

CGS1060 Team-based Course Project

Complex data is all around us—online, in the news, and under our noses each day. This growth of data shows no signs of slowing, and indeed seems to be accelerating. Collecting and exploring data, spotting patterns, and extracting useful information have been integrated in many disciplines for better understanding of phenomena of interest. These skills are critical for full participation in the workforce and civic engagement of the 21st century. Data analytics-related jobs are highly in demand and prominent in the job market.

Currently we are learning Microsoft Excel to manage data. Through online lessons and in-class mini-projects, we started to appreciate and enjoy data and data-related technology in discovering patterns and making prediction. Another two learning modules this semester are 1) Microsoft Access database tool which is used to manage and more effectively query your data that are inter-related and 2) Microsoft Powerpoint for presenting and communicating your discovery or idea. All these three modules together provide us a great platform to work on a complete project and investigate environment around us through analyzing data. We expect to form a team, specify question that you want to ask and answer through data, analyze data from different perspectives, make a poster, and present your investigation and analysis results.

Data Source

You must use datasets from at least one of the following three sources:

- [Miami-Dade County's Open Data Portal](#)
- [Miami-Dade County's GIS Data Library](#)

You may combine the city or county datasets that you choose with any other open data that you can find, such as [Census Bureau data](#), [Twitter](#) or other social network data, data from the [State of Florida](#), the U.S. [Federal Government Open Data Portal](#), [World Bank Data](#), [world population data](#) (alternative) or data from the [Centers for Disease Control and Prevention](#).

Procedure and timeline

- Form a team (less than or equal to three members) and specify the question that you would like to ask of the data [by Oct. 25]
- Collect data and formulate your question or build hypothesis that you expect to test through the project [by Oct. 27]
- Analyze data in Excel [by Nov. 3]
- Analyze data in Access [by Nov. 17]
- Make a first-version poster [by Nov. 24]
- Make a second-version poster [by Dec. 1]

Example questions

- What is the salary distribution over fields?

Download Employee Pay Information at [HERE](#) [Employee_Pay_Information.csv]

- [Elasticity of city systems] How fast does the Miami city system get recovered after a natural disaster, for example Hurricane Irma or tropical storm, flooding?
- [Disaster handling of the Miami City] Whether are senior nursery centers ready for handling natural disasters?
- [Disaster handling of the Miami City] Whether does hospital handle with disasters? For example, check hospital (beds)
- What is the optimization model for inventory systems? Using the simulation data
- What is the current trend of U.S. Trade balance in Goods and Services? [Data](#)
- What is the PC Component Brand Distribution?
- [More](#)

Example analysis

- Which Factors Affect Life Expectancy? [Slides](#) [Release package](#)

Content to present in a poster

- What is the original project topics you would like to work on and why?
- Whether there is related work? If yes, which data did the author use, and which discovery?
- What would be difference between your project and the existing work?
- What is your hypothesis? Or what you expect?
- What is the interrelated data? which format?
- What is your method?
- What is your solution?
- Discussion points

Supplementary Data Information

<https://opendata.miamidade.gov/>

Purchase Orders (ADPICS) - Jan 2008 to current Procurement

<https://opendata.miamidade.gov/Procurement/Purchase-Orders-ADPICS-Jan-2008-to-current/8weh-4fbz>

This data set includes Purchase Orders (PO) logged in Miami-Dade County's Advanced Purchasing and Inventory Control System (ADPICS) from January 1, 2008 to the current date. The data include PO's in one of the following statuses – Posted, Partially Vouchered, Closed.

<http://www.miamidade.gov/transparency/public-records.asp>

<https://developer.twitter.com/en/docs/ads/general/guides/getting-started>

<https://developer.twitter.com/en/docs>

<http://geodata.myflorida.com/>

<https://www.data.gov/>

<https://data.cdc.gov/>

Environment-related topics

Contaminated Site

- Contaminated_Site.csv
- http://gis-mdc.opendata.arcgis.com/datasets/7641224cd8f34be5bf5b90996636ccd0_1

Environment Endangered Land Sites

- Environment_Endangered_Land_Sites.csv
- http://gis-mdc.opendata.arcgis.com/datasets/2ac693bb31d54880937d6a784ef172ef_2

Landfill

A polygon layer of general areas of current and historic; legal and illegal landfill sites.

- Landfill.csv
- http://gis-mdc.opendata.arcgis.com/datasets/9b7ce46319cc45db9dd6b63a266617eb_2

Major Mall

This point layer contains locations of Major Malls in Miami-Dade County.

- Major_Mall.csv
- http://gis-mdc.opendata.arcgis.com/datasets/a64bd8e9525a4544b5b4637eb2f5b8e7_1

Flooding

Storm Surge Planning Zones

Land Use

Hurricane Bus Stop

- A point feature class of Miami-Dade County, Hurricane Evacuation Bus Stop locations for mobile homes and/or general public shelter transfer.
- Hurricane_Bus_Stop.csv
- http://gis-mdc.opendata.arcgis.com/datasets/c51d2e89b85145e3969f9b4bacca6d21_1

Hurricane Shelter

Garbage Pick Up Route

The GarbagePickupRoute polygon feature class was created for the Miami-Dade Department of Solid Waste Management (DSWM) now Public Works and Waste Management Department. It contains the boundaries of the Waste Collection System Garbage Routes. The routes cover the area of Unincorporated Miami-Dade County and of municipalities served by PWWMD.

- Garbage_Pick_Up_Route.csv
- http://gis-mdc.opendata.arcgis.com/datasets/15574518e8cc41c7ae700c3a7afccb8a_3

Education-related topics

College

- College.csv
- http://gis-mdc.opendata.arcgis.com/datasets/9137689caa404b59aea6b897dc6b997a_4

Charter School

- Charter_School.csv
- http://gis-mdc.opendata.arcgis.com/datasets/2ee624731ebd40b3860d79bde64b8c92_1

Private School

Public School

Business-related topics

Daycare

Hospital

A point layer of hospital facilities in Miami-Dade County.

- Hospital.csv
- http://gis-mdc.opendata.arcgis.com/datasets/287127f9521742009b774eb220ab9ef7_6

Hotel Motel Inn

A point layer of Miami-Dade County hotels, motels and inns facilities.

- Hotel_Motel_Inn.csv
- http://gis-mdc.opendata.arcgis.com/datasets/17b1b5a023bc4da6b5be2e39c553da09_0

House District

Polygon feature class of Miami-Dade County (Florida) State House Districts.

- House_District.csv
- http://gis-mdc.opendata.arcgis.com/datasets/9bd2519f5693416d88377e592164cd07_0

Jackson Primary Care Center

- Jackson_Primary_Care_Center.csv
- http://gis-mdc.opendata.arcgis.com/datasets/d45f9a3cc0d34f1ca551ccdac1d37d97_4

HIV Testing Center

A point layer of HIV and AIDS Testing Centers in Miami-Dade County.

- HIV_Testing_Center.csv
- http://gis-mdc.opendata.arcgis.com/datasets/8ad2457b20454f6c85043bc0f9dff505_3

School Based Clinic

Mental Health Center

- Mental_Health_Center.csv
- http://gis-mdc.opendata.arcgis.com/datasets/94debdd51a5b43fc83d27aa78961c99a_0

Free Standing Clinic

- Free_Standing_Clinic.csv
- http://gis-mdc.opendata.arcgis.com/datasets/a60fb01beffa49238808b60f23b6bb6a_2

Populations

Places (Time series data)

2010 Census Designated Places (CDPs) with Population. CDPs are delineated to provide data for settled concentrations of population that are identifiable by name, but are not legally incorporated under the laws of the State in which they are located.

- Places_2010.csv
- http://gis-mdc.opendata.arcgis.com/datasets/0a694aef86224e40a0bbb1e52f6ce1f3_2

Places_1990

Places_2000

Transportation

MDCPS Bus Stop

Major Road

Metromover

Metromover Stations

Metrorail

Metrorail Stations

Miami-Dade Boundary

Mobile Home

Municipal Fire Station

Municipal Library

Municipal Park

Municipal Park Boundary

Municipal Police Grid

Municipal Police Station

Municipal Zone

Rail

National or State Park or Preserve

Neighborhood Revitalization Area

Neighborhood Stabilization Program

Police District

Police Grid

Police Patrol Area

Police Station

Recycling Route**Recycling Zone****Senate District****Sewer Service Area**

Shore line Development Boundary

Shoreline

Street

Small Buidling 2001/2003/2005/2013

Street Maintenance

Subdivision Boundary

Super Fund Site

A point layer of Superfund Sites which are hazardous waste facilities.

- Super_Fund_Site.csv
- http://gis-mdc.opendata.arcgis.com/datasets/21e49c9bfed148dfa860cdab9e6472a6_0

Target Urban Area

Traffic Signals

Traffic Analysis Zones 2010

Tracts

Tri-Rail

Urban Development Boundary

Waste Collection Service Zipcode

Water

Water Service Area

Wide curb Lane

Outer Safety Zone

No SchoolZone

South Florida Region

WCS Bulky Book