PhonePe is an Indian Digital payments company headquartered in Bengaluru Karnataka India. It is could be one of the most common UPI app you are using for making peer to peer transactions and payments.

> Analysis Statement.
>
> Every quarter company provides JSON data of different aggregate values in different categories this tradition is happening from 2018 onwards. Lets say you are an economist try to make an analysis of penetration of digital payments in different parts of India state wise and year wise. As a stock analyst perspective which year would have been the best year to invest in this company.

- Here it the link of the Repository Provided by the PhonePe Company. The README data of the repository tries to explain the folder structure. But We have provided the grid view of the `json` data in different folders in a grid view for your understanding.
- Now based on the data in the repository Phone pay has an extraordinary website have a look into it here which could help you on how to do analysis on the data .

What is `JSON` and how to work with it.

What is JSON Format?

JSON (JavaScript Object Notation) is a lightweight data-interchange format that is easy for humans to read and write and easy for machines to parse and generate. It is primarily used to transmit data between a server and a web application as text. JSON is language-independent but uses conventions that are familiar to programmers of the C-family of languages, including C, C++, C#, Java, JavaScript, Perl, Python, and many others.

> In simple terms it is the query output from your data base.

Here is an example of JSON data:

```
{
    "name": "John",
    "age": 30,
    "isStudent": false,
    "courses": ["Math", "Science", "History"],
    "address": {
        "street": "123 Main St",
        "city": "Anytown",
        "zipcode": "12345"
    }
}
```

> Have you noticed something here JSON is nothing but a dictionary in python which could be nested and can have lists in them as well. So one you import it you can work with it like a dictionary.

Working with JSON in Python

Python provides a built-in library called `json` for handling JSON data. Here's how you can work with JSON files in Python with that library:

Step-by-Step Example

1. Lets say you have a `data.json` file by the way it can have any name as long as it is a JSON file.
2. Below is an example showing you how to import that data.

```python
import json

# Specify the path to the JSON file
file_path = 'data.json'

# Open the JSON file and load its content
with open(file_path, 'r') as file:
    data = json.load(file)

# Print the loaded data
print(data)
```

Explanation

1. **Import the `json` Library**: Import the built-in `json` library, which provides functions for working with JSON data.
2. **Specify the Path to the JSON File**: Define the path to the JSON file. In this example, it's `'data.json'`.
3. **Open the JSON File and Load Its Content**: Use a `with` statement to open the JSON file in read mode (`'r'`). The `json.load()` function reads the JSON data from the file and converts it into a Python dictionary.
4. **Print the Loaded Data**: Print the data to verify that it has been correctly loaded into the Python program.

Output

When you run the above code, it will print the content of the JSON file as a Python dictionary:

```
{
    'name': 'John',
    'age': 30,
    'isStudent': False,
    'courses': ['Math', 'Science', 'History'],
    'address': {
        'street': '123 Main St',
        'city': 'Anytown',
        'zipcode': '12345'
    }
}
```

This is a simple and effective way to import and work with JSON data in Python.

Now you can even get key values using simple python code you know :

Just an example on how to access different key values :

```
print(data['name'])        # Output: John

print(data['age'])         # Output: 30

print(data['isStudent'])   # Output: False

print(data['courses'])     # Output: ['Math', 'Science', 'History']

print(data['courses'][0])  # Output: Math

print(data['address'])     # Output: {'street': '123 Main St', 'city': 'Anytown',
'zipcode': '12345'}

print(data['address']['street'])  # Output: 123 Main St

print(data['address']['city'])    # Output: Anytown

print(data['address']['zipcode']) # Output: 12345
```

Like this you can access different key values and have them in a flat file (CSV file.) this is what you are supposed to accomplish so that you can work with the data for analysis purpose.

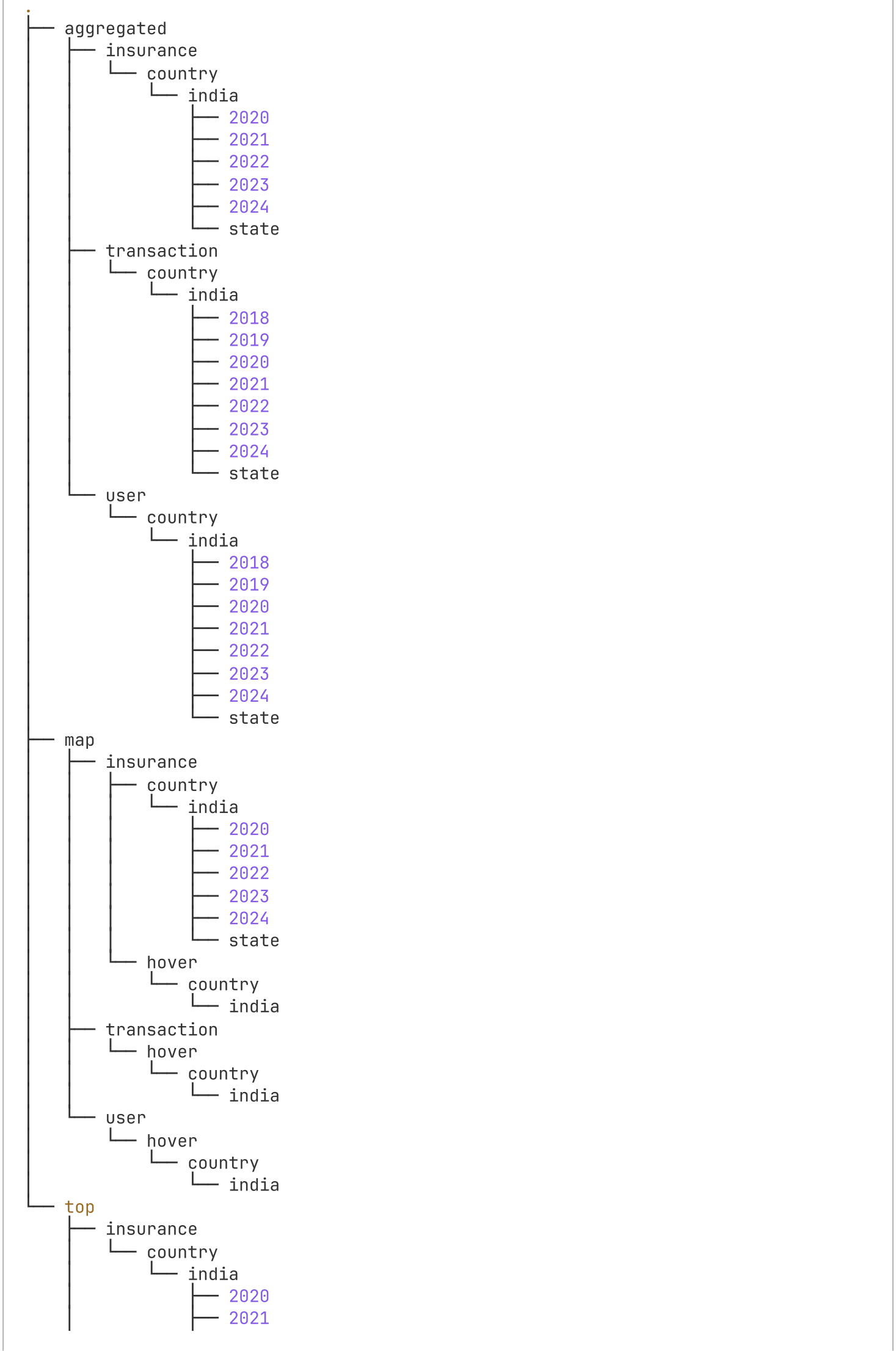
PhonePe Pulse JSON Data

Complete File Info :

```
===============================================================================
 Language             Files        Lines         Code     Comments       Blanks
===============================================================================
 JSON                  7918         8278         8275            0            3
-------------------------------------------------------------------------------
 Markdown                 1          188            0          135           53
 |- JavaScript            1          292          268            0           24
 (Total)                             480          268          135           77
===============================================================================
 Total                 7919         8466         8275          135           56
===============================================================================
```

The Data Folder Section :

Total Folder Section : All the data files and How they are arranged :


.
aggregated
insurance
country
india
2020
2021
2022
2023
2024
state
transaction
country
india
2018
2019
2020
2021
2022
2023
2024
state
user
country
india
2018
2019
2020
2021
2022
2023
2024
state
map
insurance
country
india
2020
2021
2022
2023
2024
state
hover
country
india
transaction
hover
country
india
user
hover
country
india
top
insurance
country
india
2020
2021

```
        ├── 2022
        ├── 2023
        ├── 2024
        ├── state
        └── state.zip
    ├── transaction
    │   └── country
    │       └── india
        ├── 2018
        ├── 2019
        ├── 2020
        ├── 2021
        ├── 2022
        ├── 2023
        ├── 2024
        └── state
    └── user
        └── country
            └── india
        ├── 2018
        ├── 2019
        ├── 2020
        ├── 2021
        ├── 2022
        ├── 2023
        ├── 2024
        └── state
```

There are 3 Major Sections in In the data :

```
.
├── aggregated --> Aggreagte
├── map --> Details on Map
└── top --> Top Districts
```

aggregated

Files in Aggregate folder :

```
===============================================================================
 Language             Files        Lines         Code     Comments       Blanks
===============================================================================
 JSON                  2442         2569         2569            0            0
===============================================================================
 Total                 2442         2569         2569            0            0
===============================================================================
```

```
.
├── insurance
│   └── country
│       └── india
        ├── 2020 -
        ├── 2021  |
```

```
                ├── 2022  | --> Yearly Data
                ├── 2023  |
                ├── 2024 -
                └── state -->
    ├── transaction
    │   └── country
    │       └── india
                ├── 2018
                ├── 2019
                ├── 2020
                ├── 2021
                ├── 2022
                ├── 2023
                ├── 2024
                └── state
    └── user
        └── country
            └── india
                ├── 2018
                ├── 2019
                ├── 2020
                ├── 2021
                ├── 2022
                ├── 2023
                ├── 2024
                └── state
```

- File Data In insurance → country → India → (Year Folders [2018, 2019, 2020, 2021, 2022, 2023, 2024])

Phone-Pay > pulse > data > aggregated > insurance > country > india > 2020 > {} 3.json

Object[4] -

success	true
code	SUCCESS
data	Object[3] -
from	1593541800000
to	1601231400000
transactionData	Array[1] -

	name	paymentInstruments
0 Obj	Insurance	Array[1] -

	type	count	amount
0 Obj	TOTAL	354284	89495076

responseTimestamp	1692610844644

- File Data In insurance → country → India → (State [Andhra, Telangana, Delhi, ...])

Phone-Pay > pulse > data > aggregated > insurance > country > india > state > andhra-pradesh > 2020 > {} 3.json

Object[4] -

success	true
code	SUCCESS
data	Object[3] -

from	1593541800000
to	1601231400000
transactionData	Array[1] -

	name	paymentInstruments
0 Obj	Insurance	Array[1] -

	type	count	amount
0 Obj	TOTAL	49812	12426481

responseTimestamp	1692610852100

- File Data In transaction → country → India → (Year Folders [2018, 2019, 2020, 2021, 2022, 2023, 2024])

Phone-Pay > pulse > data > aggregated > transaction > country > india > 2018 > {} 1.json

Object[4] -

success	true
code	SUCCESS
data	Object[3] -

from	1514745000000
to	1522175400000
transactionData	Array[5] -

	name	paymentInstruments
0 Obj	Recharge & bill payments	Array[1] -

	type	count	amount
0 Obj	TOTAL	72550406	14472713558.652578

	name	paymentInstruments
1 Obj	Peer-to-peer payments	Array[1] -

	type	count	amount
0 Obj	TOTAL	46982705	147245883542.77402

	name	paymentInstruments
2 Obj	Merchant payments	Array[1] -

	type	count	amount
0 Obj	TOTAL	5368669	4656678915.140091

	name	paymentInstruments
3 Obj	Financial Services	Array[1] -

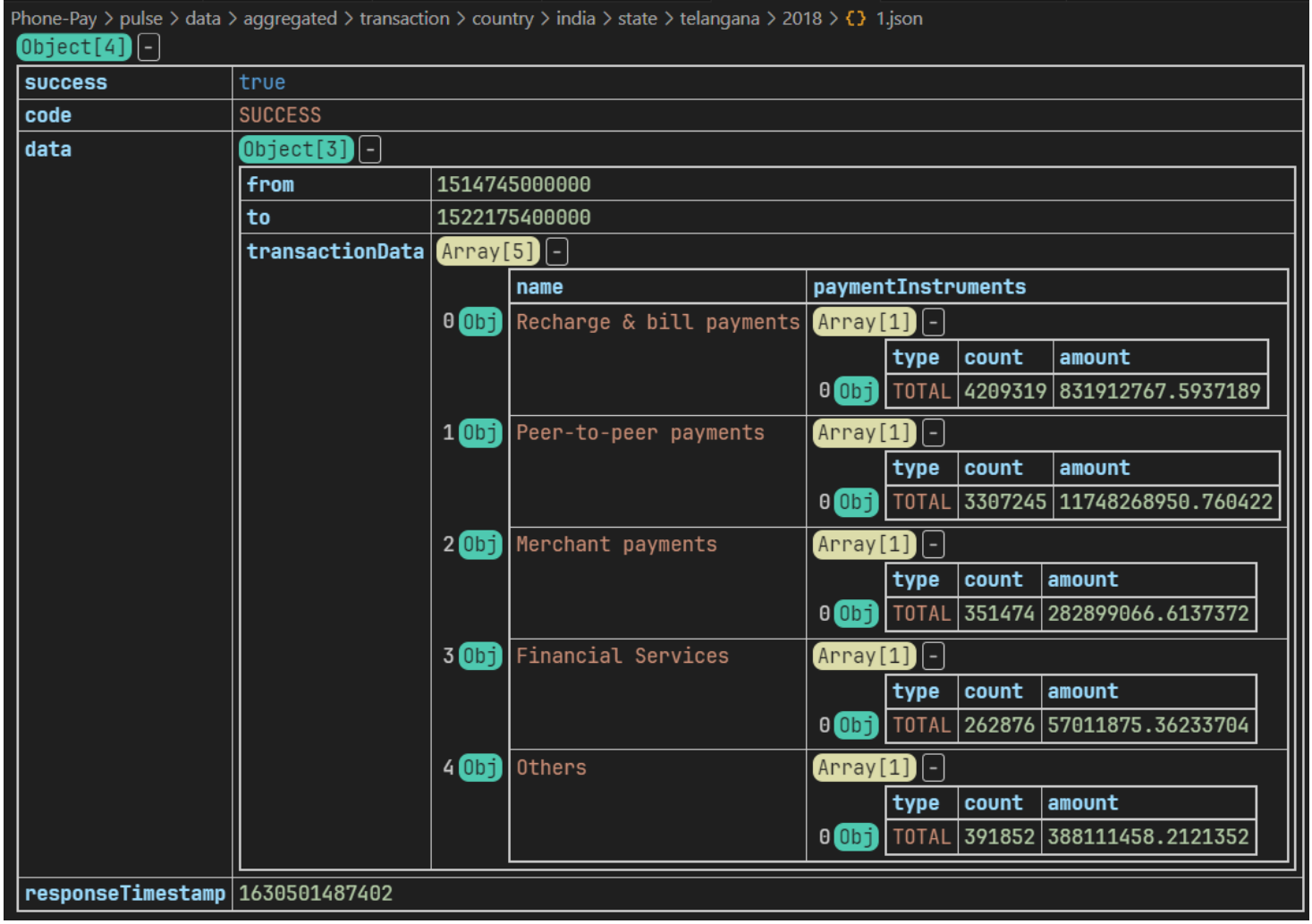
	type	count	amount
0 Obj	TOTAL	3762820	815853105.1000277

	name	paymentInstruments
4 Obj	Others	Array[1] -

	type	count	amount
0 Obj	TOTAL	5761576	4643217301.269438

responseTimestamp	1630346628866

- **File Data In transaction → country → India → (State [Andhra, Telangana, Delhi, ...])



Phone-Pay > pulse > data > aggregated > transaction > country > india > state > telangana > 2018 > {} 1.json

Object[4] -

success	true
code	SUCCESS
data	Object[3] -

data:

from	1514745000000
to	1522175400000
transactionData	Array[5] -

transactionData:

	name	paymentInstruments
0 Obj	Recharge & bill payments	Array[1] -
1 Obj	Peer-to-peer payments	Array[1] -
2 Obj	Merchant payments	Array[1] -
3 Obj	Financial Services	Array[1] -
4 Obj	Others	Array[1] -

paymentInstruments:

	type	count	amount
0 Obj	TOTAL	4209319	831912767.5937189
0 Obj	TOTAL	3307245	11748268950.760422
0 Obj	TOTAL	351474	282899066.6137372
0 Obj	TOTAL	262876	57011875.36233704
0 Obj	TOTAL	391852	388111458.2121352

responseTimestamp	1630501487402

- File Data In user → country → India → (Year Folders [2018, 2019, 2020, 2021, 2022, 2023, 2024])

Phone-Pay > pulse > data > aggregated > user > country > india > 2018 > {} 1.json

Object[4] -

success	true
code	SUCCESS
data	Object[2] -

data

aggregated	Object[2] -

aggregated

registeredUsers	46877867
appOpens	0

usersByDevice — Array[11] -

	brand	count	percentage
0 Obj	Xiaomi	11926334	0.25441289809538475
1 Obj	Samsung	9609401	0.204988017052909
2 Obj	Vivo	5894293	0.1257372269092363
3 Obj	Oppo	4479351	0.09555364368434255
4 Obj	Realme	2376866	0.05070337351313361
5 Obj	Apple	1825153	0.03893421601285741
6 Obj	Motorola	1593250	0.033987254582210406
7 Obj	OnePlus	1536418	0.03277491273227086
8 Obj	Lenovo	1246507	0.026590522986039446
9 Obj	Huawei	808774	0.01725279010668297
10 Obj	Others	5581520	0.1190651443249327

responseTimestamp	1630501482414

- **File Data In user → country → India → (State [Andhra, Telangana, Delhi, ...])

Phone-Pay > pulse > data > aggregated > user > country > india > state > delhi > 2018 > {} 1.json

Object[4] -

success	true
code	SUCCESS
data	Object[2] -

aggregated — Object[2] -

registeredUsers	2087022
appOpens	0

usersByDevice — Array[11] -

	brand	count	percentage
0 Obj	Xiaomi	529823	0.25386555580152004
1 Obj	Samsung	407203	0.19511198252821485
2 Obj	Vivo	223992	0.10732613264258833
3 Obj	Oppo	186309	0.08927026164554087
4 Obj	Apple	138507	0.06636585527129087
5 Obj	Realme	88082	0.042204634162936475
6 Obj	OnePlus	86368	0.0413833682634874
7 Obj	Motorola	83639	0.040075763456254895
8 Obj	Lenovo	52568	0.025188043058482372
9 Obj	Huawei	37398	0.01791931278156148
10 Obj	Others	253133	0.12128909038812241

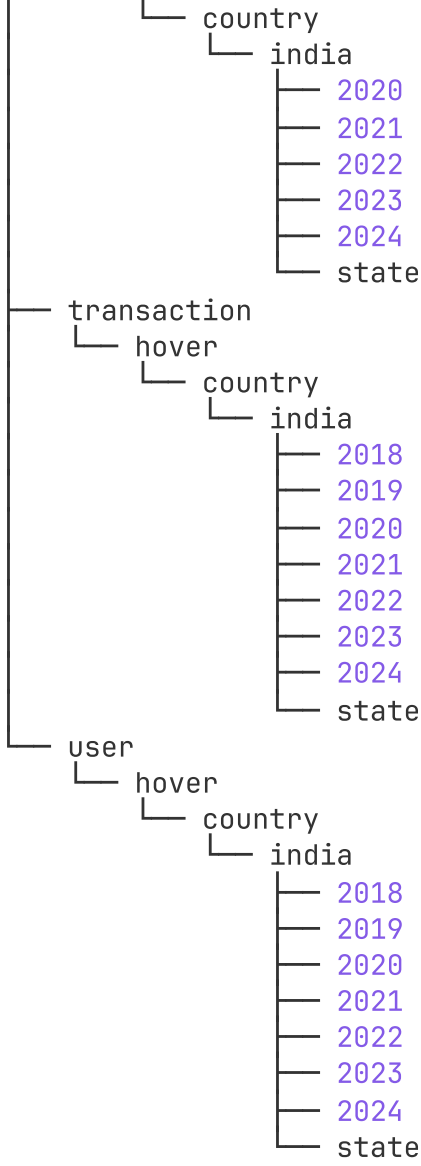
responseTimestamp	1630501494620				

map

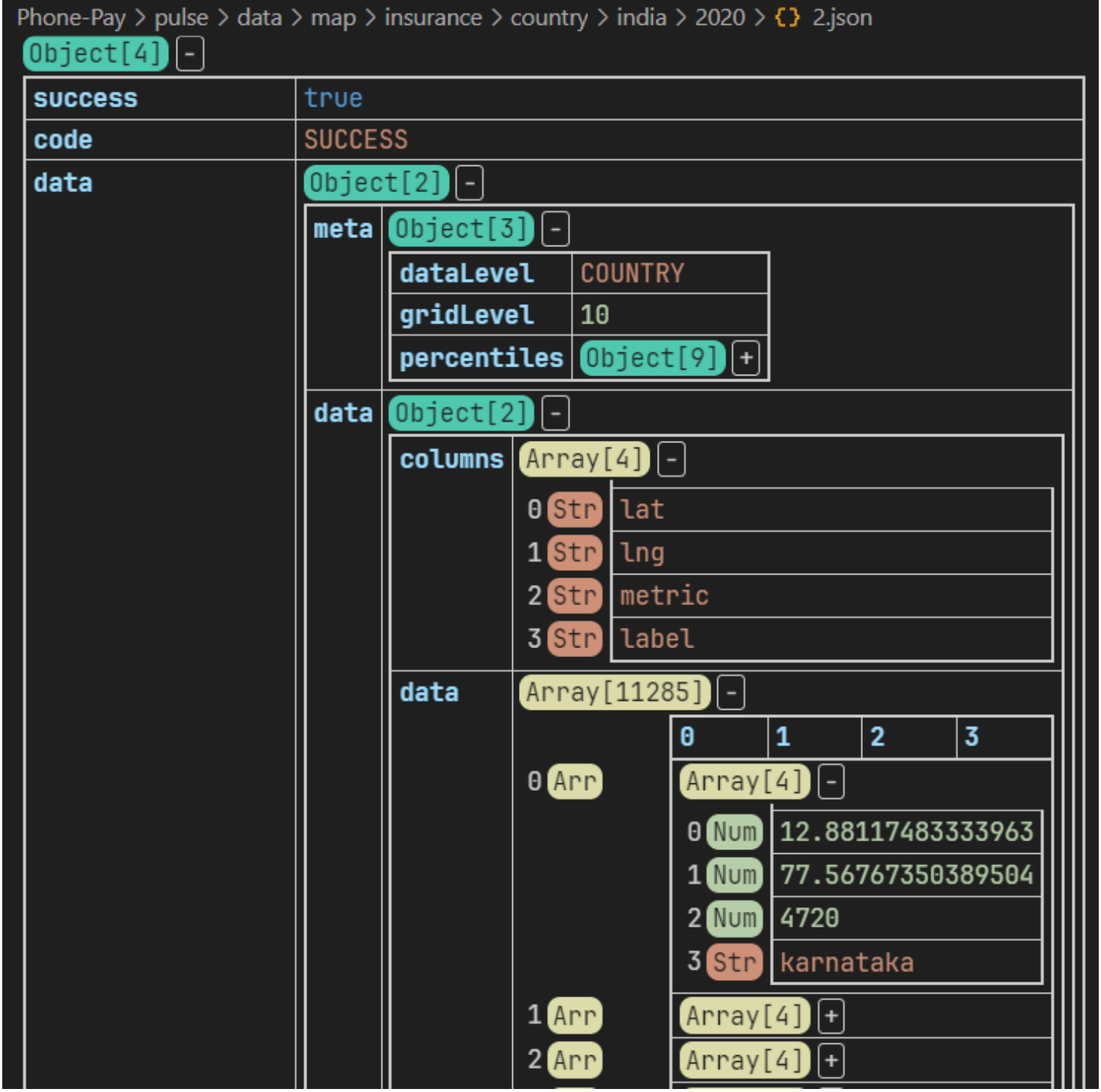
Files in map :

Language	Files	Lines	Code	Comments	Blanks
JSON	3034	3034	3034	0	0
Total	3034	3034	3034	0	0

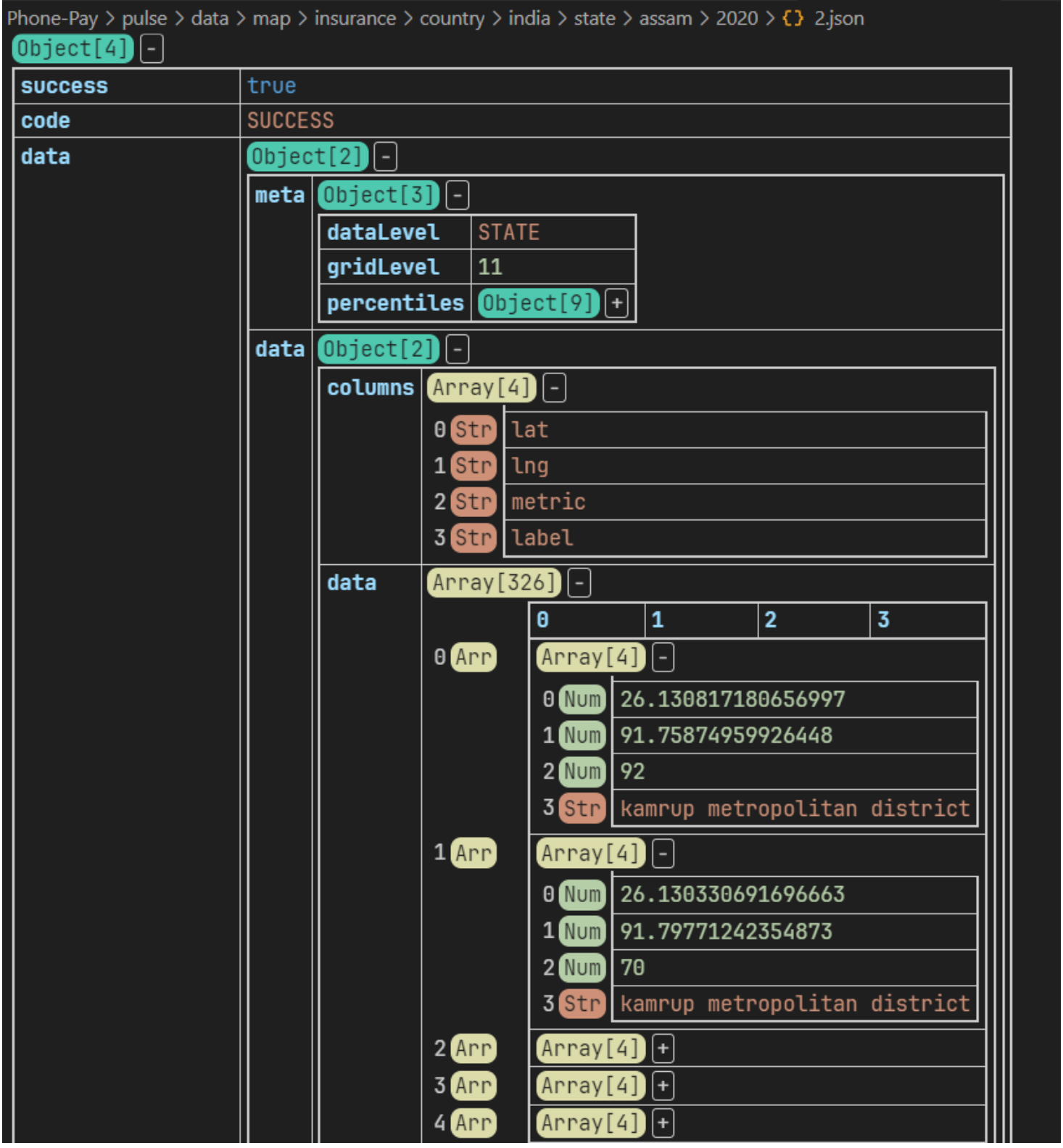
```
.
├── insurance
│   ├── country
│   │   └── india
│   │       ├── 2020
│   │       ├── 2021
│   │       ├── 2022
│   │       ├── 2023
│   │       ├── 2024
│   │       └── state
│   └── hover
```



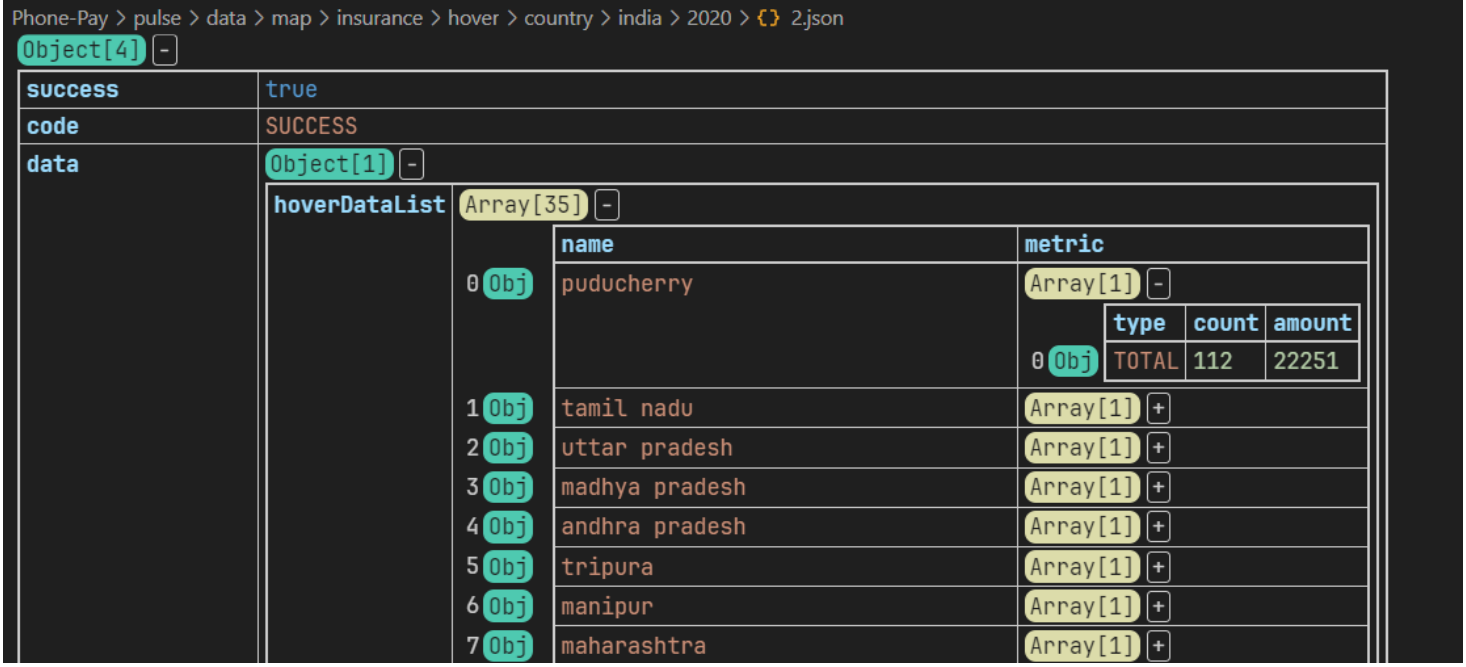
- **File Data In insurance → country → India → (Year Folders [2018, 2019, 2020, 2021, 2022, 2023, 2024])**



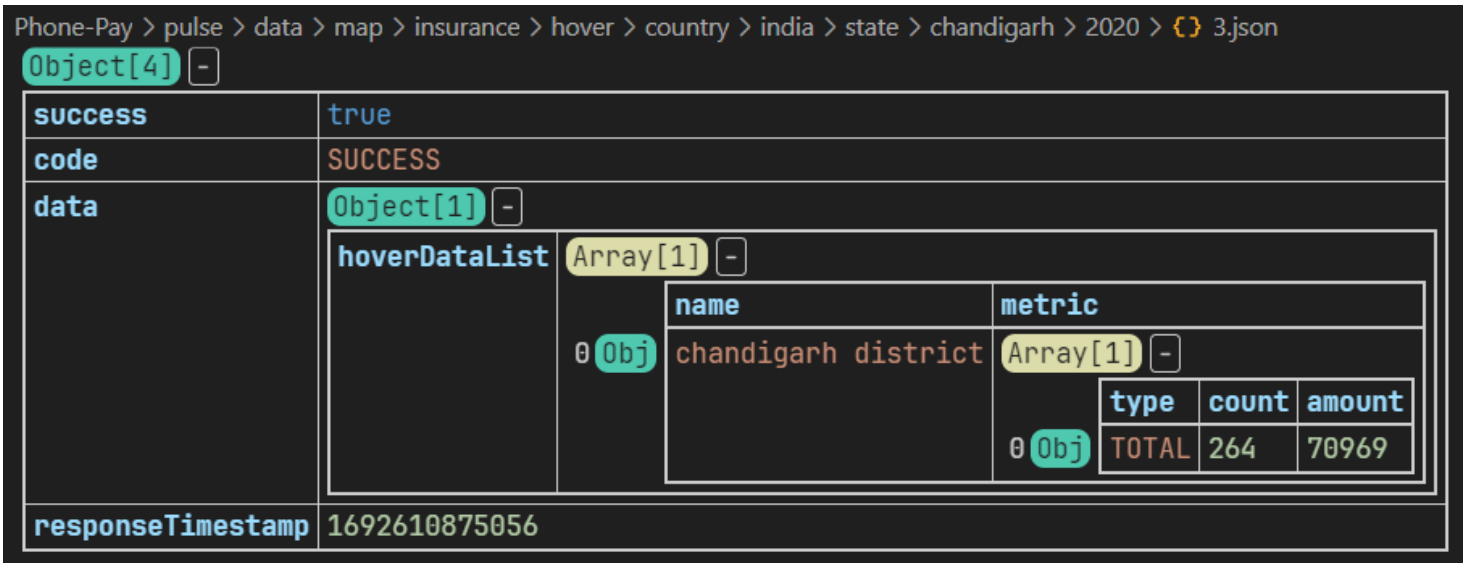
- **File Data In insurance → country → India → (State [Andhra, Telangana, Delhi, ...])



- File Data In insurance → hover → country → India → (Year Folders [2018, 2019, 2020, 2021, 2022, 2023, 2024])



- - **File Data In insurance → hover → country → India → (State [Andhra, Telangana, Delhi, ...])



top

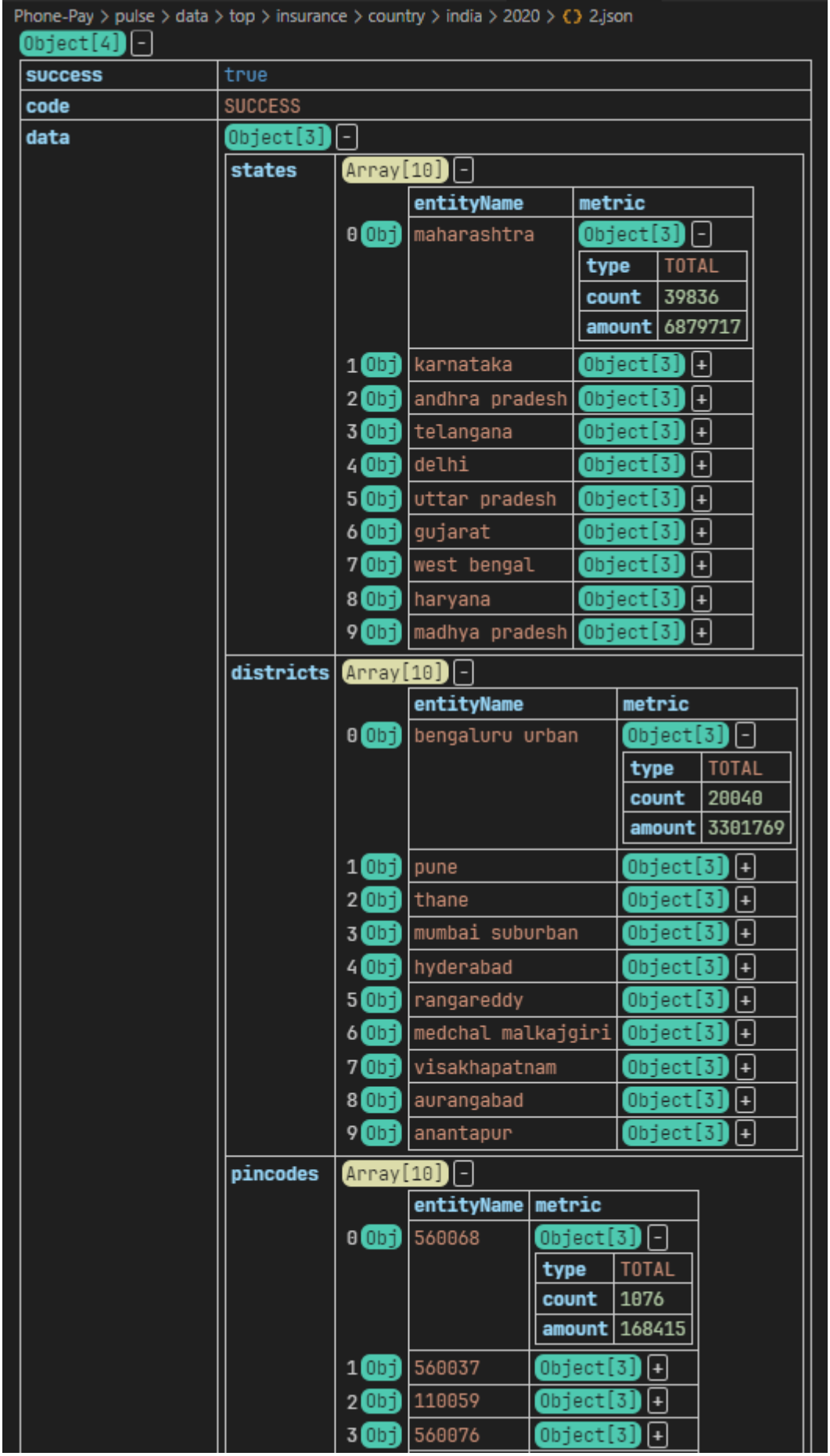
Files in top :

```
===============================================================================
 Language             Files        Lines         Code     Comments       Blanks
===============================================================================
 JSON                  2442         2675         2672            0            3
===============================================================================
 Total                 2442         2675         2672            0            3
===============================================================================
```

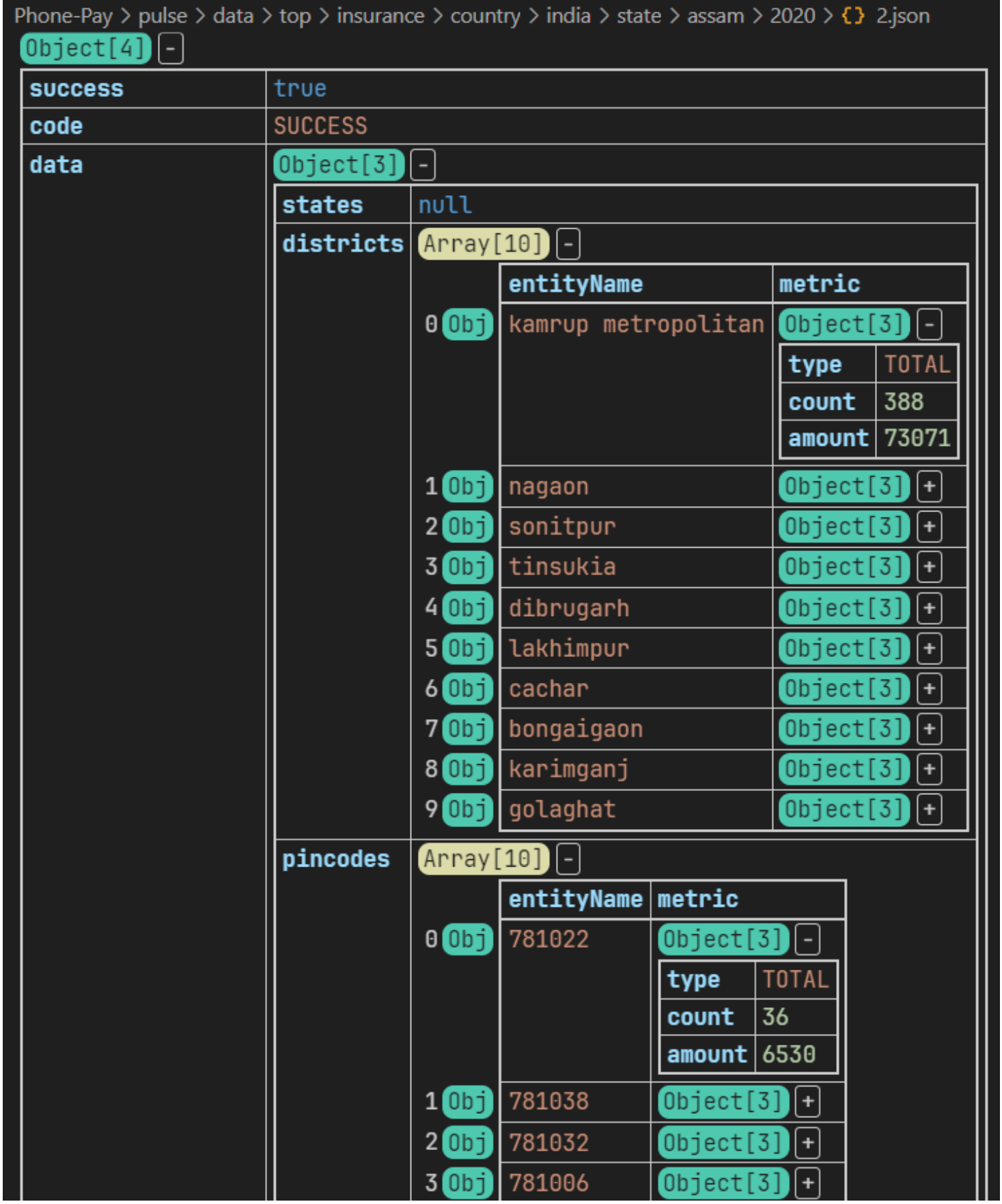
```
.
└── insurance
    └── country
        └── india
            ├── 2020
            ├── 2021
            └── 2022
```

```
            ├── 2023
            ├── 2024
            └── state
├── transaction
│   └── country
│       └── india
            ├── 2018
            ├── 2019
            ├── 2020
            ├── 2021
            ├── 2022
            ├── 2023
            ├── 2024
            └── state
└── user
    └── country
        └── india
            ├── 2018
            ├── 2019
            ├── 2020
            ├── 2021
            ├── 2022
            ├── 2023
            ├── 2024
            └── state
```

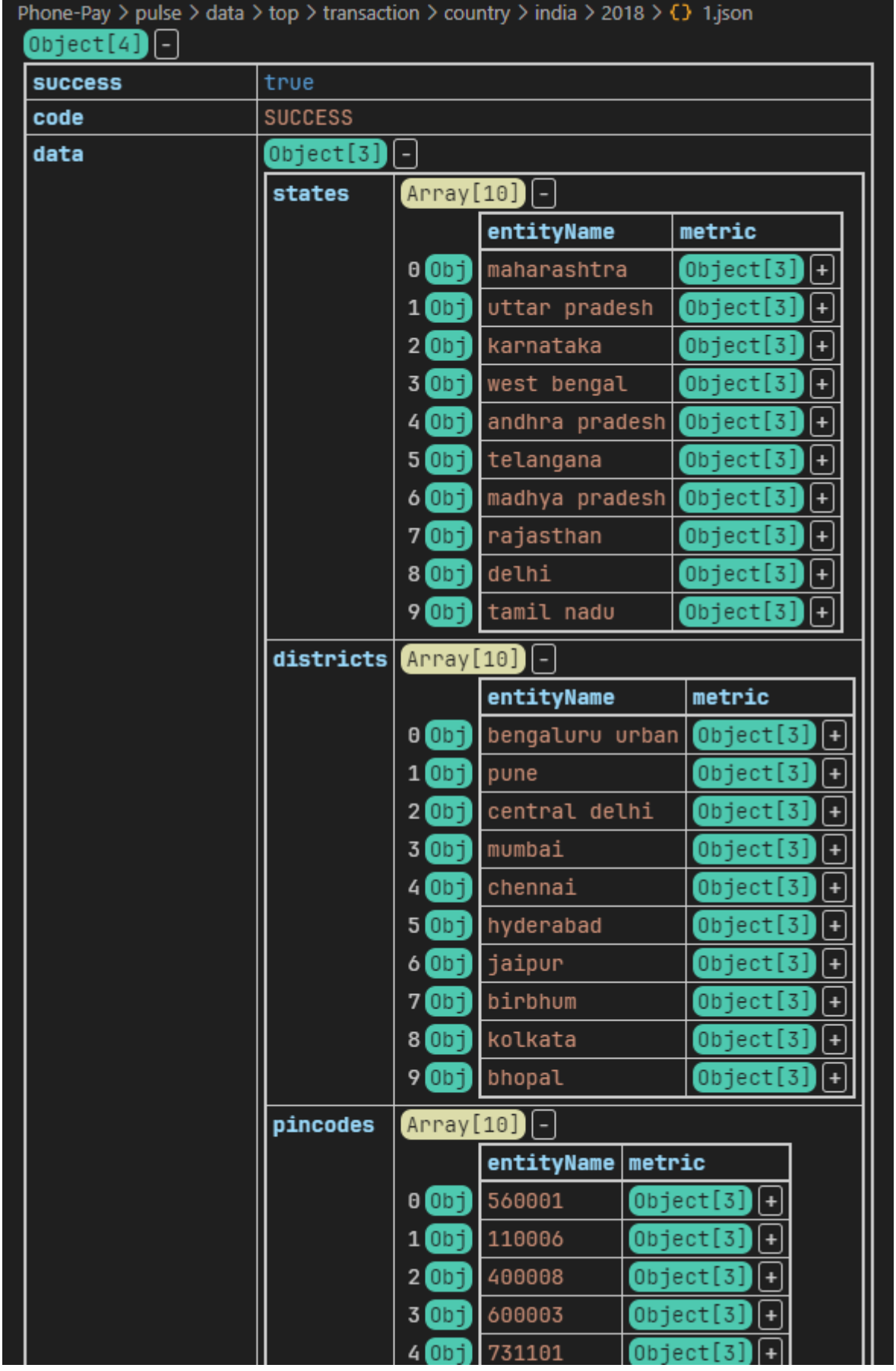
- **File Data In insurance → country → India → (Year Folders [2018, 2019, 2020, 2021, 2022, 2023, 2024])**



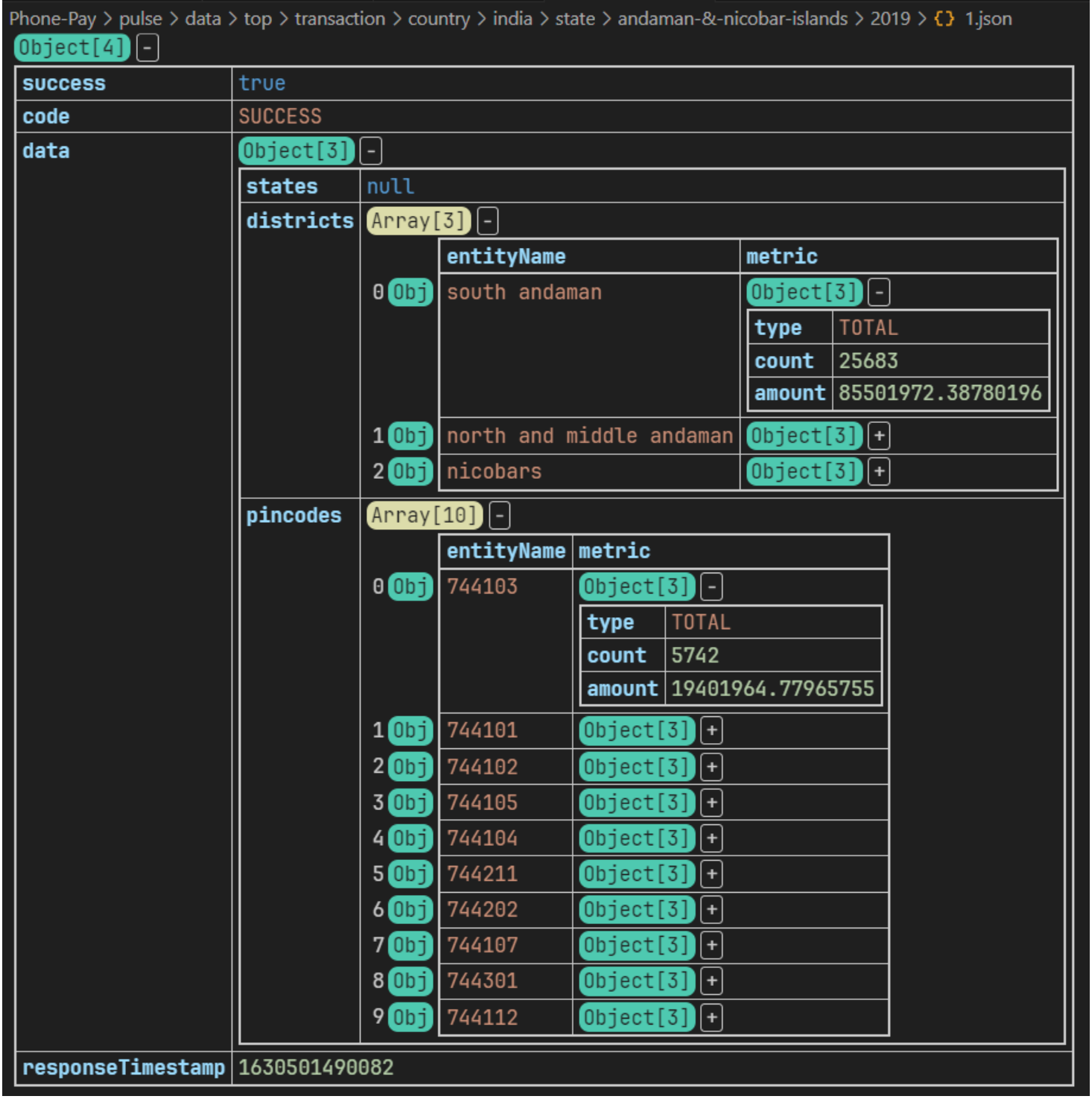
- File Data In insurance → country → India → (State [Andhra, Telangana, Delhi, ...])



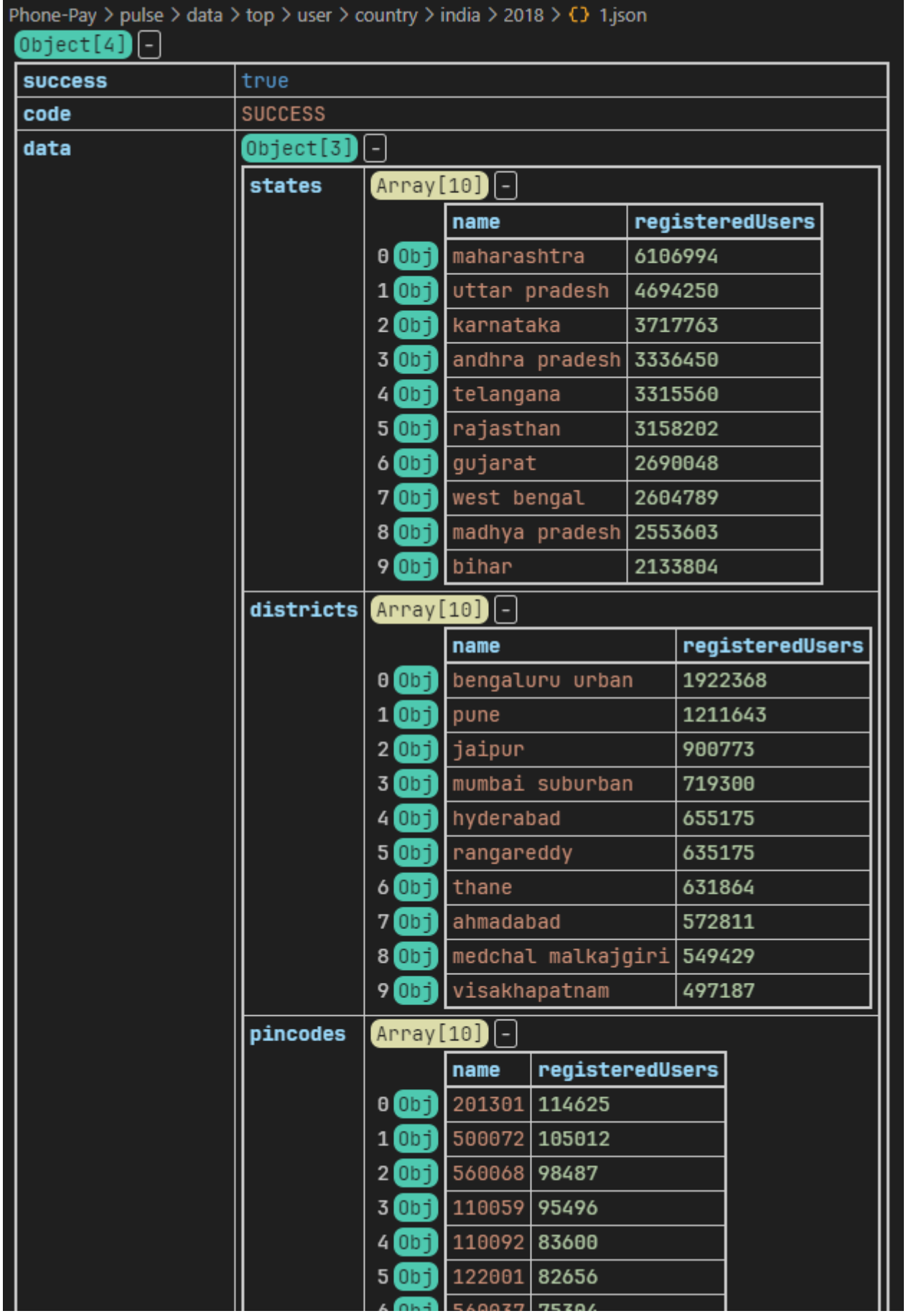
- File Data In transaction → country → India → (Year Folders [2018, 2019, 2020, 2021, 2022, 2023, 2024])



- **File Data In transaction → country → India → (State [Andhra, Telangana, Delhi, ...])



- File Data In user → country → India → (Year Folders [2018, 2019, 2020, 2021, 2022, 2023, 2024])



- **File Data In user → country → India → (State [Andhra, Telangana, Delhi, ...])

Phone-Pay > pulse > data > top > user > country > india > state > andaman-&-nicobar-islands > 2018 > {} 1.json

Object[4] -

success	true
code	SUCCESS
data	Object[3] -

states: null

districts: Array[3] -

	name	registeredUsers
0 Obj	south andaman	5846
1 Obj	north and middle andaman	632
2 Obj	nicobars	262

pincodes: Array[10] -

	name	registeredUsers
0 Obj	744103	1608
1 Obj	744101	1108
2 Obj	744105	1075
3 Obj	744102	1006
4 Obj	744104	272
5 Obj	744202	237
6 Obj	744112	215
7 Obj	744301	207
8 Obj	744107	196
9 Obj	744211	156

responseTimestamp	1630501494546

> **Some Suggestion**
>
> Some of the tools that could be help full to view the JSON files:
>
> 1. JSON GRID VsCode extension
> 2. JSON CRACK VsCode extension

```
Dataview (inline field
'================================================================================
=======
 Language             Files        Lines         Code      Comments
Blanks
================================================================================
=======
 JSON                    7918         8278         8275            0
```

```
3
-------------------------------------------------------------------------
-------
 Markdown                1          188            0          135
53
 |- JavaScript           1          292          268            0
24
 (Total)                             480          268          135
77
=========================================================================
=======
 Total                7919         8466         8275          135
56
=========================================================================
=======): Error:
-- PARSING FAILED -----------------------------------------------

> 1 |
=========================================================================
======
    | ^
  2 |  Language            Files        Lines         Code     Comments
Blanks
  3 |
=========================================================================
=======

Expected one of the following:

'(', 'null', boolean, date, duration, file link, list ('[1, 2, 3]'),
negated field, number, object ('{ a: 1, b: 2 }'), string, variable
```

```
Dataview (inline field
'=======================================================================
=======
 Language            Files        Lines         Code     Comments
Blanks
=======================================================================
=======
 JSON                 2442         2569         2569            0
0
=======================================================================
=======
 Total                2442         2569         2569            0
0
=======================================================================
```

```
======='): Error:
-- PARSING FAILED -----------------------------------------------

> 1 |
=================================================================
======
    | ^
  2 |  Language            Files        Lines         Code     Comments
Blanks
  3 |
=================================================================
=======

Expected one of the following:

'(', 'null', boolean, date, duration, file link, list ('[1, 2, 3]'),
negated field, number, object ('{ a: 1, b: 2 }'), string, variable
```

```
Dataview (inline field
'=================================================================
=======
 Language            Files        Lines         Code     Comments
Blanks
=================================================================
=======
 JSON                 3034         3034         3034            0
0
=================================================================
=======
 Total                3034         3034         3034            0
0
=================================================================
========'): Error:
-- PARSING FAILED -----------------------------------------------

> 1 |
=================================================================
======
    | ^
  2 |  Language            Files        Lines         Code     Comments
Blanks
  3 |
=================================================================
=======

Expected one of the following:
```

```
'(', 'null', boolean, date, duration, file link, list ('[1, 2, 3]'),
negated field, number, object ('{ a: 1, b: 2 }'), string, variable
```

```
Dataview (inline field
'=================================================================
=======
 Language             Files        Lines         Code     Comments
Blanks
=================================================================
=======
 JSON                  2442         2675         2672            0
3
=================================================================
=======
 Total                 2442         2675         2672            0
3
=================================================================
======='): Error:
-- PARSING FAILED -----------------------------------------------

> 1 |
=================================================================
======
    | ^
  2 |  Language             Files        Lines         Code     Comments
Blanks
  3 |
=================================================================
=======

Expected one of the following:

'(', 'null', boolean, date, duration, file link, list ('[1, 2, 3]'),
negated field, number, object ('{ a: 1, b: 2 }'), string, variable
```