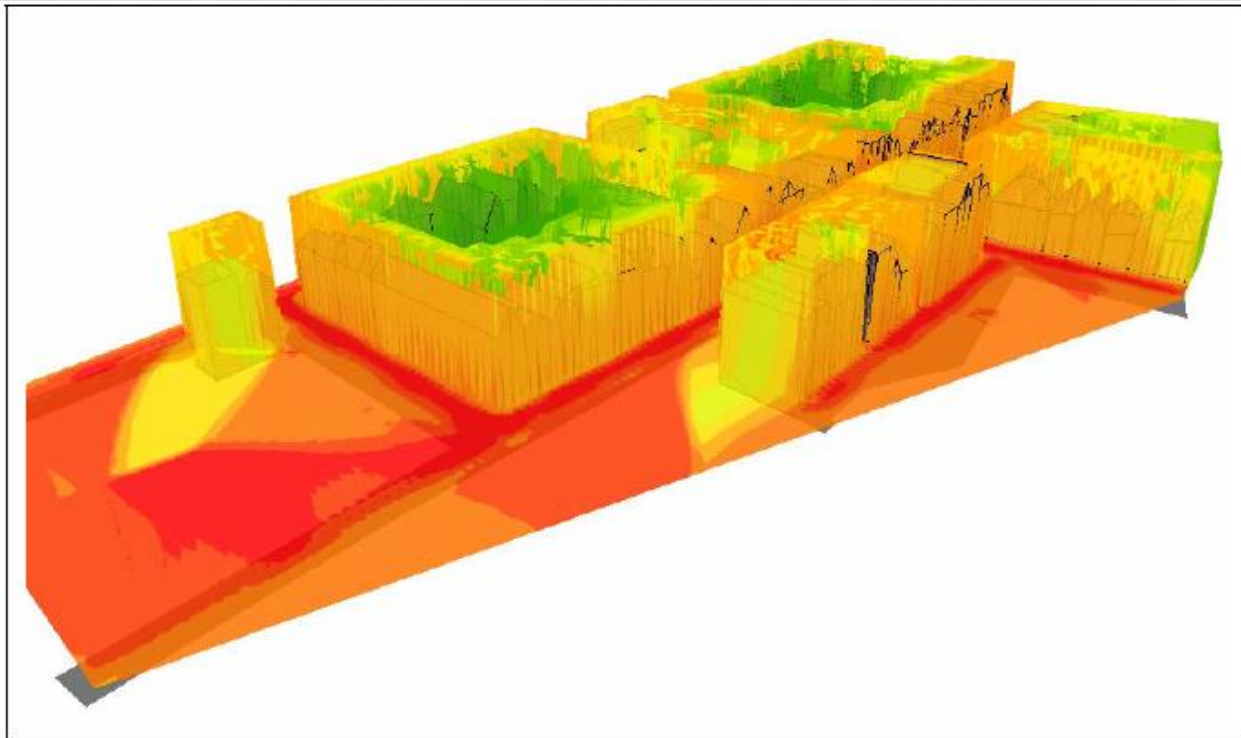
- 2D noise maps represent noise levels at one particular height





# TECHNIQUES

- 2 ½ D noise maps represent noise levels at one elevation for the same x,y coordinates
- 3D maps show all the information on x,y,z axis.



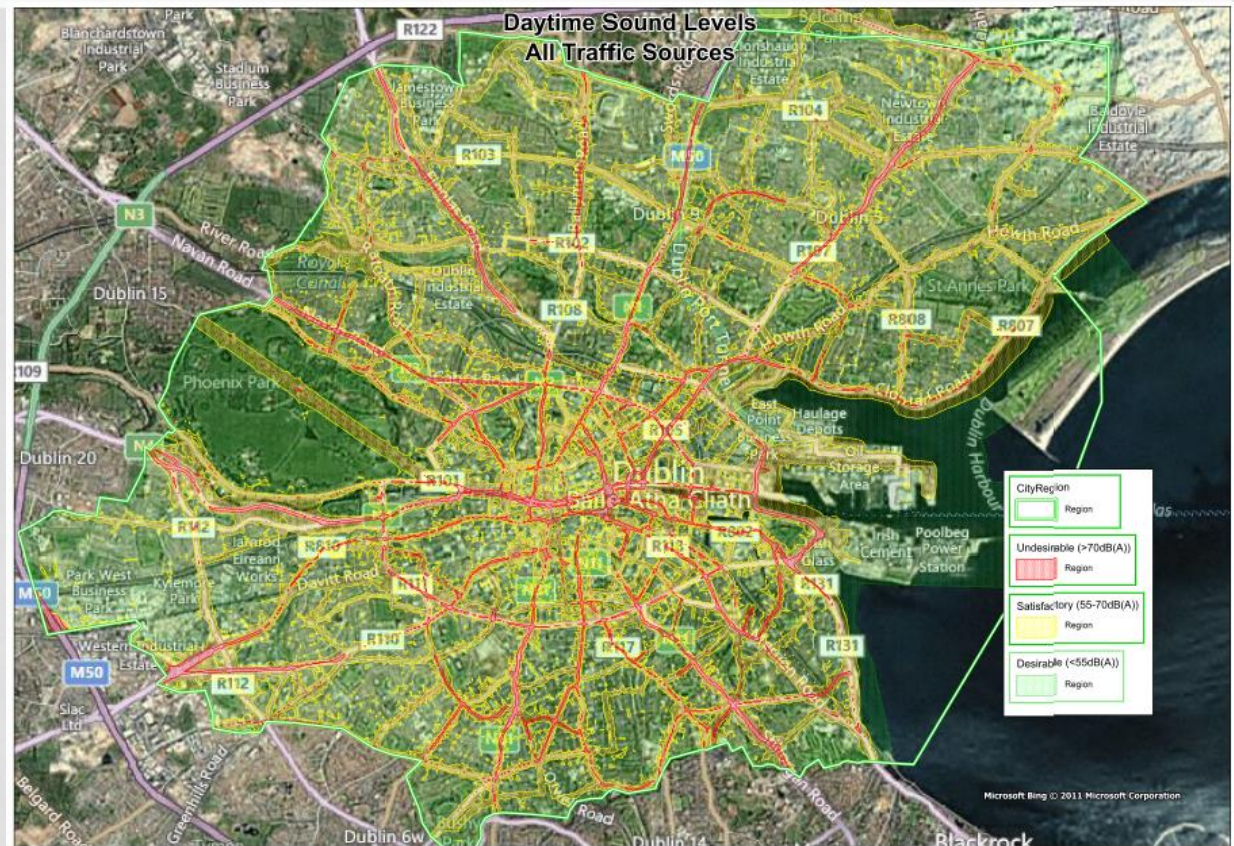
# CASE STUDIES

- Adelaide, South Australia, Australia
- 2d Map
- Based on Field Measurements
- Annual Update
- 2 Consultants:
  - GIS
  - Acoustics



# CASE STUDIES

- Duplin City, Ireland
- Daytime and nighttime maps



<http://www.dublincity.ie/WATERWASTEENVIRONMENT/NOISEMAPSANDACTIONPLANS/Pages/default.aspx>

# CASE STUDIES

- San Francisco, California, USA
- Developed by the Department of Health

San Francisco - City-wide Noise Map



v.2.0 (08/25/2006)  
- TNM 2.5 Lookup  
- 4 road classes  
- Neighborhood-specific hourly traffic fractions  
- MUNI schedules

1 0.5 0 1 Kilometers

Street noise levels  
Ldn (dBA)  
0.0 - 55.0  
55.1 - 60.0  
60.1 - 65.0  
65.1 - 70.0  
70+

# CASE STUDIES

- Barcelona City (Internet GIS)

Internet browser interface for the Barcelona City Noise Map application.

Address bar: [http://w20.bcn.cat:1100/WebMapaAcustic/mapa\\_soroll.aspx?lang=en](http://w20.bcn.cat:1100/WebMapaAcustic/mapa_soroll.aspx?lang=en)

Page title: Estrategic map of noise | Th... x

Ajuntament de Barcelona Català Castellano

## Noise map

**SEARCH**

**By address**


Street

Number

**By crossroads**

Street

Contact: [programasoroll@bcn.cat](mailto:programasoroll@bcn.cat)



# CONCLUSION

- Implementation of GIS in noise mapping contributed positively of the control noise pollution.
- Many researchers now find it easier to conduct studies on noise levels.
- This has also helped urban planners to improve city and villages pollution.