



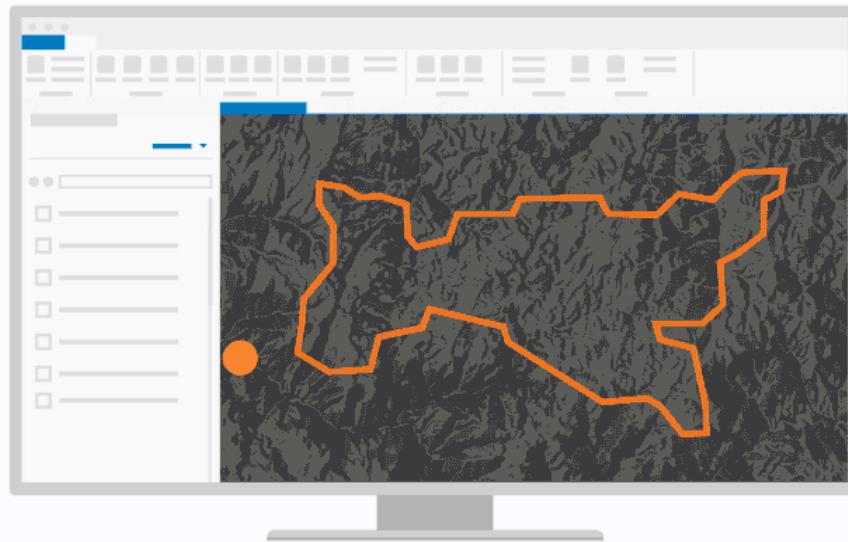
Spatial Data Science with Notebooks and ArcGIS Pro

Danny McVey

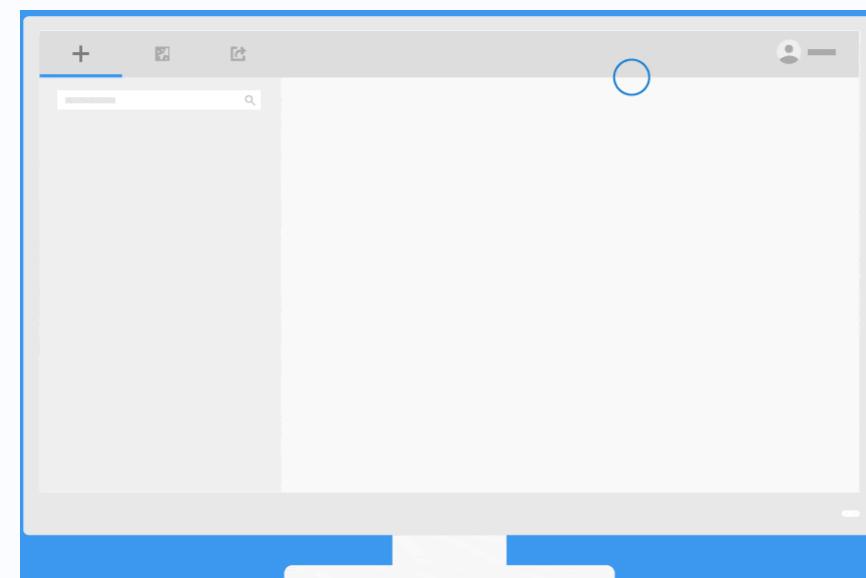
Alberto Nieto

*2021 ESRI
DEVELOPER SUMMIT*

ArcGIS Pro

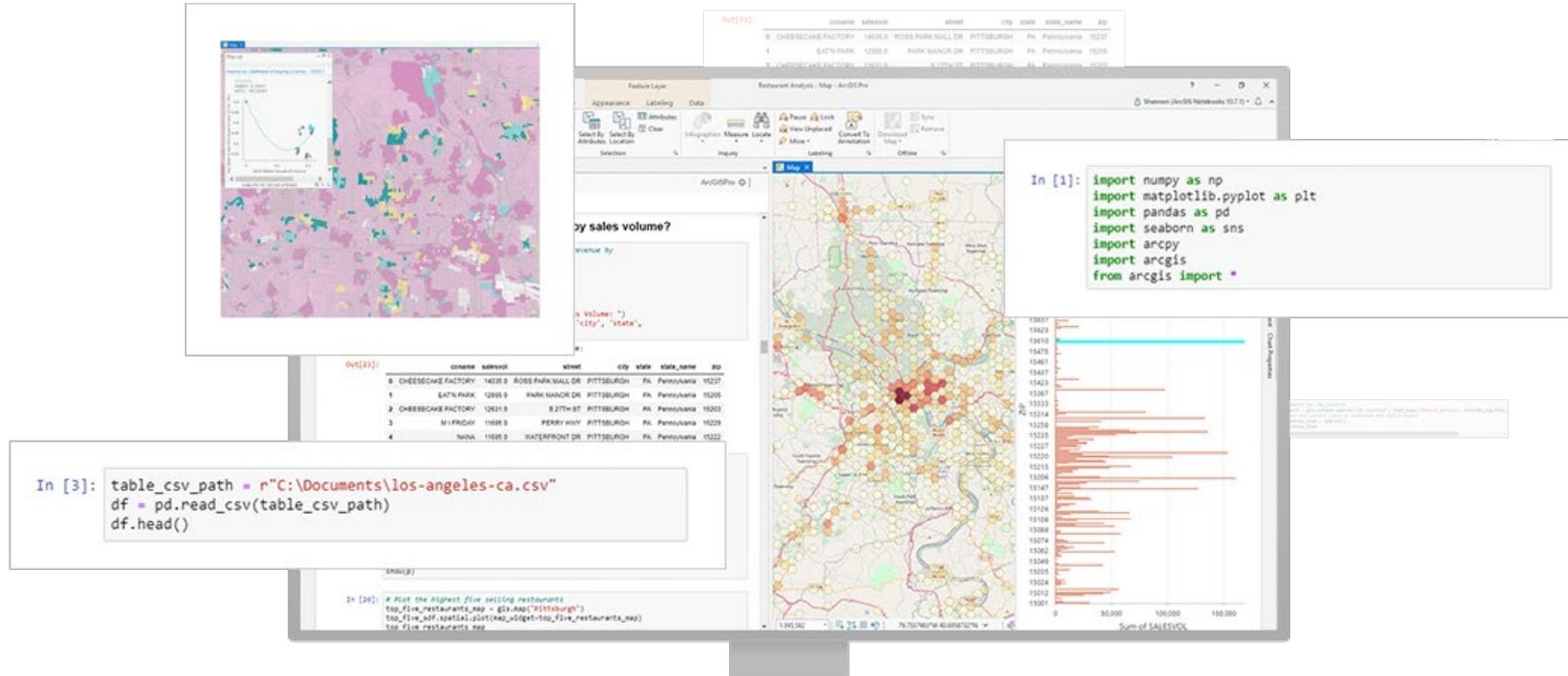


Notebooks



▼ ^ + ? : x

Notebooks in ArcGIS Pro



Spatial Analysis and Data Science Framework



Data
Engineering



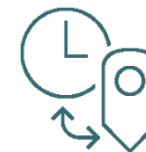
Visualization
& Exploration



Spatial
Analysis



Machine Learning
& AI



Big Data
Analytics



Modeling
& Scripting



Sharing
& Collaboration



Data
Engineering



Visualization
& Exploration



Spatial
Analysis



Machine Learning
& AI



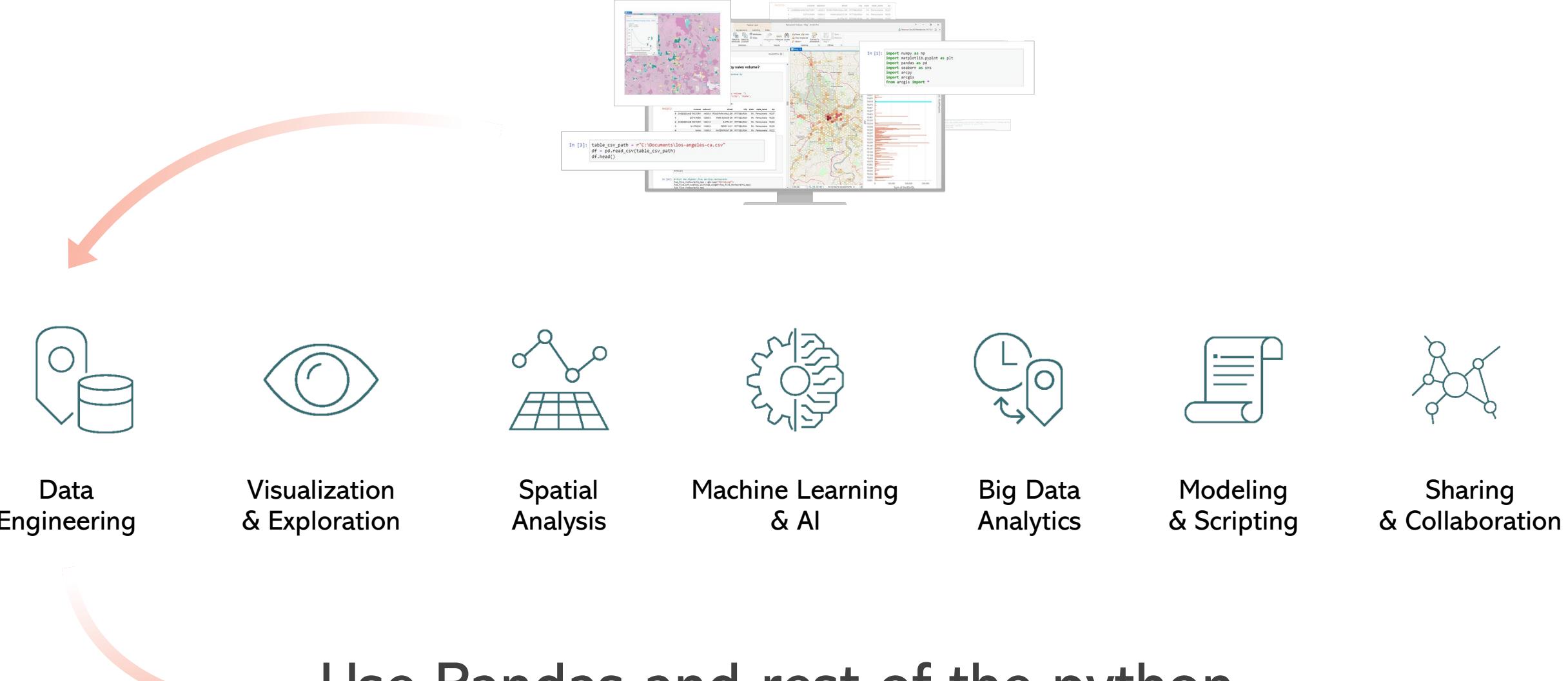
Big Data
Analytics



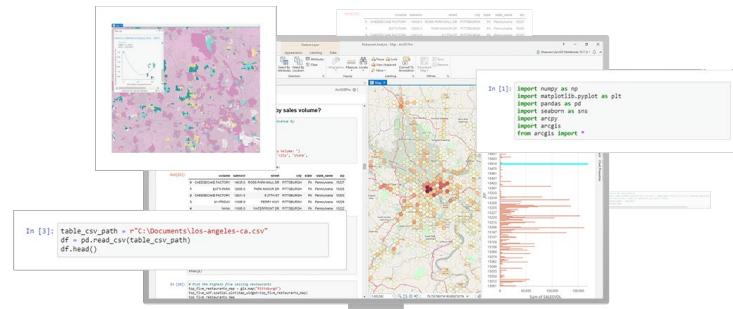
Modeling
& Scripting



Sharing
& Collaboration



Use Pandas and rest of the python
ecosystem to manage data



Data
Engineering



Visualization
& Exploration



Spatial
Analysis



Machine Learning
& AI



Big Data
Analytics

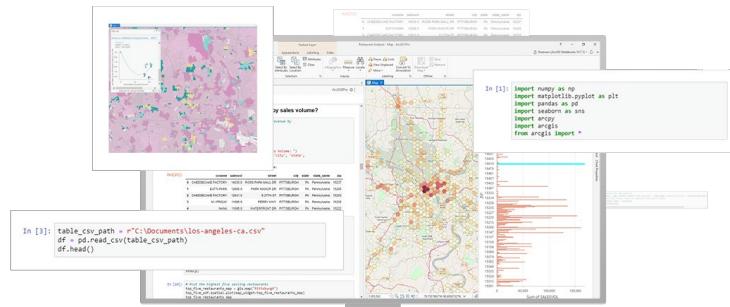


Modeling
& Scripting



Sharing
& Collaboration

Use the robust data visualization capabilities
of ArcGIS Pro in conjunction with your code



Data
Engineering



Visualization
& Exploration



Spatial
Analysis



Machine Learning
& AI



Big Data
Analytics

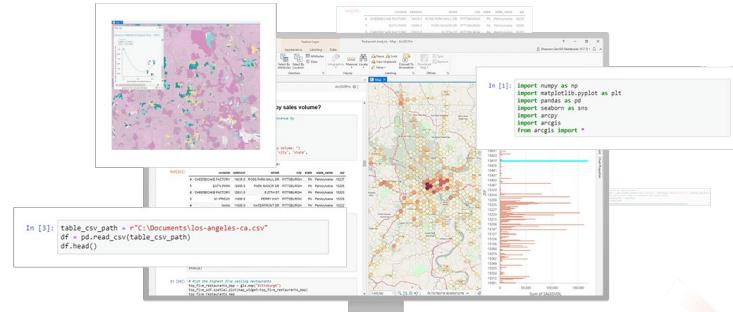


Modeling
& Scripting



Sharing
& Collaboration

Use ArcGIS Pro's rich suite of
spatial data science tools



Data
Engineering



Visualization
& Exploration



Spatial
Analysis



Machine Learning
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Big Data
Analytics

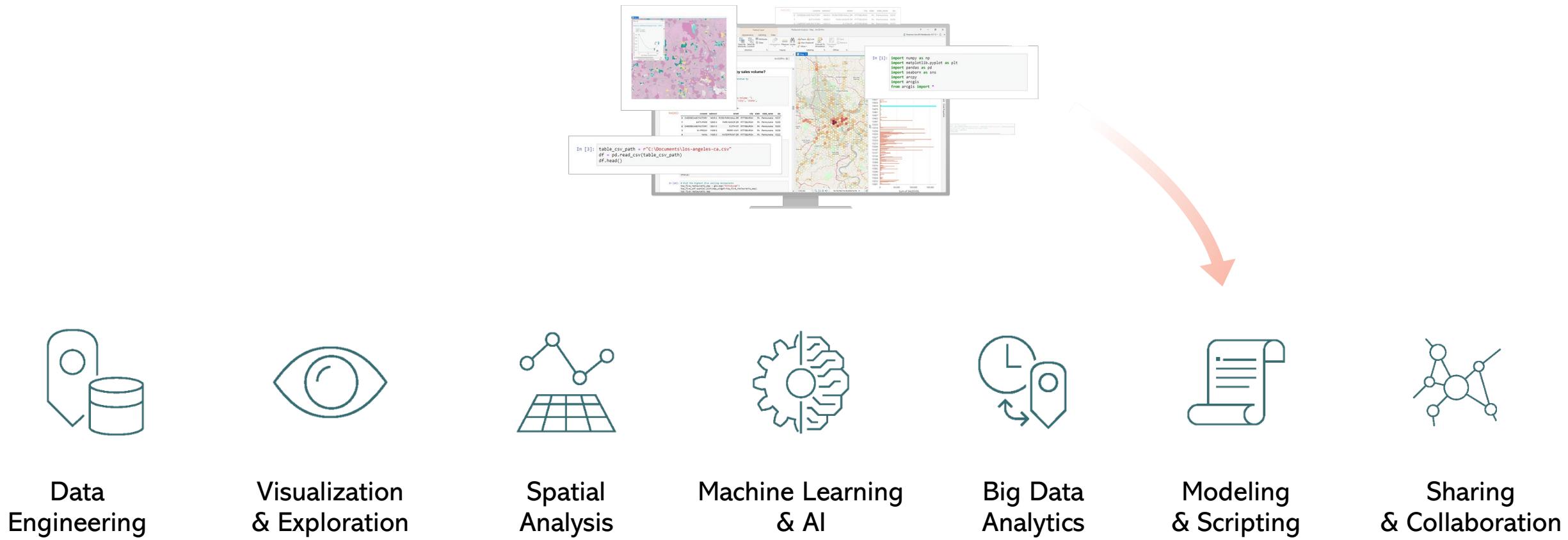


Modeling
& Scripting

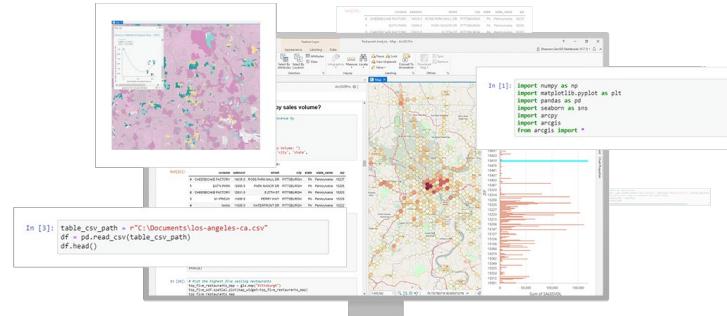


Sharing
& Collaboration

Access Python's ecosystem
designed for Big Data workflows



Umm... Script! :)



Data
Engineering



Visualization
& Exploration



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Analytics



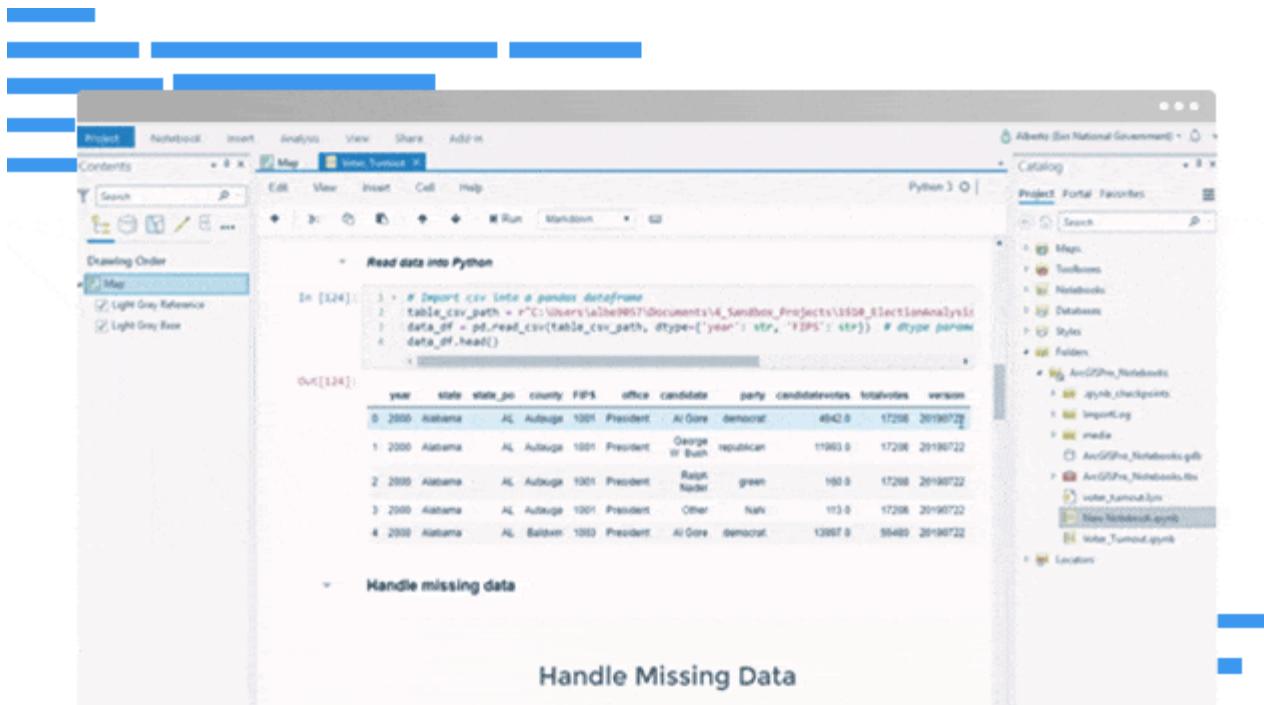
Modeling
& Scripting



Sharing
& Collaboration

Sharing ArcGIS Pro packages can now include
documented workflows with a notebook

1. Useful to learn spatial data science workflows



The screenshot shows a Jupyter Notebook interface with a Python 3 kernel. The code cell (In [124]) reads a CSV file into a pandas DataFrame:

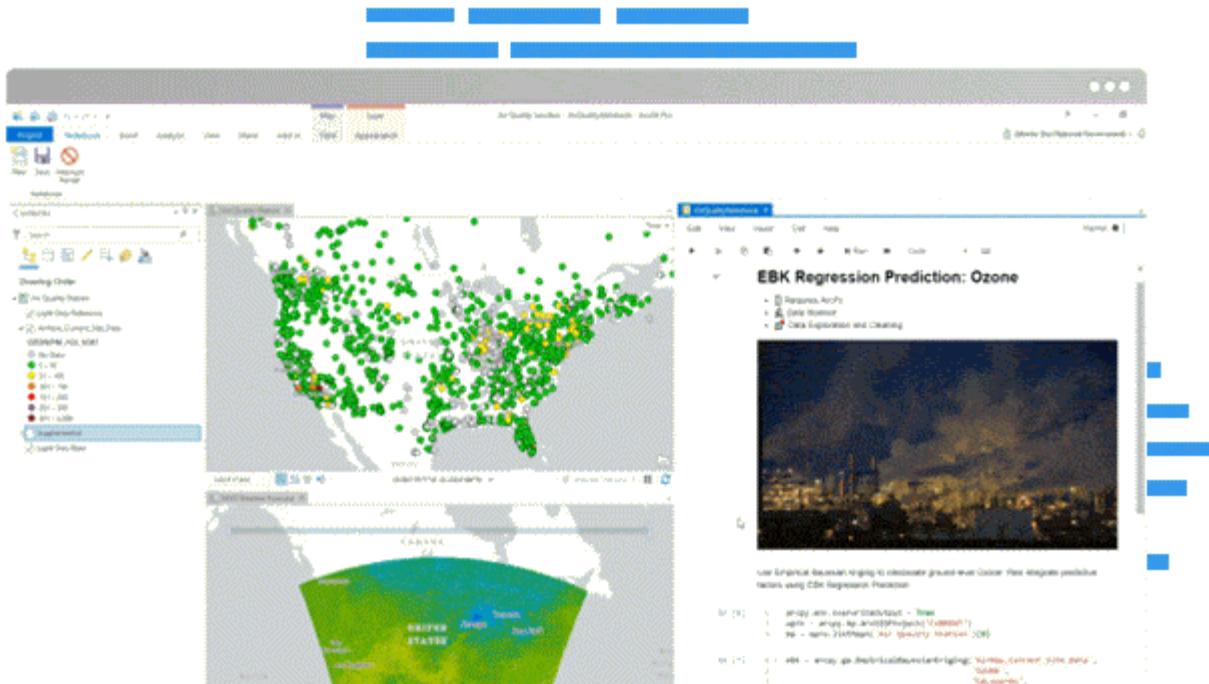
```
In [124]: 1 # Import csv into a pandas dataframe
2 table_csv_path = r'C:\Users\alber\Documents\14_Sandbox_Projects\1608_ElectionAnalysis'
3 data_df = pd.read_csv(table_csv_path, dtype={'year': str, 'FIPS': str}) # dtype parameter
4 data_df.head()
```

The output cell (Out[124]) displays the first 5 rows of the DataFrame:

	year	state	state_po	county	FIPS	office	candidate	party	candidatevotes	totalvotes	version
0	2000	Alabama	AL	Autauga	1001	President	Al Gore	democrat	4842.0	17208	20190722
1	2000	Alabama	AL	Autauga	1001	President	George W. Bush	republican	11963.0	17208	20190722
2	2000	Alabama	AL	Autauga	1001	President	Ralph Nader	green	163.0	17208	20190722
3	2000	Alabama	AL	Autauga	1001	President	Other	Nan	113.0	17208	20190722
4	2000	Alabama	AL	Baldwin	1003	President	Al Gore	democrat	13887.0	55489	20190722

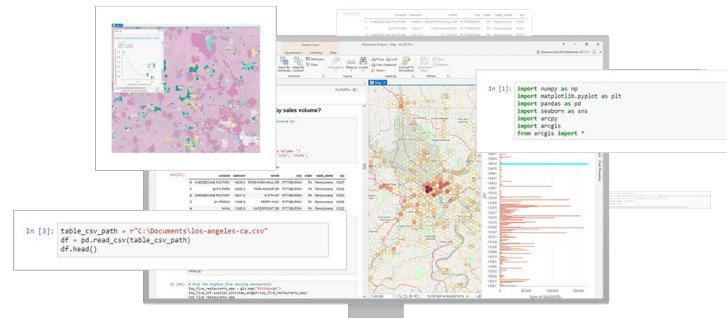
The sidebar on the right shows a catalog of project files, including ArcGIS Pro Notebooks, a CSV file, and a PDF file.

2. Useful to prototype and document work



3. Useful to share and reproduce results





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Resources

- [ArcGIS Notebooks in ArcGIS Pro \(2.7\) - GeoNet, The Esri Community](#)
- Notebook Lessons: [Learn ArcGIS](#)
- [Five Tips To Get You Started With Jupyter Notebook](#)
- [Three Reasons to use Jupyter Notebooks as a GIS User](#)



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