Decentralizing Data Analysis Through Data Modeling

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Pronouns: she/her/hers
Objective

To strip complexity from traditional data sources by building simplified data models that are comprehensible to a wider audience.
Content Experts

- Program Leadership
- Social Workers
- Evaluators
- Data Analysts
- Epidemiologists
- Nurses
- Educators
Where are they?
Why Decentralize?

• Alleviate data bottlenecks
• Give content experts more access to (their!) data
• Standardize reporting measures and definitions
• Bring more people and perspectives into the conversation
• Ask better questions

• Because you can: data modeling and visualization tools are increasingly accessible and affordable
Putting It Into Practice

- Listen to People
- Build a Model
- Share Output
- Let the Content Experts Drive
Discovery

Talk to Users

Talk to People

Listen to People
Listen to People

• Connect with data consumers at all levels and of all kinds
• Go to them
• “What would success look like?”
• Anecdotes are full of clues
• Shadowing
• Traditional discovery
Build A Model

- Cherry-pick Data Elements
- Filter Rows
- Use Intermediate/Summary Queries
- Create Columns
- Add a Semantic Layer
- Transform Data
- Validate

FAMILY HEALTH INITIATIVES
Choose Data

Cherry-pick Data Elements

Filter Rows

Narrow

Broad

Hide *almost* everything

Filter conservatively

SELECT

FROM

WHERE

Listen to People

Build a Model

Share Output

Content Experts Drive

FAMILY HEALTH INITIATIVES
Transform Data

- Change data types
- Replace values
- Address null values and errors
- Format text fields
- Format date and time fields
- Extract data
### Expand Upon Existing Data

<table>
<thead>
<tr>
<th>Use Intermediate/Summary Queries</th>
<th>Create Columns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggregation</td>
<td>Calculated fields</td>
</tr>
<tr>
<td>Merge tables</td>
<td>Merged columns</td>
</tr>
<tr>
<td>Consider Hiding</td>
<td>Custom formulas</td>
</tr>
</tbody>
</table>

---

**Family Health Initiatives**

Listen to People

Build a Model

Content Experts Drive

Share Output
Make it Readable

Add a Semantic Layer

Translate metadata to English*

Table/Object Names

Field/Column Names
Let

```sql
let
Source = Sql.Database("172.24.16.85", "pPASpectSQL"),
dbo_z_PBI_4Ps = Source((Schema="dbo", Item="z_PBI_4Ps"))[Data],
# Sorted Rows = Table.Sort(dbo_z_PBI_4Ps,["Provider Code", Order.Ascending]),
#"Filtered Rows" = Table.SelectRows(#Sorted Rows", each [County] <> null and [County] <> "")
# Changed Type = Table.TransformColumnType(#"Filtered Rows", [{Quarter}, type text])
# Replaced Value1 = Table.ReplaceValue(#"Changed Type", "1", "Q1", Replacer.ReplaceText("Quarter")),
# Replaced Value2 = Table.ReplaceValue(#"Changed Value", "2", "Q2", Replacer.ReplaceText("Quarter")),
# Replaced Value3 = Table.ReplaceValue(#"Changed Value", "3", "Q3", Replacer.ReplaceText("Quarter")),
# Replaced Value4 = Table.ReplaceValue(#"Changed Value", "4", "Q4", Replacer.ReplaceText("Quarter")),
# Changed Type1 = Table.TransformColumnType(#"Replaced Value", [{Completed Screens}, int64.Type], [{AP4s}],
# Removed Columns = Table.RemoveColumns(#"Changed Type", ["Header", "BR3", "BR4", "BR5", "BR6"],
# Renamed Columns = Table.RenameColumns(#"Removed Columns", [{ctlanguage_Total}, "Language - Total"], [{Eng}],
# Inserted Merged Column1 = Table.AddColumn(#"Renamed Columns", [{RVQ}, each Text.Combine([Region], [FYear]),
# Inserted Merged Column2 = Table.AddColumn(#"Inserted Merged Column", ["CYQ", each Text.Combine([Region], [FYear]),
# Merged Queries1 = Table.NestedJoin(#"Inserted Merged Column", [{RVQ}, RegionSum, [{RVQ}], JoinKind.Left),
# Expanded RegionSum = Table.ExpandTableColumn(#"Merged Queries", "RegionSum", [{REGION - Total Screens}],
# Renamed Columns1 = Table.RenameColumns(#"Expanded RegionSum", [{RegionSum.REGION - Total Screens}, "REGION
# Merged Queries2 = Table.NestedJoin(#"Renamed Columns1", [{CYQ}, CountySum, [{CYQ}], CountySum, JoinKind.Left),
# Expanded CountySum = Table.ExpandTableColumn(#"Merged Queries2", "CountySum", [{COUNTY - TOTAL COUNTS}],
# Added Custom = Table.AddColumn(#"Expanded CountySum", ["PROVIDER >>>", each "]
# Renamed Columns2 = Table.RenameColumns(#"Added Custom", [{Parents}, "Parents use a problem"], [{Partner1}],
# Changed Type2 = Table.TransformColumnType(#"Renamed Columns2", [{AppropriateRefEdGiven_DV}, int64.Type],
# Reordered Columns = Table.ReorderColumns(#"Changed Type", ["County", "FYear", "Quarter", "Completed Screen"]
```
Let the Content Experts Drive

• Give them the data in a format/application they are familiar with
• Provide training
• Be prepared for lots of back and forth…or long periods of silence
Share Output & Incorporate Feedback
Share Output & Incorporate Feedback

- Design
- Collect
- Analyze
- Interpret
- Distribute
Not everything that counts can be counted, and not everything that can be counted counts.
## Some Considerations

<table>
<thead>
<tr>
<th>Potential Pitfalls</th>
<th>Get Ahead of It</th>
</tr>
</thead>
<tbody>
<tr>
<td>Misinterpretation</td>
<td>• Modify your publication approval process</td>
</tr>
<tr>
<td>Changes to data inputs</td>
<td>• Schedule regular reviews of data and outputs</td>
</tr>
<tr>
<td>Privacy concerns</td>
<td>• Apply appropriate user-level permissions</td>
</tr>
</tbody>
</table>
Thank You!

Tracy Butler
Data Analyst and Reporting Manager

Patricia McGrane, Ph. D.
Quality Improvement Manager
Discussion
Resources

http://fhiworks.org/


https://weallcount.com/

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