Opening and using National Fire Incident Reporting System (NFIRS) Public Data release (PDR) GeoPackage (.gpkg) files

What is a GeoPackage (.gpkg) file:

A GeoPackage is an open-source format for storing and sharing geospatial data - such as maps, geographic features, and raster imagery - in a single SQLite database file. Specific to the NFIRS PDR data, these files contain geo-located incident data by year in a relational table structure.

Opening a GeoPackage (.gpkg):

You can open and work with GeoPackage files using a variety of tools, depending on the use case. Below are several common options for working with GeoPackages. Refer to your specific tool for more detailed instructions on the import and use of GeoPackages.

1. GIS Software
    - ArcGIS Pro
    - QGIS
2. Python Packages
    - GeoPandas
    - Fiona
    - Pygeopkg
    - GDAL
3. SQLite Tools
    - DB Browser for SQLite
    - SQLiteStudio
    - DBeaver

NFIRS PDR GeoPackage Contents:

Each year of geo-located data within a GeoPackage contains several tables that mirror the traditional PDR .txt files. Details and guidelines for working with the NFIRS PDR are available on the USFA website.

- main.IncidentAddress
- main.arson
- main.arsonagencyreferal
- main.arsonjuvsub
- main.basicaid
- main.basicincident
- main.civilliancasualty
- main.hazmobprop
- main.ems
- main.ffcasualty
- main.ffequipfail
- main.fireincident
- main.hazchem
- main.hazmat
- main.hazmatequipinvolved
- main.wildlands

The following tables are reference tables that do not include incident specific data. Therefore, there is no georeferenced data.

- main.codelookup
- main.fdheader

Working with a PDR GeoPackage:

The “main.Incidentaddress” table is the table containing the incident geocoding and must be loaded to map or visualize the data geospatially. To map or visualize the associated data or table, they will need to be joined, merged or related to the “main.Incidentaddress” table within the tool being used.

The remaining tables can be joined using the primary key or data field of “**INCIDENT_KEY**” found in each table. The “**INCIDENT_KEY**” field is a unique identifier for each incident record and associated records, consisting of the incident state (STATE), fire department identifier (FDID), incident data (INC_DATE), incident number (INC_NO), and the exposure number (EXP_NO).