Play Geospatial Analysis

with the Ease of Building Blocks

Open Data Access with KNIME Extension: Dataverse, ArcGIS Living Atlas, Open Street Map

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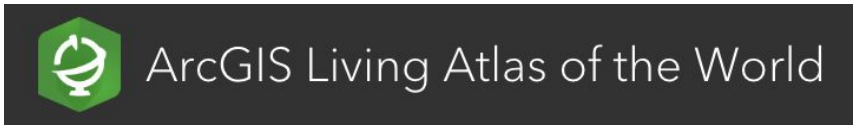
4. How to access data from Open Street Map

Why we need KNIME extension to access data



1. Read for using and quick access the data for research in KNIME
2. Download data automatically through KNIME

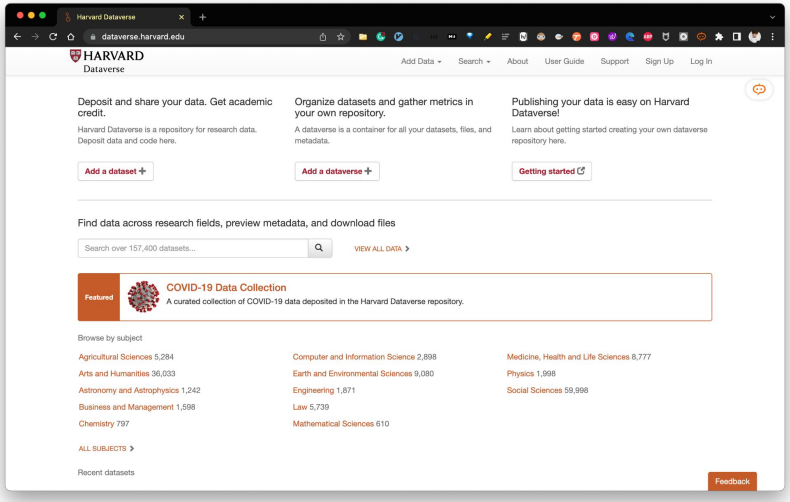
How to access data from Dataverse

What's Dataverse?

Dataverse is an open-source web application developed by the Institute for Quantitative Social Science (IQSS) at Harvard University.

It is designed for researchers to store, share, publish, and manage their research data.

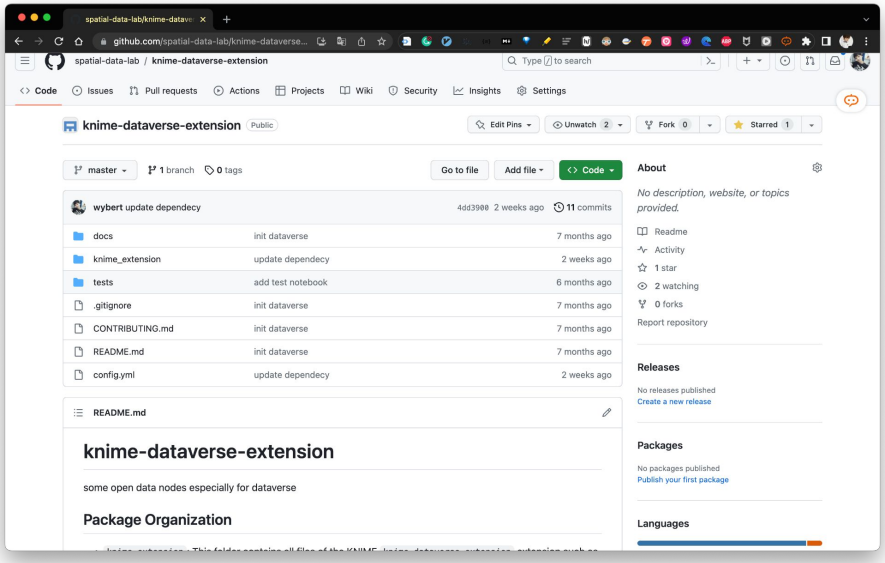
Harvard Dataverse is an open-source repository for storing, sharing, and citing research data, managed by Harvard University.



How to access data from Dataverse

What's Knime Dataverse extension?

- We can access data from Dataverse through **Knime Dataverse extension**
- **Knime Dataverse extension is** an community Knime extension which allow user query, access, read data directly from Dataverse and upload, update data to Dataverse.



How to access data from Dataverse

How to install?

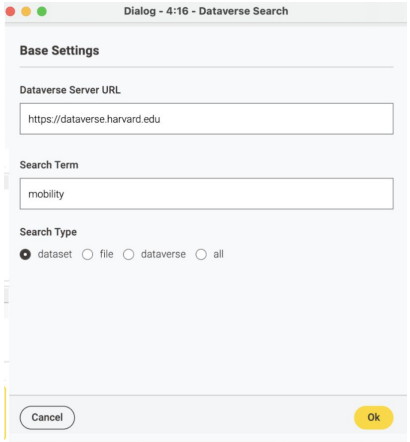
Follow the Knime Dataverse extension installation instruction

How to access data from Dataverse

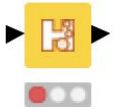
What do we have in dataverse extension

Dataverse Search

Node 16



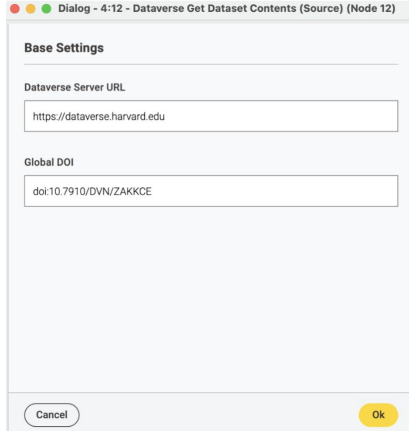
Dataverse Get Dataset Contents



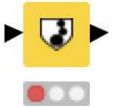
Node 15

Dataverse Get Dataset Contents (Source)

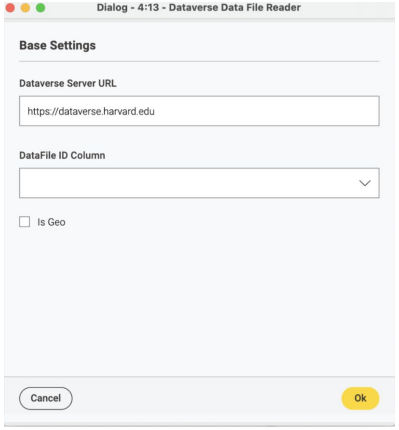
Node 12



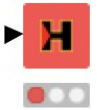
Dataverse Data File Reader



Node 13

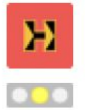


Dataverse Data File Replacer



Node 14

Dataverse Publisher



Node 17

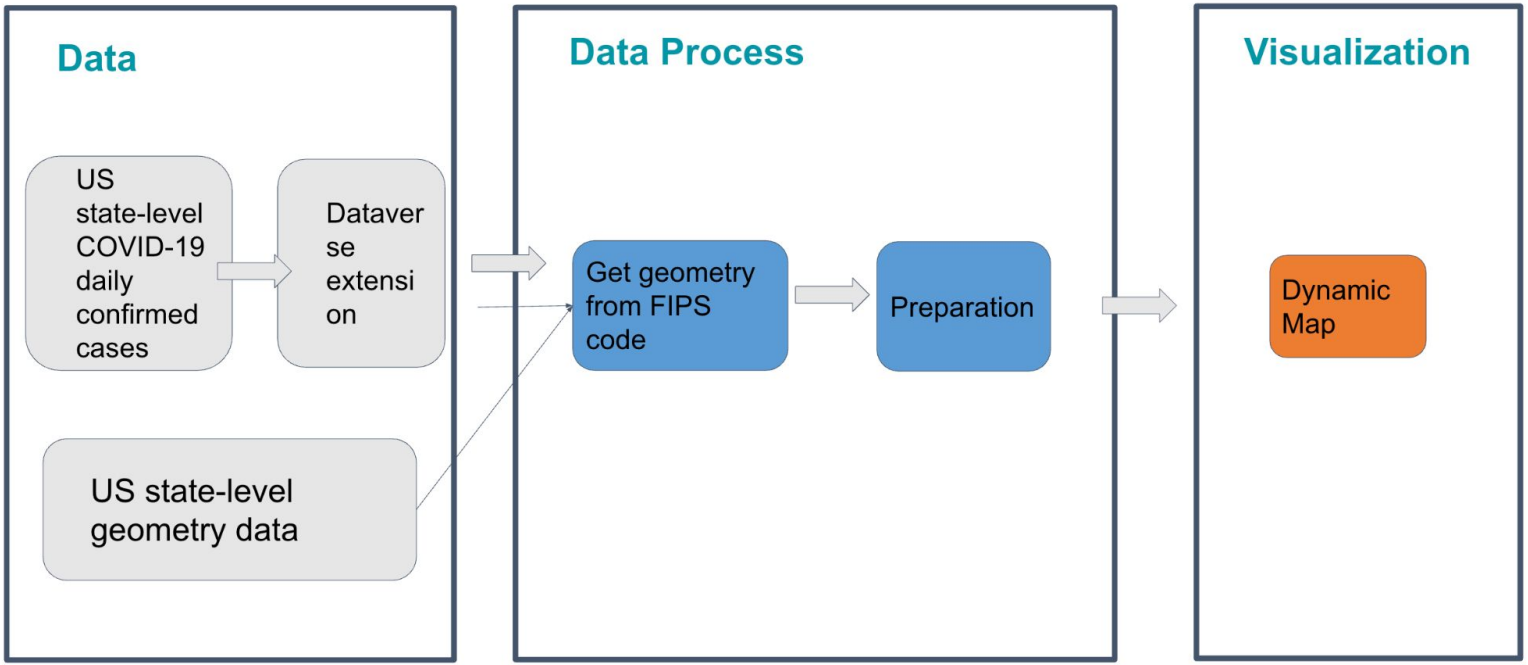
Case Study: Uncovering Covid-19 Trends

Overview

- **Our objective is** to uncover valuable insights by integrating data from the Harvard Dataverse through the Knime Dataverse Extension and create dynamic maps using the Knime Geospatial Extension.
- **You will learn how to**:
  - Get data from Dataverse in Knime
  - Some basic data processing in Knime
  - Make a dynamic map of US Covid-19 cases in Knime

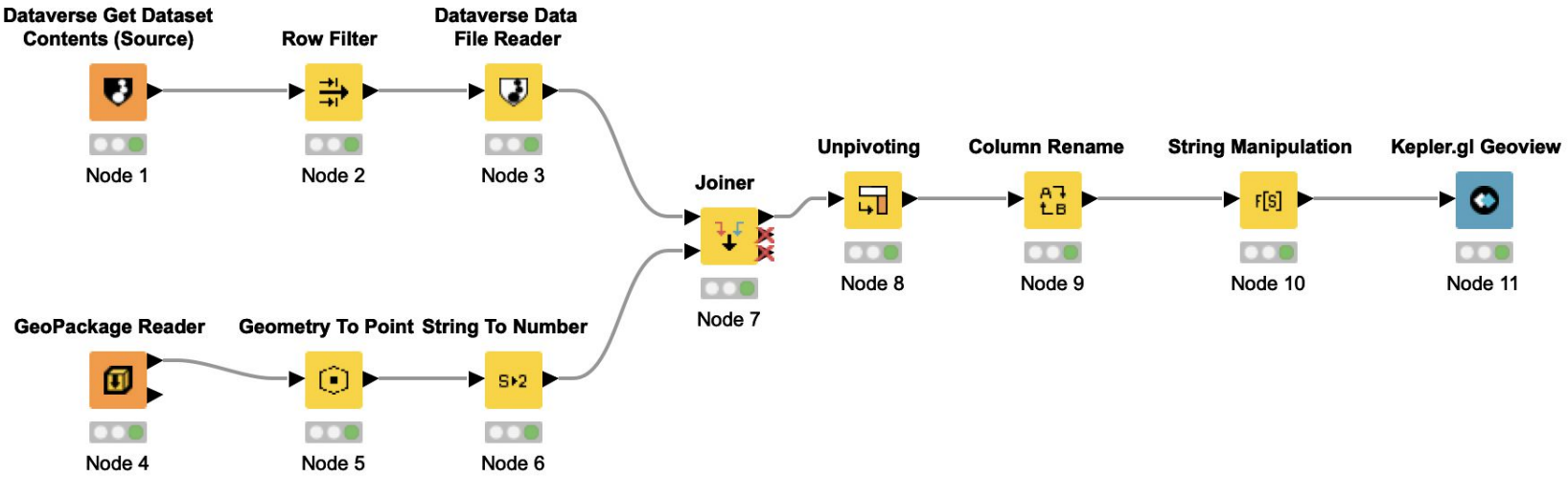
Case Study: Uncovering Covid-19 Trends

Data Flows



Case Study: Uncovering Covid-19 Trends

Knime workflow looks like



💡Tips: Click on the node to see the document of the node if you can’t understand what dose the node do

Case Study: Uncovering Covid-19 Trends

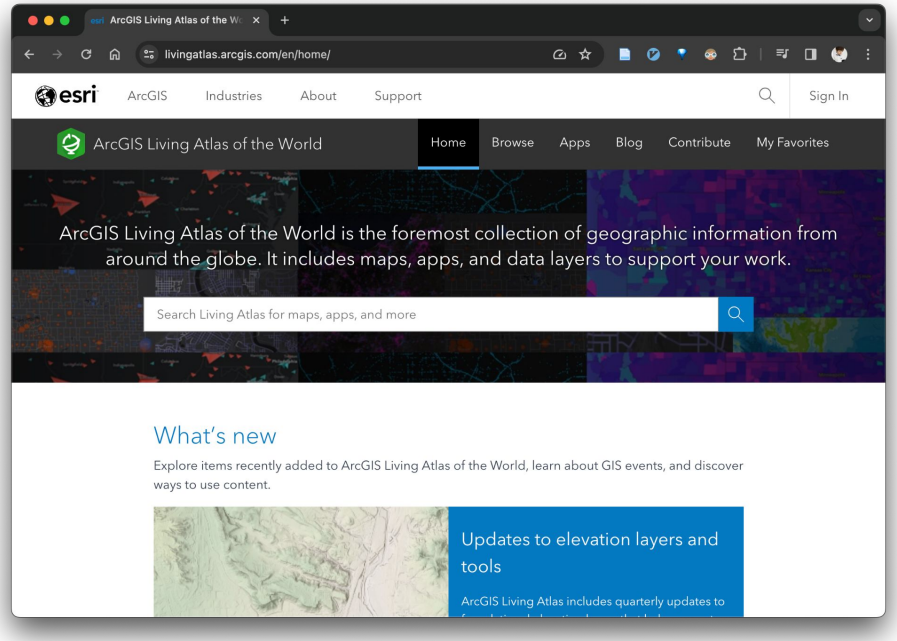
The map looks like

Demo

How to access data from ArcGIS Living Atlas

What's ArcGIS Living Atlas?

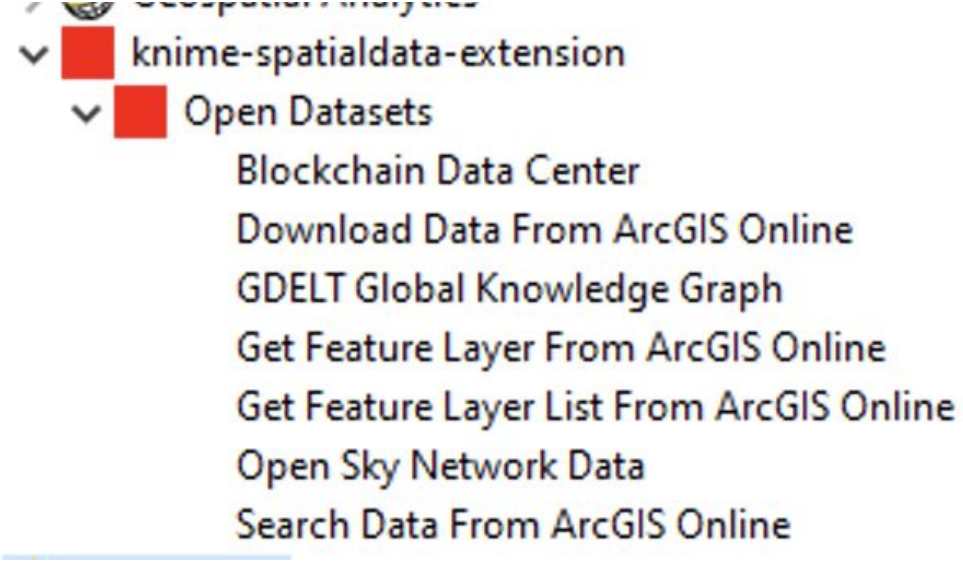
ArcGIS Living Atlas of the World is a comprehensive collection of geographic information from around the globe, including maps, apps, and data layers to support geographic analysis and visualization within the ArcGIS platform.



How to access data from ArcGIS Living Atlas

How to access ArcGIS Living Atlas from KNIME

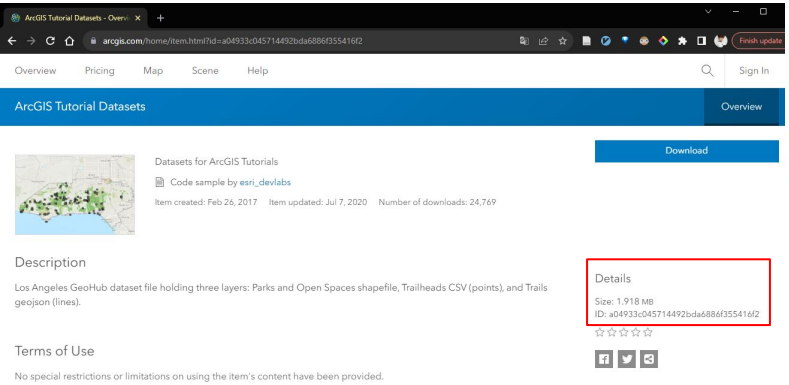
- We are developing the KNIME nodes which could allow users to search, filter, download data/feature data from ArcGIS Living Atla in KNIME
- Once done you could install it



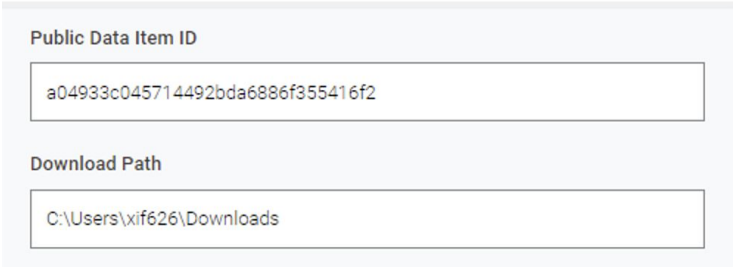
Workflow examples

Native KNIME Node to Download Data from ArcGIS Hub

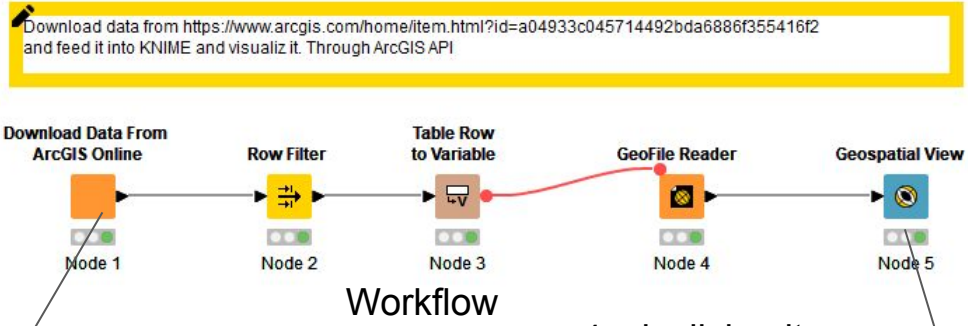
1. Find the data item ID



2. Configure the setting of the node

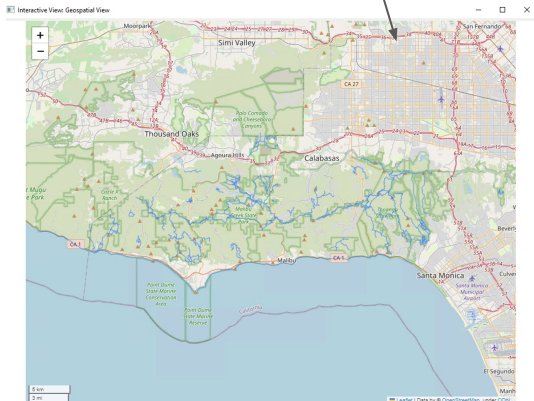


3. Run the workflow



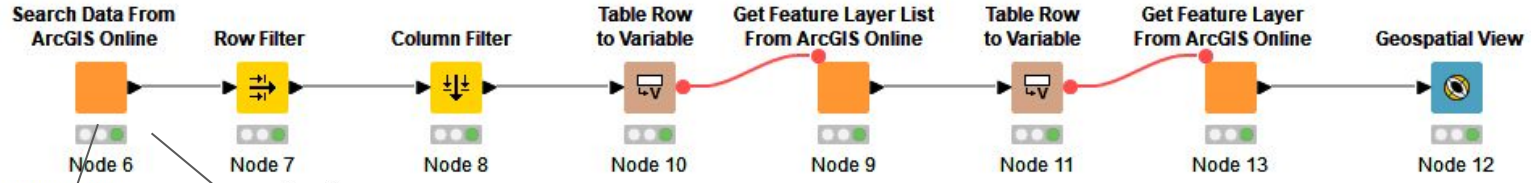
Workflow

4. visulizing it



Native KNIME Nodes to search ArcGIS Data Online

Workflow



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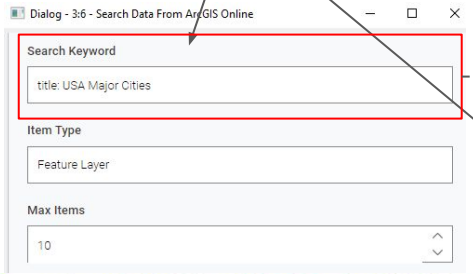


Search ArcGIS Online Feature Layer

Search Results

2

search result - 3:6 - Search Data From ArcGIS Online

File Edit Hilite Navigation View

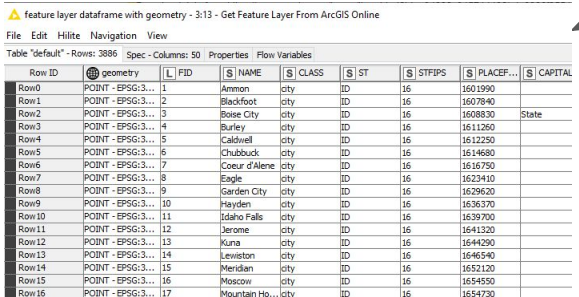
Table "default" - Rows: 8 | Spec - Columns: 22 | Properties | Flow Variables

Row ID	title	type	url	id	owner	created	modifie
Row0	USA Major Cities	Feature Service	https://services.arcgis.com/P3ePLMYs2RVChkJx/arcgis/rest/services/USA_Major_Cities/FeatureServer	85d0ca4ea1ca4b9abf0c51b9bd34de2e	esri_dm	1372631312...	167052585
Row1	Find_Locations...	Feature Service	https://services4.arcgis.com/wyNGOB7qusRtCAPP/arcgis/rest/services/Find_Locations_in_USA_Maj...	c246f152e91549a18db3efcd92d83536	2018fairfax...	1538073819...	153807385
Row2	USA_Major_Ci...	Feature Service	https://services4.arcgis.com/wyNGOB7qusRtCAPP/arcgis/rest/services/USA_Major_Cities_Over_1_...	f40906e84fdf4eb58b3a6114e313917a	2018fairfax...	1537970338...	153797039
Row3	Buffer_of_US...	Feature Service	https://services7.arcgis.com/QJAXFtWNqmmdPqVr/arcgis/rest/services/Buffer_of_USA_Major_Cities...	39a69aacfd714eb79e8ff9256b694580	Moritz.Schmi...	1610705217...	161070524
Row4	USA National P...	Feature Service	https://services2.arcgis.com/RQcpPaCpMAXzUI5g/arcgis/rest/services/USA_National_Parks_WFL1/F...	94f568a797cf449b9ff51bf372fd5585	meb5925@ri...	1639154420...	163915446
Row5	USA Major Cities	Feature Service	https://services.arcgis.com/LBbVDC0hKPAnLRpO/arcgis/rest/services/USA_Major_Cities/FeatureServer	a1fbb64995c64ed1b283ec3414eee71a	andrea.galin...	1667503485...	166801834

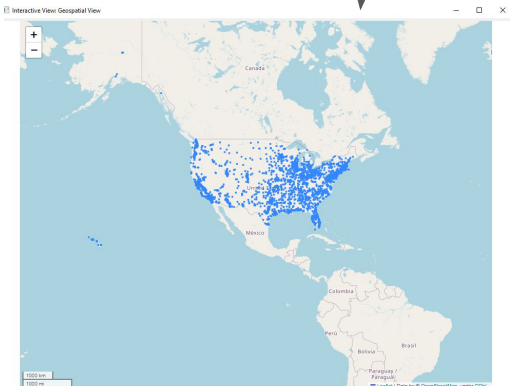
Native KNIME Nodes to Fetch Feature Layer to Knime

1. Feed a feature layer url

2. Return the feature data

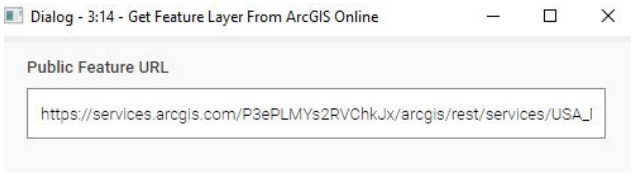


3. Visulizing it

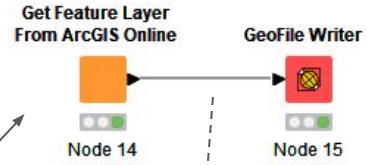


Exporting Data for Advancing Mapping in ArcGIS Desktop

1. dialog setting

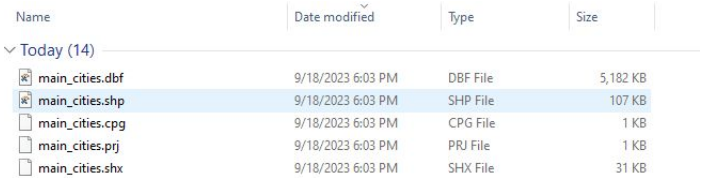


2. workflow

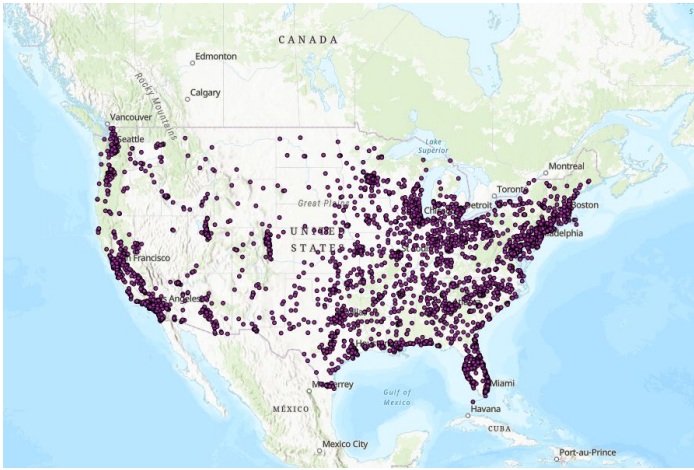


Could add process or modeling nodes between these two nodes

3. downloaded data



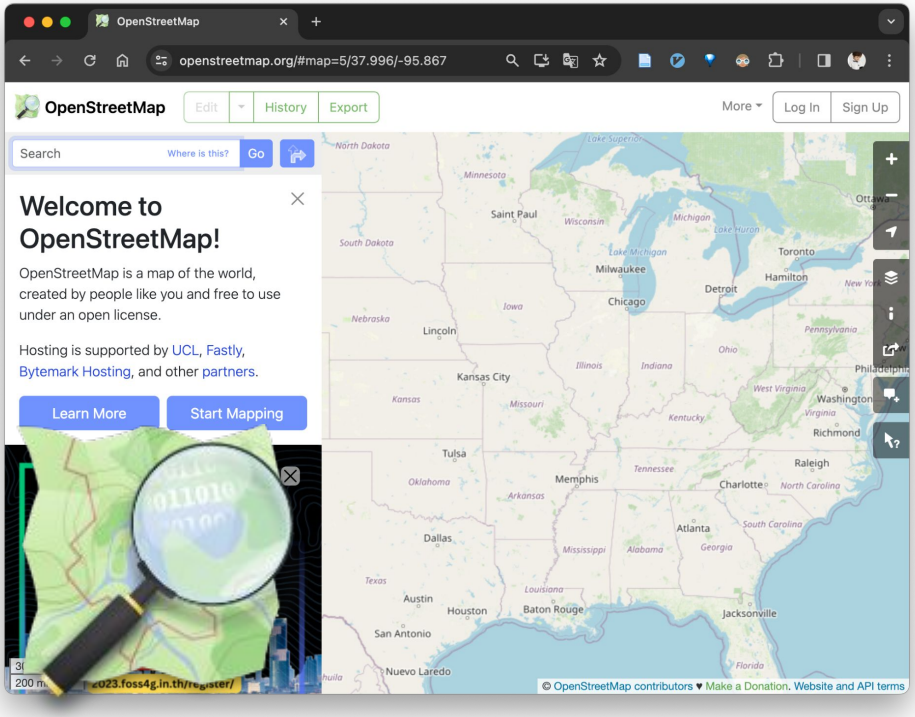
4. Make a map in ArcGIS



How to access data from OpenStreetMap

What's OpenStreetMap?

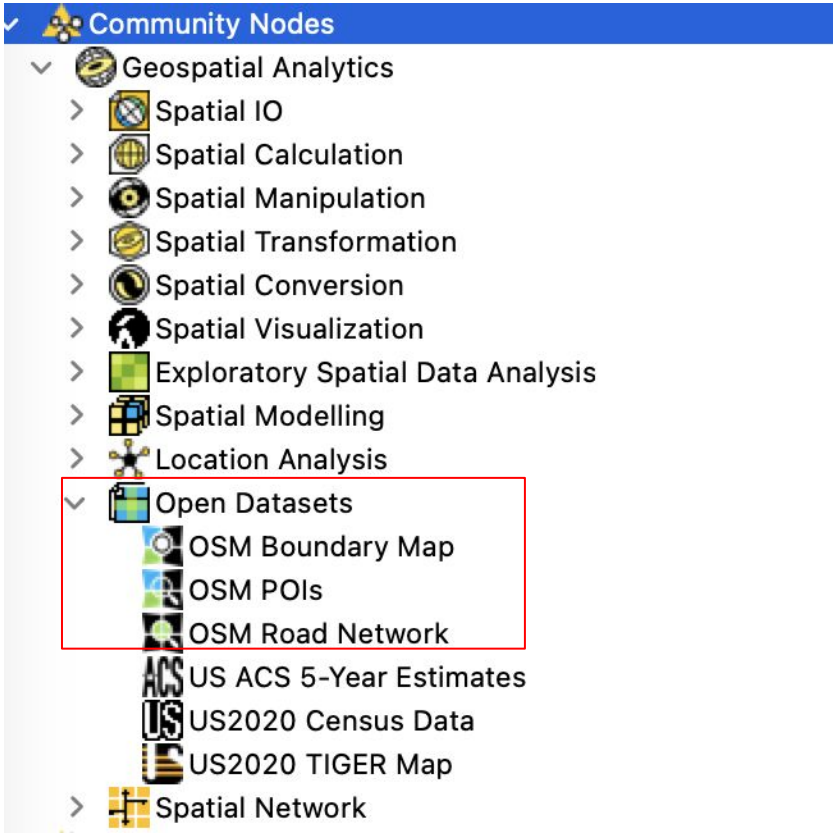
OpenStreetMap is a collaborative project to create a free editable map of the world, made by people who contribute and maintain geographic data that can be used by anyone under an open license.



How to access data from OpenStreetMap

OSM nodes in KNIME Geospatial Extension

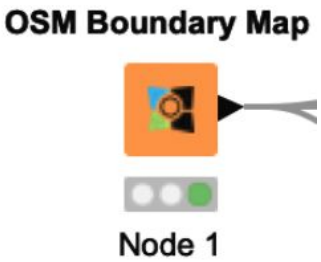
OpenStreetMap data can be access in KNIME through the OSM nodes inside the KNIME Geospatial Extension under Open Datasets catergory

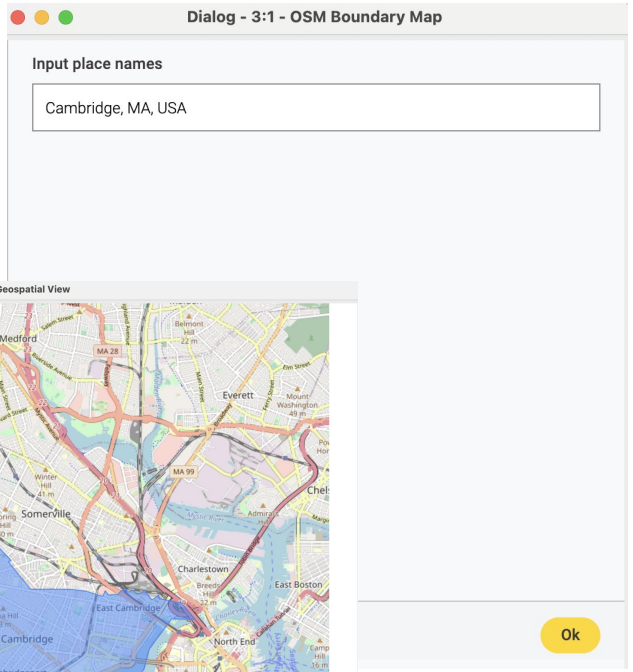


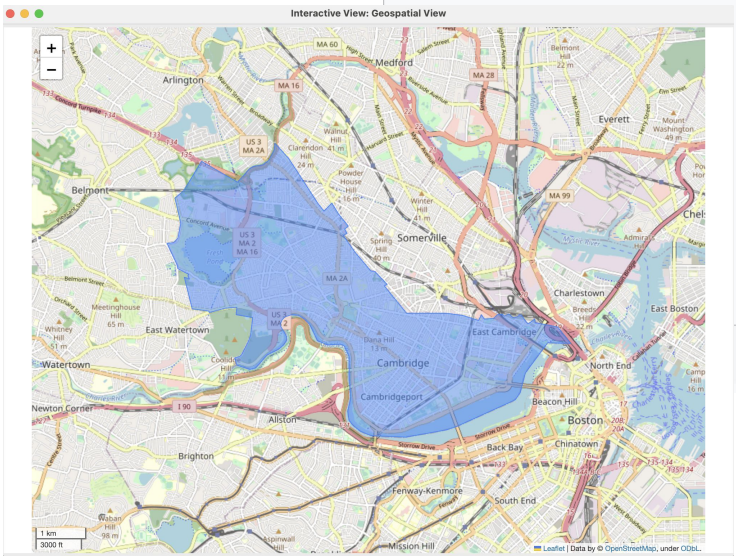
How to access data from OpenStreetMap

OSM Boundary Map

This node downloads geospatial entities' geometries and attributes from OpenStreetMap.



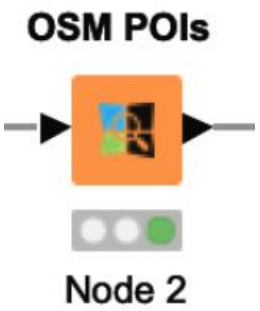


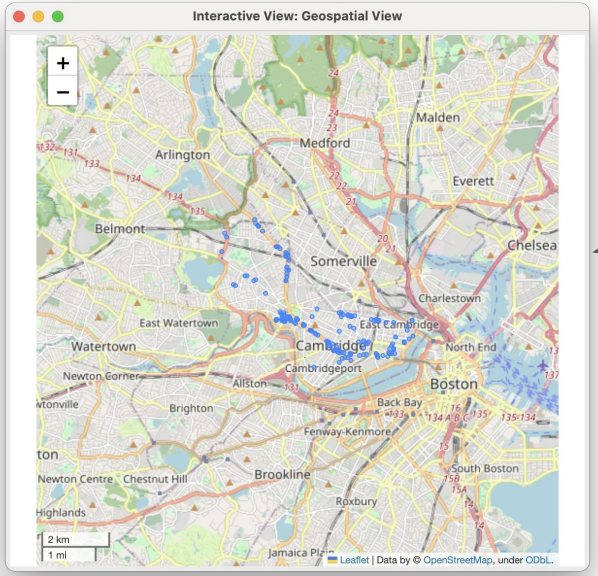


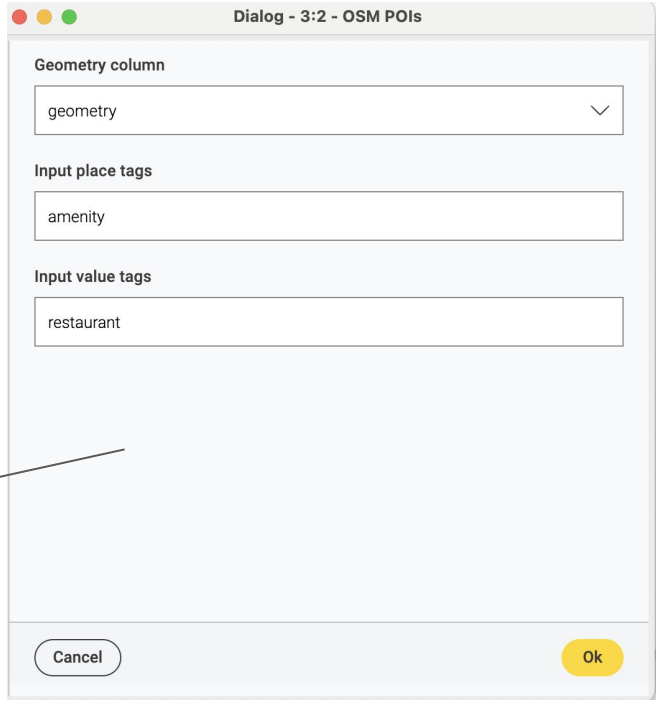
How to access data from OpenStreetMap

OSM POIs

This node downloads geospatial entities' geometries and attributes from OpenStreetMap.



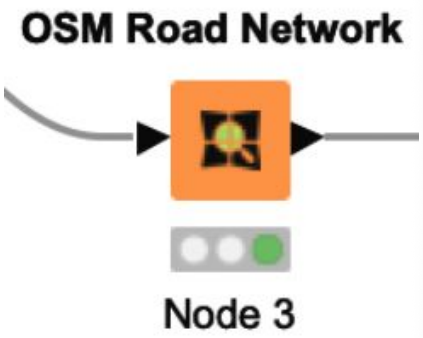


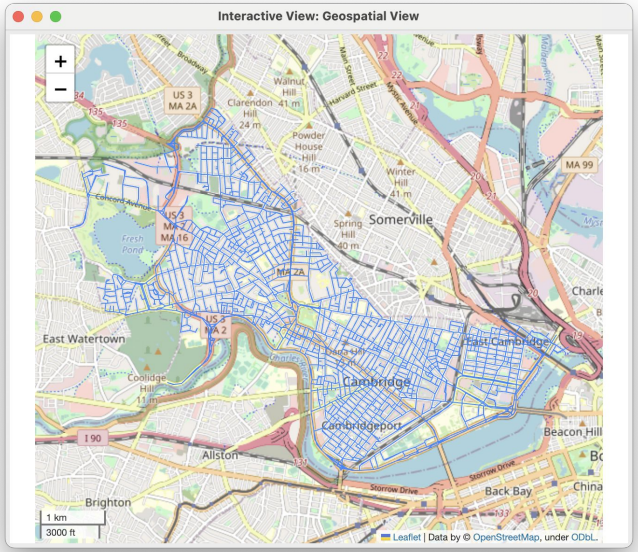


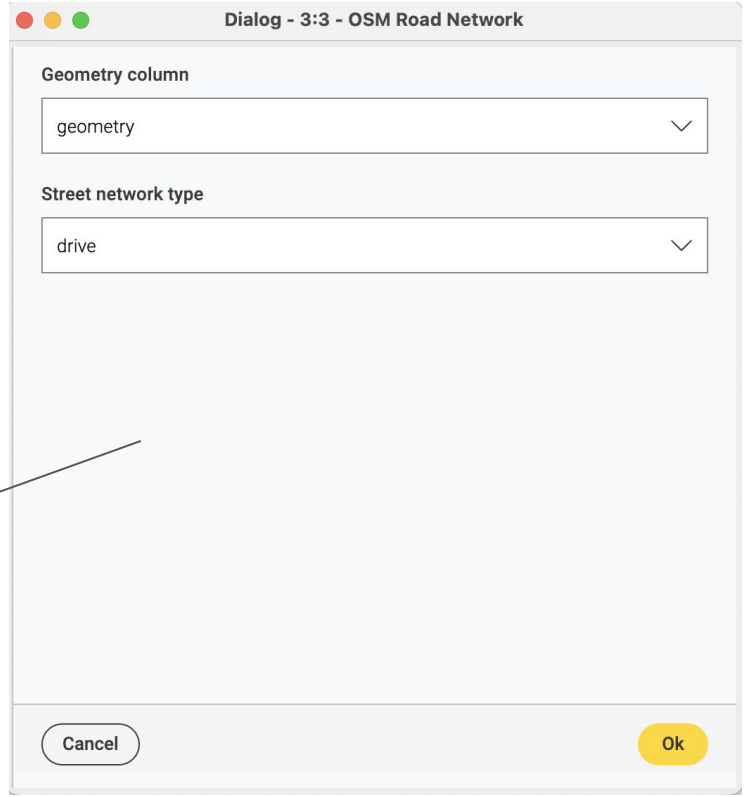
How to access data from OpenStreetMap

OSM Road Network

This node downloads a geospatial network and its attributes from OpenStreetMap.







Demo: Exploring OSM Geospatial Data

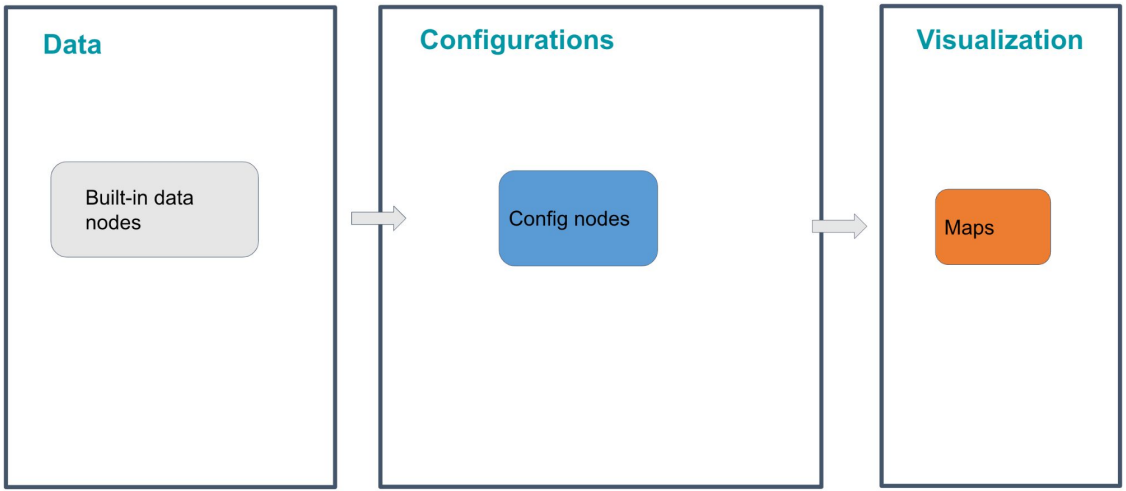
Overview

In this example, we will explore geospatial Data with Built-in Data Nodes in KNIME, you will learn:

- Learn how to use the built-in data nodes to access the geospatial data from OpenStreetMap(OSM).
- How to use the `Geospatial View` node to visualize and explore the geospatial data we get from the built-in data nodes.

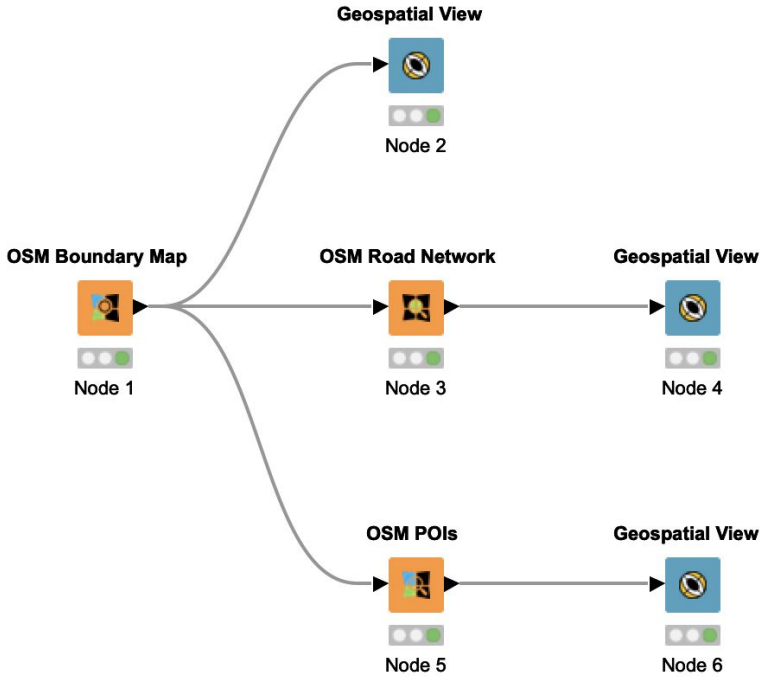
Demo: Exploring OSM Geospatial Data

Data Flows



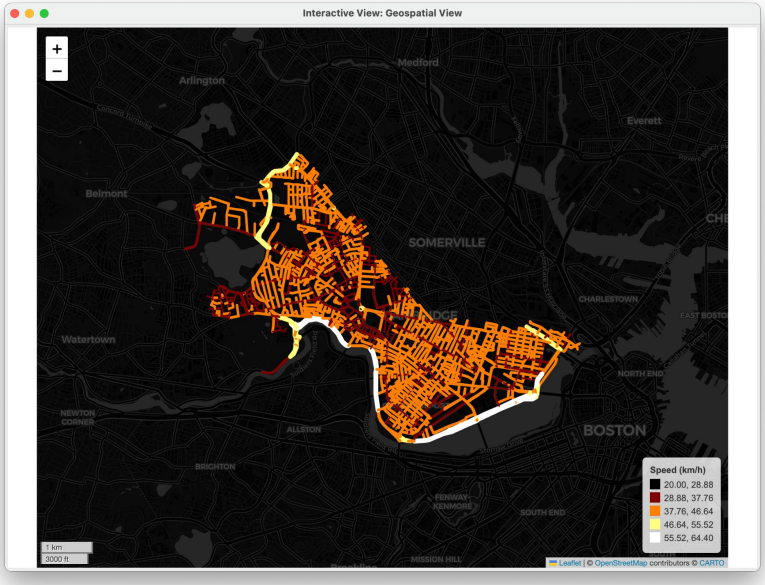
Demo: Exploring OSM Geospatial Data

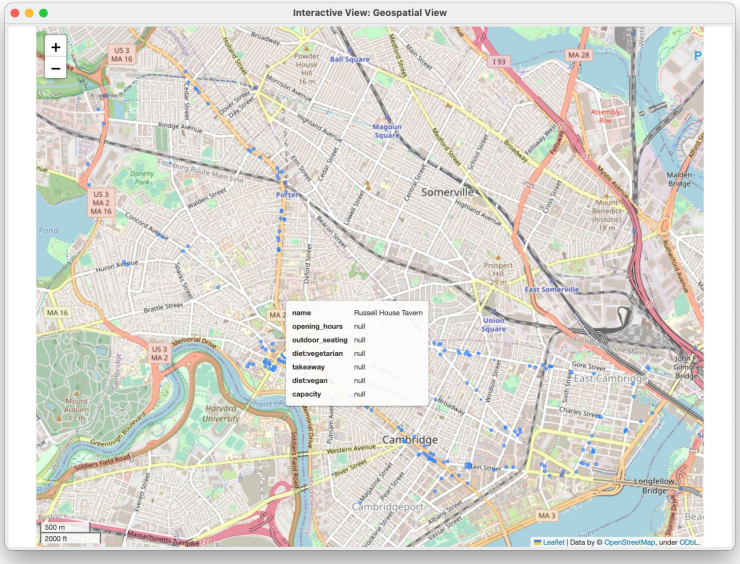
Workflows



Demo: Exploring OSM Geospatial Data

Results





Demo

Conclusion

1. How to access data from Dataverse
2. How to access data from ArcGIS Living Atlas
3. How to access data from Open Street Map

Want learn more?

https://drive.google.com/file/d/1Thp4wJmSMDvexxxrt7hbTgJw45L4LA5Z/view?usp=drive_link

Acknowledgement

NSF
U/I CRC

Future Data Lab

Spatiotemporal
Innovation Center

Thanks

xiaokang_fu@fas.harvard.edu
X: @fxk123