Location Analytics in Business Curricula Through the Lens of Big and Small Data

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About the Project

- Bring GIS into the business classroom
- Raise business problems that raise spatial business questions
- In Year 3 of a three year grant supported by Esri
About the Project

• Contributions:
  • Development of **big data library** with variation in data sets that lend themselves to spatial analysis
  • **4 labs** for use in classroom using Esri’s Insights for ArcGIS
  • **New model** for integration/infusion of big data and location analytics into the business classroom
Big Data

• Large volumes of data useful for analysis to solve a problem, predict behavior, or acquire knowledge.

• “Big Data” refers to how the data is used and how the data useful, not just size.
Business Analytics

• Scientific process of transforming data into insights for making better business decisions.

https://www.informs.org
Bloom’s Taxonomy

• **Revised taxonomy (2001)**

• Provides a visualization and model for understanding the learning process

• Goals assigned by matriculation level and technology infusion
A Conceptual Model

- Analytics
- Big Data
- Infusion
  (Bloom’s Taxonomy)
Lab One

Solving Virgin Atlantic’s Flight Delays

• FAA penalties + customer satisfaction issues

• Analyze a large FAA database (488,000 records in a 3 month period) of flight delays in the United States

• Prepare a report for COO recommending solutions
Lab One

Solving Virgin Atlantic’s Flight Delays

A-Spatial Questions

• Do the largest delays correlate with certain days of the week?

• How does Virgin Atlantic compare to other carriers?
Lab One

Solving Virgin Atlantic’s Flight Delays

Spatial Questions

• Where are the most delays happening?
Lab One

Solving Virgin Atlantic’s Flight Delays

Descriptive
• Show where and when delays happened

Diagnostic
• Explain the issues and find patterns of past delays

Predictive
• Forecast effects on future delays

Prescriptive
• Recommend specific actions to reduce delays
Lab One

Solving Virgin Atlantic’s Flight Delays

Volume
  • Complete flight delay data in 3-month period

Velocity
  • Lab uses static data for classroom reliability

Variety
  • Basic location and typical data

Veracity
  • Reliable data collected by official agencies

Value
  • Appropriate for addressing Virgin Atlantic’s problem
Lab Two

Airbnb Austin: South by Southwest (SXSW)

• Considering listing trends, what strategies can an Airbnb executive employ to capitalize on the event?
Lab Three

Introductory Lab: Seattle Construction Permits

• Cookbook-style learning exercise.
• Consider what questions this data might answer.
## What We Learned

<table>
<thead>
<tr>
<th></th>
<th>Big Data</th>
<th></th>
<th>Location Analytics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
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<td>Before</td>
<td>After</td>
<td>Before</td>
<td>After</td>
</tr>
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</tbody>
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Scale of 1 to 5
Next Steps

• Consolidation of results into a final report.
• Write articles to submit to journals.
• Present the results and share the learning materials in 2018-2019 academic year.
• Provide online access to materials to users worldwide.
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