



## C3.ai COVID-19 API Documentation (5.1)

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This is the reference documentation for C3.ai COVID-19 HTTP RESTful API. The API request and responses are in JSON.

Please contribute your questions, answers and insights to the [C3.ai COVID-19 Grand Challenge community](#).

For support, please send email to: [covid@c3.ai](mailto:covid@c3.ai).

## Citing the C3.ai COVID-19 Data Lake

If any publications or research results are derived in full or in part from the C3.ai COVID-19 Data Lake, please make sure to credit the C3.ai COVID-19 Data Lake by referencing the case study at <https://c3.ai/customers/covid-19-data-lake/>.

## Quickstart Guide

Get started using the C3.ai COVID-19 Data Lake with R and Python notebooks. Use the online notebooks to easily try out the C3.ai COVID-19 Data Lake APIs in the cloud without any downloads or local environment setup. Use the downloadable notebooks to edit the code and save your results locally.

### R Quickstart

The R Quickstart notebook shows simple API calls and the breadth of data available in the C3.ai COVID-19 Data Lake.

#### Online R Notebook

To try out the C3.ai COVID-19 Data Lake without any downloads or local environment setup, run the R Notebook in your browser using Binder:



#### Downloadable R Notebook

To edit the notebook and save your results locally, follow these steps.

##### Local environment setup

Ensure that the following are installed on your computer:

- [R from CRAN](#), and
- [R Studio](#)

##### Download R Notebooks

- [Download zip file containing R Notebooks and library functions](#)

##### Troubleshooting

While opening the R notebook (.Rmd file), if you see the error:

`Unable to locate R binary by scanning standard locations.`

then you probably did not install [R from CRAN](#). Make sure you install both [R Studio](#) and [R from CRAN](#).

## Python Quickstart

The Python Quickstart notebook shows simple API calls and the breadth of data available in the C3.ai COVID-19 Data Lake.

### Online Python Jupyter Notebook

To try out the C3.ai COVID-19 Data Lake without any downloads or local environment setup, run the Python Jupyter Notebook in your browser using Binder:

[launch binder](#)

### Downloadable Python Jupyter Notebook

To edit the notebook and save your results locally, follow these steps.

#### Local environment setup

Ensure that the following are installed on your computer:

- [Python 3](#), and
- [Jupyter Notebook](#)

#### Download Python Jupyter Notebooks

- [Download zip file containing Python Jupyter Notebooks and library functions](#)

#### Troubleshooting

- Ensure that you have Python 3 and not Python 2.7.
- While opening the Jupyter Notebook, if you see the error:

```
*Error loading notebook: An unknown error occurred while loading this notebook. This version can load notebook formats or earlier. See the server log for details.
```

then you can probably resolve this by installing Python from Anaconda.

- If you see error messages regarding `pandas` functions such as `json_normalize` or `explode`, make sure that you are using a `pandas` version of at least 1.0.0. See the [pandas installation guide](#) for installation instructions.

## R and Python Deep Dive: Mobility and Case Counts

The R and Python Deep Dive notebooks explore datasets in mobility and case counts, and provide a starting point for detailed analysis into the relationships between these datasets.

### Online R Notebook

Run the Deep Dive notebook in your browser using Binder:

[launch binder](#)

### Downloadable R Notebook

To edit the Deep Dive notebook and save your results locally, [download the zip file containing R Notebooks and library functions](#). For additional details, see the [R Quickstart](#) section.

### Online Python Notebook

Run the Deep Dive notebook in your browser using Binder:

[launch binder](#)

### Downloadable Python Notebook

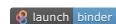
To edit the Deep Dive notebook and save your results locally, [download the zip file containing Python Notebooks and library functions](#). For additional details, see the [Python Quickstart](#) section.

## Python Deep Dive: Clinical and Demographic Data

The Python Deep Dive notebook explores datasets in disease spread, state-level clinical data, and demographics data and provides a starting point for detailed analysis into the relationships between these datasets.

### Online Python Notebook

Run the Deep Dive notebook in your browser using Binder:



### Downloadable Python Notebook

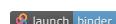
To edit the Deep Dive notebook and save your results locally, [download the zip file containing Python Notebooks and library functions](#). For additional details, see the [Python Quickstart](#) section.

## R Deep Dive: Economic Indicators

The R Deep Dive notebook explores economic indicator datasets and provides a starting point for detailed analysis into the economic impacts of the pandemic.

### Online R Notebook

Run the Deep Dive notebook in your browser using Binder:



### Downloadable R Notebook

To edit the Deep Dive notebook and save your results locally, [download the zip file containing R Notebooks and library functions](#). For additional details, see the [R Quickstart](#) section.

## Release Notes

### Release Notes for 5.1 (September 14, 2020)

Version 5.1 provides updates to data availability and adds new metrics to the following data sources:

- Opportunity Insights: Economic Tracker
- Corona Data Scraper

### Release Notes for 5.0 (August 11, 2020)

Version 5.0 adds eight new datasets to reach 40 total datasets in C3.ai COVID-19 Data Lake.

What's new:

- Added eight new datasets (see [C3.ai APIs for COVID-19 Unified Data](#)):
  - US Bureau of Labor Statistics: County Unemployment Statistics
  - Realtor.com: Housing Indicators
  - Bureau of Economic Analysis: GDP and Economic Profile by County
  - Swayable and TapResearch: COVID-19 Tracker Poll
  - Opportunity Insights: Economic Tracker
  - Centers for Disease Control and Prevention: Weekly Updates by Select Demographic Characteristics
  - COVID Racial Data Tracker
  - US Census Bureau: County Population by Age, Sex, Race, and Hispanic Origin
- Added two new C3.ai Types: [LaborDetail](#) and [SurveyData](#).
- Added two Deep Dive notebooks exploring economic data and medical data.
- Revised Quickstart notebooks to include new C3.ai Types and APIs.
- Revised document for clarity.

### Release Notes for 4.0 (June 23, 2020)

Version 4.0 adds six new datasets.

What's new:

- Added six new datasets (see [C3.ai APIs for COVID-19 Unified Data](#)):
  - The New York Times: All-Cause Mortality,
  - University of Oxford: Coronavirus Government Response Tracker,
  - US Census Bureau: International Census,

- The World Bank: Finance Related Policy Responses to COVID-19,
- PlaceIQ Exposure Indices,
- IBM: Weather Company Data.
- Added two new C3.ai Types: [LocationExposure](#) and [PolicyDetail](#).
- Added Deep Dive notebook exploring mobility data and case counts.
- Revised Quickstart notebooks to include new C3.ai Types and APIs.
- Renamed [Policy](#) Type to [LocationPolicySummary](#) for clarity. Query via [Policy](#) Type is deprecated but still supported.
- Revised document for clarity.

### Release Notes for 3.0 (June 2, 2020)

Version 3.0 adds four new datasets, dataset versioning, and online Quickstart notebooks.

What's new:

- Added four new datasets (see [C3.ai APIs for COVID-19 Unified Data](#)):
  - Corona Data Scraper: COVID-19 Coronavirus Case Data
  - Centers for Disease Control and Prevention (CDC): VaxView
  - Cytel: Global Coronavirus COVID-19 Clinical Trial Tracker
  - Google: COVID-19 Community Mobility Reports
- Added two new C3.ai Types: [VaccineCoverage](#) and [ClinicalTrial](#)
- Added one new API: [GetProjectionHistory](#)
- Revised Quickstart notebooks to include new C3.ai Types and APIs
- Added online hosting for Quickstart notebooks
- Revised document for clarity

### Release Notes for 2.0 (May 15, 2020)

Version 2.0 doubles the number of datasets incorporated into the C3.ai COVID-19 Data Lake from 11 to 22.

What's new:

- Added eleven new datasets: see [C3.ai APIs for COVID-19 Unified Data](#)
- Added six new C3.ai Types: [PopulationData](#), [PatientRoute](#), [Hospital](#), [Diagnosis](#), [DiagnosisDetail](#), and [LocationPolicySummary](#)
- Added two new APIs: [GetImageURLs](#) and [AllVersionsForPolicy](#)
- Categorized C3.ai Types in navigation bar for ease of navigation
- Revised Quickstart notebooks to include new C3.ai Types and APIs
- Revised and restructured document for clarity

### Release Notes for 1.0 (April 22, 2020)

Version 1.0 is the full release of the C3.ai COVID-19 API documentation.

What's new:

- [GetArticleMetadata](#) now provides metadata for multiple article using "ids" rather than "id"
- Added "Interpolated" JHU metrics for [OutbreakLocation](#) [EvalMetrics](#) API
- Added additional clarifications and wording adjustments

### Release Notes for 0.1

Version 0.1 is the initial release of the C3.ai COVID-19 API documentation.

## Data from Multiple Sources

Using these APIs, you can pull together data from multiple COVID-19 data sources with a single API call. This is made possible by using C3.ai Types.

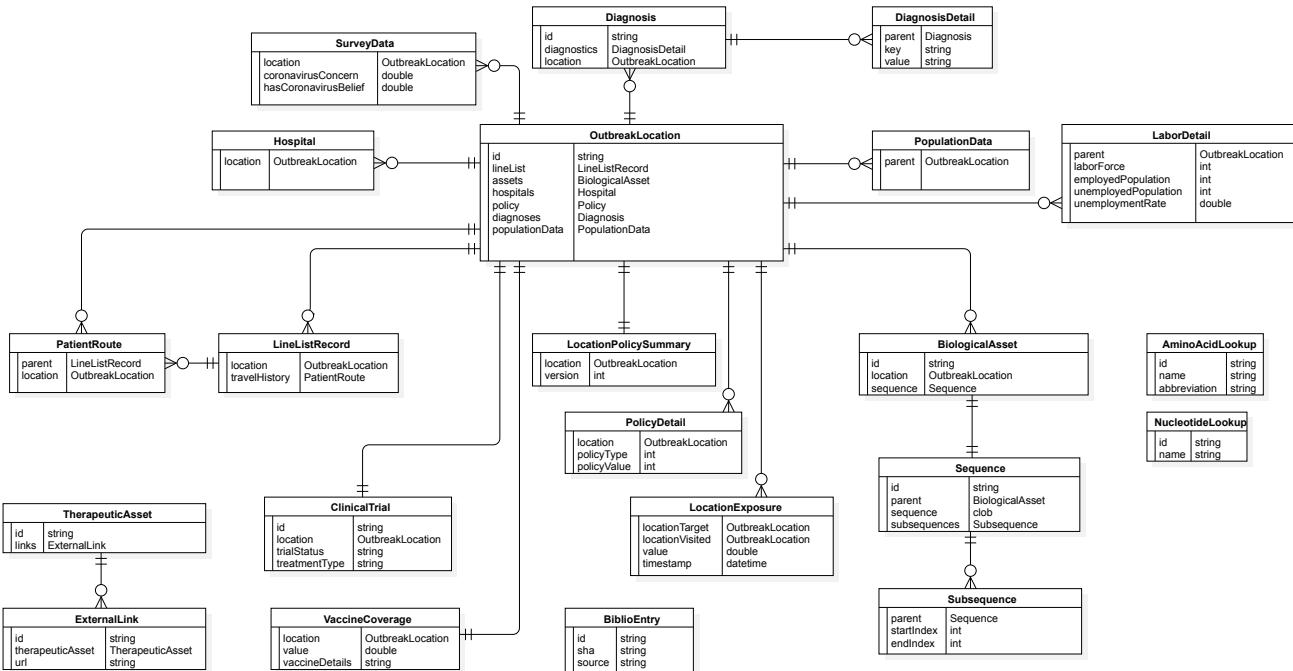
If you are new to the concept of a C3.ai Type, then it is easier to think of a C3.ai Type as an entity that holds the data. Using C3.ai Types makes it possible to programmatically interact with a unified, federated image of COVID-19 data.

On this page, entries such as [OutbreakLocation](#), [LineListRecord](#) are the names of C3.ai Types. Each C3.ai Type holds data of a certain kind. For example:

- [OutbreakLocation](#) stores location data such as countries, provinces, cities, where COVID-19 outbreaks are recorded, and
- [LineListRecord](#) stores individual-level information such as symptoms, travel history, reported onset, and discharge status from laboratory-confirmed COVID-19 patients.

While each such C3.ai Type holds the data of a particular kind, you can use these APIs to connect up the data from multiple C3.ai Types. For example, you can join the data from two C3.ai Types, [BiologicalAsset](#) and [Sequence](#). This can be accomplished by using the [include](#) option in the fetch API call.

The following is an example entity relationship diagram showing how C3.ai Types are connected. Not all fields are shown in the below diagram. Refer to the **Fields** table for a C3.ai Type for a full listing of the fields for that C3.ai Type. See, for example, [LineListRecord](#).



## Fetching from Multiple Sources

The `include` parameter is a powerful way to fetch data from multiple C3.ai Types. This parameter can also be used to fetch specific fields from a single C3.ai Type.

When you want to join data from two C3.ai Types, you make a fetch API call to one C3.ai Type, and use `include` in your request body to refer to the second C3.ai Type. The returned objects will contain fields and data from both the C3.ai Types.

See the section [Using Include](#) for detailed examples showing how to use `include` to combine data from multiple C3.ai Types.

## C3.ai APIs for COVID-19 Unified Data

The following APIs are currently supported:

- `fetch` (for all C3.ai Types presented here)
- `evalmetrics` (for `OutbreakLocation`)
- `getprojectionhistory` (for `OutbreakLocation`)
- `getarticlemetadata` (for `BiblioEntry`)
- `getimageurls` (for `Diagnosis`)
- `allversionsforpolicy` (for `LocationPolicySummary`)

Use `POST` requests to access these APIs.

**NOTE:** If you are new to the concept of RESTful API, this [Postman Learning Center](#) is a good place to start. All APIs described in this documentation can be verified using the Postman client.

The following table shows the APIs available for specific data sources (more data sources are being added):

Data Category	Data Source	C3.ai Types	APIs
Daily Case Reports	<a href="#">Johns Hopkins University: COVID-19 Data Repository</a> ( <a href="#">link to source data</a> )	OutbreakLocation	<code>evalmetrics</code>
Daily Case Reports	<a href="#">COVID Tracking Project</a> ( <a href="#">link to source data</a> )	OutbreakLocation	<code>evalmetrics</code>
Daily Case Reports	<a href="#">World Health Organization: Situation Reports</a>	OutbreakLocation	<code>evalmetrics</code>
Daily Case Reports	<a href="#">The New York Times: Coronavirus (Covid-19) Data in the United States</a>	OutbreakLocation	<code>evalmetrics</code>

Data Category	Data Source	C3.ai Types	APIs
Daily Case Reports	European Centre for Disease Prevention and Control: Situation Update Worldwide (link to source data)	OutbreakLocation	<code>evalmetrics</code>
Daily Case Reports	University of Washington's Institute for Health Metrics and Evaluation: COVID-19 Projections (updated through June 13, 2020)	OutbreakLocation	<code>evalmetrics</code> , <code>getprojectionhistory</code>
Daily Case Reports	Data Science for COVID-19: South Korea Dataset	OutbreakLocation, LineListRecord, PatientRoute	<code>fetch</code> , <code>evalmetrics</code>
Daily Case Reports	Dipartimento della Protezione Civile – Emergenza Coronavirus: La Risposta Nazionale	OutbreakLocation	<code>evalmetrics</code>
Daily Case Reports	COVID-19 India	OutbreakLocation, LineListRecord	<code>fetch</code> , <code>evalmetrics</code>
Daily Case Reports	Corona Data Scraper: COVID-19 Coronavirus Case Data	OutbreakLocation	<code>evalmetrics</code>
Daily Case Reports	COVID Racial Data Tracker	OutbreakLocation	<code>evalmetrics</code>
Case Reports	The New York Times: All-Cause Mortality	OutbreakLocation	<code>evalmetrics</code>
Case Reports	Centers for Disease Control and Prevention: Weekly Updates by Select Demographic Characteristics	OutbreakLocation	<code>evalmetrics</code>
Epidemiology Line Lists	University of Washington's Institute for Health Metrics and Evaluation: nCoV-2019 Data (updated through April 30, 2020)	LineListRecord	<code>fetch</code>
Epidemiology Line Lists	Laboratory for the Modeling of Biological Socio-technical Systems (MOBS Lab): Situation Report (link to source data)	LineListRecord	<code>fetch</code>
Genome Sequences	National Center for Biotechnology Information Virus Database	BiologicalAsset, Sequence, Subsequence, AminoAcidLookup, NucleotideLookup	<code>fetch</code>
Journals	Allen Institute for AI: COVID-19 Open Research Dataset (CORD-19) (updated through April 8, 2020)	BiblioEntry	<code>fetch</code> , <code>getarticlemetadata</code>
Clinical	Milken Institute: COVID-19 Treatment and Vaccine Tracker (link to source data)	TherapeuticAsset	<code>fetch</code>
Clinical	World Health Organization: COVID-19 Research & Development (link to source data)	TherapeuticAsset	<code>fetch</code>
Clinical	The University of Montreal: COVID-19 Image Data Collection	Diagnosis, DiagnosisDetail	<code>fetch</code> , <code>getimageurls</code>
Clinical	Carbon Health & Braid Health: COVID-19 Clinical Data Repository	Diagnosis, DiagnosisDetail	<code>fetch</code>
Clinical	Definitive Healthcare: Hospital ICU Beds	Hospital	<code>fetch</code>
Clinical	Centers for Disease Control and Prevention (CDC): VaxView	VaccineCoverage	<code>fetch</code>
Clinical	Cytel: Global Coronavirus COVID-19 Clinical Trial Tracker	ClinicalTrial	<code>fetch</code>
Policy	Kaiser Family Foundation: Social Distancing Policies	LocationPolicySummary	<code>fetch</code> , <code>allversionsforpolicy</code>
Policy	University of Oxford: Coronavirus Government Response Tracker	PolicyDetail	<code>fetch</code> , <code>evalmetrics</code>
Policy	The World Bank: Finance Related Policy Responses to COVID-19	PolicyDetail	<code>fetch</code>
Mobility	Apple: COVID-19 Mobility Trends	OutbreakLocation	<code>evalmetrics</code>
Mobility	Google: COVID-19 Community Mobility Reports	OutbreakLocation	<code>evalmetrics</code>
Mobility	PlaceIQ Exposure Indices	OutbreakLocation, LocationExposure	<code>getlocationexposures</code> , <code>evalmetrics</code>
Demographics	US Census Bureau: Demographic Estimates	OutbreakLocation, PopulationData	<code>fetch</code> , <code>evalmetrics</code>
Demographics	US Census Bureau: International Census	PopulationData	<code>fetch</code> , <code>evalmetrics</code>
Demographics	The World Bank: Global Health Statistics	OutbreakLocation, PopulationData	<code>fetch</code>
Demographics	US Census Bureau: County Population by Age, Sex, Race, and Hispanic Origin	OutbreakLocation	<code>evalmetrics</code>
Economic	US Bureau of Labor Statistics: County Unemployment Statistics	OutbreakLocation, LaborDetail	<code>fetch</code> , <code>evalmetrics</code>
Economic	Realtors.com: Housing Indicators	OutbreakLocation	<code>evalmetrics</code>
Economic	Bureau of Economic Analysis: GDP and Economic Profile by County	OutbreakLocation	<code>evalmetrics</code>
Economic	Opportunity Insights: Economic Tracker	OutbreakLocation	<code>evalmetrics</code>
Public Surveys	Swayable and TapResearch: COVID-19 Tracker Poll	SurveyData	<code>fetch</code>
Environmental	IBM: Weather Company Data	OutbreakLocation	<code>evalmetrics</code>

## Using C3.ai APIs

### POST Requests

All C3.ai APIs described in this documentation must be accessed using [POST](#) requests.

If you receive the following error:

```
{
  "message": "Missing Authentication Token"
}
```

then you are probably using [GET](#) or another request, and you should instead use [POST](#). No authentication token is required to access the APIs.

### Required Headers

All C3.ai APIs described in this documentation must be used with the following header settings:

Headers	Setting
Accept	application/json
Content-Type	application/json

### Using Fetch

The request JSON for the [fetch](#) API should be used with the [filter](#) key. This [filter](#) key can be used in the fetch call to select any combination of the fields in the data. A few examples follow:

**IMPORTANT:** For a list of fields available for a C3.ai Type, refer to the fields section of that C3.ai Type in this document.

To fetch the data that match the specific values of the [id](#) field of the data:

```
{
  "spec" : {"filter": 'id == "Afghanistan"} }
```

A few other examples:

```
{
  "spec" : {"filter": 'id == "Afghanistan" && age == 45'} }
```

or,

```
{ // See BiologicalAsset
  "spec": {
    "filter": "isolationSource == 'feces' && location == 'Japan'",
    "limit": -1
  }
}
```

or, using a `"contains(field, "string")"` format:

```
{ // See LineListRecord
  "spec": {
    "filter": "gender == 'male' && lineListSource == 'OPEN' && age <= 20 && contains(relevantTravelHistoryLocation, 'Wuhan')"
  }
}
```

The `fetch` API returns two main kinds of information in its response:

- The data from the C3.ai Type, fetched as an array of objects.
- Metadata, or data describing data, such as:
  - The number of objects fetched.
  - Number of rows of information.
  - An indicator if more data exists in the C3.ai Type that was not returned.
- See the section [Limits](#) for the number of entries returned per `fetch` API call.

For full details on request and response JSON, see the several examples provided in the `fetch` API for all the C3.ai Types in this documentation.

## Using Include

In a C3.ai Type, the data type of a field can be a C3.ai Type. For example, the field `links` in [TherapeuticAsset](#) is of the type [ExternalLink](#). This is how these two C3.ai Types are connected.

For example, to join data from these two connected C3.ai Types, [TherapeuticAsset](#) and [ExternalLink](#), use the `include` parameter as follows:

- Make a `fetch` API call to [TherapeuticAsset](#).
- The field `links` in [TherapeuticAsset](#) is of [ExternalLink](#) Type. Using the dot notation on the `links` field, you can access any field in the [ExternalLink](#). For example, specifying `links.url` will resolve into `ExternalLink.url`, which will obtain the `url` field data from the [ExternalLink](#).
- Notice that we have not issued a fetch call to [ExternalLink](#). See the full fetch example, including the response objects, below.

### Example 1: Join data from TherapeuticAsset and ExternalLink (click arrow to open)

► Example 1: Join data from TherapeuticAsset and ExternalLink

### Example 2: Join data from BiologicalAsset and Sequence (click arrow to open)

In the following example, the `include` parameter is used with `this` keyword, which obtains all the fields from [BiologicalAsset](#) and the field `sequence` from [Sequence](#).

► Example 2: Join data from BiologicalAsset and Sequence

## More Filter Examples

- Filter on `dateTime`

```
{
  "spec" : {
    "filter": "field >= dateTime('YYYY-MM-DD')"
  }
}
// Example: Fetch BiologicalAssets with collectionData post March 10, 2020.
{
  "spec" : {
    "filter": "collectionDate >= dateTime('2020-03-10')"
  }
}
```

- Logical operators

```
// Note: Multiple filters can be applied with an "and" ("&&") or an "or" ("||") operator.

// Operator "and".
```

```
{
  "spec" : {
    "filter": "fieldA == 'stringA' && fieldB == 'stringB'"
  }
}

// Example: Fetch BiologicalAssets with isolationSource 'feces' AND location 'Japan'.
{
  "spec": {
    "filter": "isolationSource == 'feces' && location == 'Japan'"
  }
}

// Operator "or".
{
  "spec" : {
    "filter": "fieldA == 'stringA' || fieldB == 'stringB'"
  }
}

// Example: Fetch BiologicalAssets with isolationSource 'feces' OR location 'Japan'.
{
  "spec": {
    "filter": "isolationSource == 'feces' || location == 'Japan'"
  }
}
```

- Filter on `contains`, `startsWith`, or `endsWith`

```
// Contains: Retrieve all entries, where the specified field contains matching characters.
// startsWith: Retrieve all entries, where the specified field starts with matching characters.
// endsWith: Retrieve all entries, where the specified field ends with matching characters.
{
  "spec": {
    "filter": "contains(field,'string') || startsWith(field, 'string') || endsWith(field, 'string')"
  }
}

// Example: Fetch Biological Assets where genBankTitle contains "ORF10".
{
  "spec": {
    "filter": "contains(genBankTitle,'ORF10')"
  }
}
```

- Filter on `empty`

```
// Empty: Retrieve all entries, where the specified field is NULL.
{
  "spec": {
    "filter": "empty(field)"
  }
}

//Example: Fetch LineListRecords without gender, age, or location data.
{
  "spec": {
    "filter": "empty(gender) && empty(age) && empty(location)"
  }
}
```

- Filter on `exists`

```
// Exists: Retrieve all entries where the specified fields exist.
{
  "spec": {
    "filter": "exists(field)"
  }
}

//Example: Fetch LineListRecords with gender, age, or location data.
{
  "spec": {
    "filter": "exists(gender) && exists(age) && exists(symptoms)"
  }
}
```

- Filter on `matchesRegex`

```
// matchesRegex: Retrieve all entries where the specified field matches with the regex pattern.
{
  "spec": {
    "filter": "matchesRegex(field, 'regex_string')"
  }
}
//Example: Fetch clinical data of patients whose COVID-19 test results are positive.
{
  "spec": {
    "filter": "matchesRegex(testResults, 'COVID(-)?19:[ ]?(Pp)positive')"
  }
}
```

- Filter on `lowerCase`

```
// lowerCase: Retrieve all entries where the specified field's lowercase matches.
{
  "spec": {
    "filter": "lowerCase(field) == 'string'"
  }
}
//Example: Fetch historical vaccination rates of >= 1 dose of Tdap vaccination for United States teenagers.
{
  "spec": {
    "filter": "contains(lowerCase(vaccineDetails), '>=1 dose tdap vaccination') && location == 'UnitedStates' && lowerCase(vaxView) == 'teenager'"
  }
}
```

## Using EvalMetrics

While the `fetch` API returns the raw data, the `evalmetrics` API returns time series data based on the metrics expression you provide. Metrics are instructions you can provide in the request JSON of the `evalmetrics` API for how to transform the data into time series data. The `evalmetrics` API will then return the resulting time series data.

The following fields are supported in the request JSON of the `evalmetrics` API:

**IMPORTANT:** Limits apply to these fields. See [Limits](#).

- **ids:** This is the list of source objects on which you want to evaluate the metrics on. For example: `"ids": ["King_Washington_UnitedStates", "SanDiego_California_UnitedStates"]`.
- **expressions:** Here you place a list of the metrics that you wish to evaluate. For example, `"expressions": ["NYT_ConfirmedCases"]`. See the [EvalMetrics section](#) for a list of supported metrics.
- **start** and **end:** The datetime fields where you can put the start and end dates of the period for which you want to evaluate your metrics. For example, `"start": "2020-03-01"` and `"end": "2020-03-30"`.
- **interval:** The desired interval for the time series output. For example, `"interval": "DAY"`.

**IMPORTANT:** Depending on the raw data, the available time ranges and frequencies of data vary across data sources. Please refer to the detailed metric documentation in the [EvalMetrics section](#) for each data source to set suitable time ranges and interval for your `evalmetrics` call.

The response JSON for the `evalmetrics` API consists of the time series data array, the timestamp array, and an array consisting of the fraction of data missing from the time series.

The `missing` array in the `evalmetrics` response JSON can be useful to determine whether the requested time range lies partially outside the available range for a particular metric. Each value in this array corresponds to the percentage availability of data in a particular time interval in the timeseries requested. For example, `0` represents no data missing; `100` represents 100% data in the interval missing.

Note the following when using the `evalmetrics` API:

1. The `evalmetrics` request body should be used with the `spec` key, just as in a `fetch` request.
2. The `end` date field in the JSON request acts as an open interval. That is, if `end` is set to "2020-04-04", then only the data upto and including April 3rd is returned. If you need the data for April 4th, then you must set `end` date to "2020-04-05".
3. Data from a few locations, such as countries and states, are the aggregate of data from more granular locations, such as counties. For example, in the JHU Dataset, there is no data for the number of confirmed cases in California. This value is computed by adding the number of cases across all counties in California.

Refer to the several examples provided in the `evalmetrics` API for [OutbreakLocation](#) for full details on response JSON.

## Limits

## Fetch Limits

API	Limit
BiblioEntry: <code>/api/1/biblioentry/ y/fetch</code>	If <code>limit</code> is not specified in the request body, then by default 2000 rows, or less if the available data is less than 2000 rows, are returned. This is also the maximum rows returned even if <code>limit</code> setting is higher, or is -1. Use the <code>offset</code> parameter to fetch more rows. For example, see <a href="#">Example 6 for Python</a> in <code>LineListRecord</code> .
LineListRecord: <code>/api/1/linelistre cord/fetch</code>	If <code>limit</code> is not specified in the request body, then by default 2000 rows, or less if the available data is less than 2000 rows, are returned. A maximum of 5000 rows is returned per API call even if <code>limit</code> setting is > 5000 or is -1. Use the <code>offset</code> parameter to fetch more rows. For example, see <a href="#">Example 6 for Python</a> in <code>LineListRecord</code> .

## EvalMetrics Limits

Setting	Limit
<code>start</code>	Start datetime of the time range must be no earlier than 50 years ago from the present day. For example: '1990-01-01'.
<code>end</code>	End datetime of the time range must be no earlier than the <code>start</code> datetime specified.
<code>interval</code>	<code>DAY</code> , <code>MONTH</code> , and <code>YEAR</code> are supported.
<code>ids</code>	The number of <code>ids</code> specified in this array must be less or equal to 10.
<code>expressions</code>	The number of <code>expressions</code> specified in this array must be less than or equal to 4.

## GetArticleMetadata Limits

Setting	Limit
<code>ids</code>	The number of <code>ids</code> specified in this array must be less than or equal to 10.

# OutbreakLocation

OutbreakLocation stores location data such as countries, provinces, cities, where COVID-19 outbreaks are recorded.

The `fetch` API provides tabular location data. The `evalmetrics` API provides time series data, while the `getprojectionhistory` API provides historical versioned projections of time series data.

OutbreakLocation IDs that should be used in the `id` field (in the `fetch` API) and `ids` field (in the `evalmetrics` API) are available for download in [this Microsoft Excel document](#).

## Fetch

### Fields

**NOTE:** If the field is not present in a returned object, then that field will not be returned.

Field	Data type	Description
<code>id</code>	string	The location ID of the country, state or province, and county to fetch for the COVID-19 outbreak. Should be used with the key <code>filter</code> , e.g., <code>{"filter": "id == "Afghanistan"}</code> .
<code>name</code>	string	Actual name of the country, state or province, and county corresponding to the location ID.
<code>fips</code>	string	FIPS code for the country, and for the county and county-equivalents in the United States.
<code>lineList</code>	LineListRecord	List of C3.ai Type LineListRecord objects associated with the location.
<code>assets</code>	BiologicalAsset	List of C3.ai Type BiologicalAsset objects associated with the location.
<code>diagnoses</code>	Diagnosis	List of C3.ai Type Diagnosis objects associated with the location.
<code>hospitals</code>	Hospital	List of C3.ai Type Hospital objects associated with the location.
<code>policy</code>	LocationPolicySummary	List of C3.ai Type LocationPolicySummary objects associated with the location.
<code>populationData</code>	PopulationData	List of C3.ai Type PopulationData objects associated with the location.
<code>laborDetail</code>	LaborDetail	List of C3.ai Type LaborDetail objects associated with the location.
<code>vaccineCoverage</code>	VaccineCoverage	List of C3.ai Type VaccineCoverage objects associated with the location.
<code>locationExposures</code>	LocationExposure	List of C3.ai Type LocationExposure objects with this location as <code>locationTarget</code> .
<code>locationExposuresVisited</code>	LocationExposure	List of C3.ai Type LocationExposure objects with this location as <code>locationVisited</code> .

Field	Data type	Description
latestTotalPopulation	int	Most recent population of the location based on data from The World Bank or the US Census Bureau. Data available at county-level for locations in the United States and country-level globally.
population2019	int	Population of the location for the year 2019, based on data from the European Centre for Disease and Control.
populationCDS	int	Population of the location, based on data from Corona Data Scraper.
hospitalICU Beds	int	Total number of hospital intensive care unit (ICU) beds. Available for locations in the United States.
hospitalStaffedBeds	int	Total number of staffed hospital beds. Available for locations in the United States.
hospitalLicensedBeds	int	Total number of licensed hospital beds. Available for locations in the United States.
populationOfAllChildren	int	Most up-to-date total population of all sub-locations (e.g. for all counties in a state) based on available demographic data. Available for locations in the United States.
latestLaborForce	int	Most up-to-date labor force population of the location based on available Bureau of Labor Statistics data. Available for county locations in the United States.
latestEmployedPopulation	int	Most up-to-date employed population of the location based on available Bureau of Labor Statistics data. Available for county locations in the United States.
latestUnemployedPopulation	int	Most up-to-date unemployed population of the location based on available Bureau of Labor Statistics data. Available for county locations in the United States.
latestUnemploymentRate	double	Most up-to-date unemployment rate of the location based on available Bureau of Labor Statistics data, in percent. Available for county locations in the United States.
laborForceOfAllChildren	int	Most up-to-date labor force population of all sub-locations (e.g. for all counties in a state) based on available Bureau of Labor Statistics data. Available for US state- and country-level locations.
employedPopulationOfAllChildren	int	Most up-to-date employed population of all sub-locations (e.g. for all counties in a state) based on available Bureau of Labor Statistics data. Available for US state- and country-level locations.
unemployedPopulationOfAllChildren	int	Most up-to-date unemployed population of all sub-locations (e.g. for all counties in a state) based on available Bureau of Labor Statistics data. Available for US state- and country-level locations.
unemploymentRateOfAllChildren	double	Most up-to-date unemployment rate, in percent, over all sub-locations (e.g. for all counties in a state) based on available Bureau of Labor Statistics data. This value is <code>unemployedPopulationOfAllChildren</code> divided by <code>laborForceOfAllChildren</code> , in percent. Available for US state- and country-level locations.
elementarySchoolCount	int	Total number of elementary schools. Available for locations in South Korea.
kindergartenCount	int	Total number of kindergartens. Available for locations in South Korea.
universityCount	int	Total number of universities. Available for locations in South Korea.
nursingHomeCount	int	Total number of nursing homes. Available for locations in South Korea.
elderlyPopulationRatio	double	Proportion of population that is elderly, as percent (0-100). Available for locations in South Korea.
elderlyAloneRatio	double	Proportion of households that are elderly people living alone, as percent (0-100). Available for locations in South Korea.
publicHealthCareCenterBeds	int	Total number of hospital beds available in public facilities. Available for locations in India.

### Examples (Click on the arrows to expand)

The following examples show how to fetch COVID-19 outbreak location data using this API.

- ▶ Fetch facts about Germany
- ▶ Fetch facts about Beijing, China (request example only)
- ▶ Fetch facts about Santa Clara County, California, United States (request example only)

### HEADER PARAMETERS

Content-Type <small>required</small>	string Set this to application/json.
Accept <small>required</small>	string Set this to application/json.

### REQUEST BODY SCHEMA: application/json

spec	object Container of query evaluation attributes
filter	string Filter expression for which Obj instances to return. For example: <code>"filter": "id == "Afghanistan" &amp;&amp; age == 45"</code> . Filter expressions must evaluate to a value type of boolean. They support basic comparison operators (e.g. ==, <, <=, >, >=, !=), arithmetic operators (e.g. +, -, /), &&,    and most non-time series functions supported by the expression engine.*
include	string Specifies which fields to bring back values for in the returned objects. A list of fields. For example: <code>"include": "productType, description, origin, links.url"</code> .
limit	integer

<code>offset</code>	Maximum number of rows that should be returned, starting from offset.
	integer <int32> (The Offset Schema) Number of rows to skip.

## Responses

✓ 200 OK. The request has succeeded.

RESPONSE SCHEMA: application/json

<code>objs</code> >	object Container of query evaluation attributes
<code>count</code>	integer <int32> (The Count Schema) Number of rows returned.
<code>hasMore</code>	boolean (The Hasmore Schema) If set to true there were more objs that were not returned.

POST /api/1/outbreaklocation/fetch

## Request samples

Payload

Content type  
application/json

```
{
  - "spec": {
    "filter": "string",
    "include": "string",
    "limit": 0,
    "offset": 0
  }
}
```

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## Response samples

200

Content type  
application/json

```
{
  - "objs": {
    "type": "string",
    "location": { },
    "name": "string",
    "id": "string",
    "version": "string",
    "meta": { },
    "typeIdent": "string"
  },
  "count": 0,
  "hasMore": true
}
```

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## EvalMetrics

The following tables show the available time series metrics from each data source that can be evaluated using EvalMetrics. Use the expressions from the **Metric** column in the `expressions` field of the request JSON of the `evalmetrics` API. For example, `"expressions": ["JHU_ConfirmedDeaths"]`. Please click on the arrows to expand examples and see request and response JSONs.

### Johns Hopkins University: COVID-19 Data Repository

#### Metrics

Daily case, death, and recovery counts available at:

- United States: country, state or territory, and county level
- Global: country and province level

Metric	Description
JHU_ConfirmedCases	Cumulative total confirmed cases.
JHU_ConfirmedDeaths	Cumulative total confirmed deaths.
JHU_ConfirmedRecoveries	Cumulative total confirmed recoveries.
JHU_ConfirmedCasesInterpolated	Cumulative total confirmed cases, with missing data points interpolated with the most recent non-missing value.
JHU_ConfirmedDeathsInterpolated	Cumulative total confirmed deaths, with missing data points interpolated with the most recent non-missing value.
JHU_ConfirmedRecoveriesInterpolated	Cumulative total confirmed recoveries, with missing data points interpolated with the most recent non-missing value.

#### Examples

- ▶ Example 1: Total number of confirmed cases in the United States
- ▶ Example 2: Total number of confirmed deaths in California
- ▶ Example 3: Total number of confirmed recoveries in Hubei, China
- ▶ Example 4: Total number of confirmed cases, deaths, and recoveries in Santa Clara, California
- ▶ Example 5: Total number of confirmed cases in France and Germany
- ▶ Example 6: Total number of confirmed Cases, Deaths, and Recoveries in King County, Washington, and San Diego, California

### COVID Tracking Project

#### Metrics

Daily case, death, hospitalization, and testing counts available at country and province level globally.

Metric	Description
CovidTrackingProject_ConfirmedCases	Cumulative total confirmed cases.
CovidTrackingProject_ConfirmedDeaths	Cumulative total confirmed deaths.
CovidTrackingProject_ConfirmedHospitalizations	Cumulative total confirmed hospitalizations.
CovidTrackingProject_NegativeTests	Cumulative total negative COVID-19 tests.
CovidTrackingProject_PendingTests	Non-cumulative daily pending COVID-19 tests.

#### Examples

- ▶ Example 1: Total number of confirmed cases in Washington, United States
- ▶ Example 2: Total number of confirmed deaths in Washington, United States
- ▶ Example 3: Total number of confirmed hospitalizations in Washington, United States
- ▶ Example 4: Total number of negative test results in Washington, United States
- ▶ Example 5: Total number of pending test results in Washington, United States

### European Centre for Disease Prevention and Control: Situation Update Worldwide

#### Metrics

Daily cumulative case and death counts available at country level globally.

**NOTE:** ECDC cumulative counts are calculated relative to the "start" date entered. To retrieve the all-time cumulative total, use a "start" date of "2020-01-01".

Metric	Description
ECDC_ConfirmedCases	Cumulative total confirmed cases.
ECDC_ConfirmedDeaths	Cumulative total confirmed deaths.
ECDC_PerDay_Cumulative14DaysPer100000	Cumulative 14-day case counts per 100,000 people.

#### Examples

- ▶ Example 1: Total number of confirmed cases in Italy
- ▶ Example 2: Total number of confirmed deaths in United Kingdom

## The New York Times: Coronavirus (Covid-19) Data in the United States

### Metrics

Daily cumulative case and death counts available at:

- United States: country, state or territory, and county level
- Global: country and province level

Metric	Description
NYT_ConfirmedCases	Cumulative total confirmed cases.
NYT_ConfirmedDeaths	Cumulative total confirmed deaths.

### Examples

- ▶ Example 1: Total number of confirmed cases in the United States
- ▶ Example 2: Total number of confirmed deaths in New York
- ▶ Example 3: Total number of confirmed cases and deaths in Cook County, Illinois
- ▶ Example 4: Total number of confirmed cases and deaths in Pennsylvania and Ohio, United States

## The New York Times: All-Cause Mortality

This dataset provides data on the number of deaths from all causes for a given location to present the full impact of the Covid-19 pandemic, since official Covid-19 death tolls often cannot account for people who have not been tested and those who died at home. All-cause mortality can supplement Covid-19 death counts and provide a better understanding of the true toll of the pandemic.

### Metrics

Metric	Description
NYT_AllCausesDeathsWeekly_Deaths_AllCauses	All-cause death case count, updated weekly.
NYT_AllCausesDeathsWeekly_Excess_Deaths	Difference between all-cause deaths and expected deaths, updated weekly.
NYT_AllCausesDeathsWeekly_Expected_Deaths_AllCauses	Expected all-cause deaths based on NYT linear model, updated weekly.
NYT_AllCausesDeathsMonthly_Deaths_AllCauses	All-cause death case count, updated monthly.
NYT_AllCausesDeathsMonthly_Excess_Deaths	Difference between all-cause deaths and expected deaths, updated monthly.
NYT_AllCausesDeathsMonthly_Expected_Deaths_AllCauses	Expected all-cause deaths based on NYT linear model, updated monthly.

### Examples

- ▶ Example: Timeseries of excess deaths in Austria and Denmark in April 2020 (case count updated weekly)

## Centers for Disease Control and Prevention: Weekly Updates by Select Demographic Characteristics

### Metrics

This dataset provides weekly national-level COVID-19 provisional death counts by age and sex for the United States, starting from Feb 1, 2020.

Weekly death counts are recorded as 0 if the value is less than 10.

The table below contains example metrics. The full list of metrics is available for download in [this Microsoft Excel document](#).

Metric	Description
AllSex_Under1_CovidDeaths	Number of COVID deaths under age 1.
AllSex_Under1_TotalDeaths	Number of total deaths of select causes under age 1.
Female_65_74_CovidDeaths	Number of COVID deaths from age 65 to 74, female.
Female_65_74_TotalDeaths	Number of total deaths by COVID-19, pneumonia, and influenza from age 65 to 74, female.
Male_85AndOver_CovidDeaths	Number of COVID deaths with age 85 and over, male.
Male_85AndOver_TotalDeaths	Number of total deaths of select causes with age 85 and over, male.

### Examples

- ▶ Example: Compare COVID and total death counts for individuals age 85 and older in the United States

## COVID Racial Data Tracker

### Metrics

This dataset provides daily state-level race-specific and ethnicity-specific COVID-19 case and death count data, available from April 2, 2020 and updated twice a week.

Metric	Description

Metric	Description
CTP_CovidDeaths_AIAN	Number of COVID-19 deaths for race: American Indian or Alaska Native.
CTP_CovidDeaths_Asian	Number of COVID-19 deaths for race: Asian.
CTP_CovidDeaths_Black	Number of COVID-19 deaths for race: Black.
CTP_CovidDeaths_EthnicityHispanic	Number of COVID-19 deaths for ethnicity: Hispanic.
CTP_CovidDeaths_EthnicityNonHispanic	Number of COVID-19 deaths for ethnicity: Non-Hispanic.
CTP_CovidDeaths_EthnicityUnknown	Number of COVID-19 deaths for ethnicity: Unknown.
CTP_CovidDeaths_LatinX	Number of COVID-19 deaths for race: LatinX.
CTP_CovidDeaths_Multiracial	Number of COVID-19 deaths for race: Multiracial.
CTP_CovidDeaths_NHPI	Number of COVID-19 deaths for race: Native Hawaiian and Pacific Islander.
CTP_CovidDeaths_Other	Number of COVID-19 deaths for race: Other.
CTP_CovidDeaths_Unknown	Number of COVID-19 deaths for race: Unknown.
CTP_CovidDeaths_White	Number of COVID-19 deaths for race: White.
CTP_CovidCases_AIAN	Number of COVID-19 cases for race: American Indian or Alaska Native.
CTP_CovidCases_Asian	Number of COVID-19 cases for race: Asian.
CTP_CovidCases_Black	Number of COVID-19 cases for race: Black.
CTP_CovidCases_EthnicityHispanic	Number of COVID-19 cases for ethnicity: Hispanic.
CTP_CovidCases_EthnicityNonHispanic	Number of COVID-19 cases for ethnicity: Non-Hispanic.
CTP_CovidCases_EthnicityUnknown	Number of COVID-19 cases for ethnicity: Unknown.
CTP_CovidCases_LatinX	Number of COVID-19 cases for race: LatinX.
CTP_CovidCases_Multiracial	Number of COVID-19 cases for race: Multiracial.
CTP_CovidCases_NHPI	Number of COVID-19 cases for race: Native Hawaiian and Pacific Islander.
CTP_CovidCases_Other	Number of COVID-19 cases for race: Other.
CTP_CovidCases_Unknown	Number of COVID-19 cases for race: Unknown.
CTP_CovidCases_White	Number of COVID-19 cases for race: White.

### Examples

- ▶ Example: Compare COVID-19 death counts for Hispanic and non-Hispanic populations in Texas, United States in May, 2020

## World Health Organization: Situation Reports

### Metrics

Daily cumulative case and death counts available at:

- Global: country level
- China: province level prior to March 15, 2020

Metric	Description
WHO_ConfirmedCases	Cumulative total confirmed cases.
WHO_ConfirmedDeaths	Cumulative total confirmed deaths.

### Examples

- ▶ Example 1: Total number of confirmed cases in South Korea
- ▶ Example 2: Total number of confirmed deaths in France

## Dipartimento della Protezione Civile – Emergenza Coronavirus: La Risposta Nazionale

### Metrics

Daily counts available for Italy at country, region, and province level.

Metric	Description
ITA_Active	Non-cumulative active cases.
ITA_ActiveDelta	Change in active cases from previous day.
ITA_ConfirmedCases	Cumulative total confirmed cases.
ITA_ConfirmedDelta	Change in cumulative total confirmed cases from previous day.
ITA_Deaths	Cumulative total deaths.

Metric	Description
ITA_HomeConfined	Non-cumulative count of individuals in home confinement.
ITA_Hospitalized	Non-cumulative count of hospitalized patients.
ITA_InICUCurrently	Non-cumulative count of patients in intensive care unit (ICU).
ITA_Recovered	Cumulative total recoveries.
ITA_TotalPeopleTested	Cumulative total individuals tested.
ITA_TotalTests	Cumulative total tests.

**Examples**

- ▶ Example: Active cases, hospitalizations, recoveries, and deaths over time in Tuscany, Italy

**COVID-19 India****Metrics**

Daily cumulative case counts available for India at country and state or territory level.

**NOTE:** India cumulative counts are calculated relative to the "start" date entered. To retrieve the all-time cumulative total, use a "start" date of "2020-01-01".

Metric	Description
India_ConfirmedCases	Cumulative total cases.
India_RecoveredCases	Cumulative total recoveries.
India_DeceasedCases	Cumulative total deaths.
India_TotalTested	Cumulative total individuals tested.
India_TotalTestedNegative	Cumulative total individuals tested negative.

**Data Science for COVID-19: South Korea Dataset****Metrics**

Daily cumulative case counts available for South Korea at country and province level.

Metric	Description
KCDC_ConfirmedCases	Cumulative total confirmed cases.
KCDC_ConfirmedDeaths	Cumulative total confirmed deaths.
KCDC_ConfirmedRecoveries	Cumulative total confirmed recoveries.
KCDC_ConfirmedNegativeTests	Cumulative total confirmed negative tests.
KCDC_ConfirmedTested	Cumulative total individuals tested.
KCDC_ConfirmedCases_0s	Cumulative total confirmed cases among individuals ages 0-9.
KCDC_ConfirmedCases_10s	Cumulative total confirmed cases among individuals ages 10-19.
KCDC_ConfirmedCases_20s	Cumulative total confirmed cases among individuals ages 20-29.
KCDC_ConfirmedCases_30s	Cumulative total confirmed cases among individuals ages 30-39.
KCDC_ConfirmedCases_40s	Cumulative total confirmed cases among individuals ages 40-49.
KCDC_ConfirmedCases_50s	Cumulative total confirmed cases among individuals ages 50-59.
KCDC_ConfirmedCases_60s	Cumulative total confirmed cases among individuals ages 60-69.
KCDC_ConfirmedCases_70s	Cumulative total confirmed cases among individuals ages 70-79.
KCDC_ConfirmedCases_80s	Cumulative total confirmed cases among individuals ages 80-89.
KCDC_ConfirmedDeaths_0s	Cumulative total confirmed deaths among individuals ages 0-9.
KCDC_ConfirmedDeaths_10s	Cumulative total confirmed deaths among individuals ages 10-19.
KCDC_ConfirmedDeaths_20s	Cumulative total confirmed deaths among individuals ages 20-29.
KCDC_ConfirmedDeaths_30s	Cumulative total confirmed deaths among individuals ages 30-39.
KCDC_ConfirmedDeaths_40s	Cumulative total confirmed deaths among individuals ages 40-49.
KCDC_ConfirmedDeaths_50s	Cumulative total confirmed deaths among individuals ages 50-59.
KCDC_ConfirmedDeaths_60s	Cumulative total confirmed deaths among individuals ages 60-69.
KCDC_ConfirmedDeaths_70s	Cumulative total confirmed deaths among individuals ages 70-79.
KCDC_ConfirmedDeaths_80s	Cumulative total confirmed deaths among individuals ages 80-89.
KCDC_ConfirmedCases_Male	Cumulative total confirmed cases among males.

Metric	Description
KCDC_ConfirmedCases_Female	Cumulative total confirmed cases among females.
KCDC_ConfirmedDeaths_Male	Cumulative total confirmed deaths among males.
KCDC_ConfirmedDeaths_Female	Cumulative total confirmed deaths among females.

### Corona Data Scraper: COVID-19 Coronavirus Case Data

#### Metrics

Daily counts available at a country, province, county, and city level globally.

Metric	Description
CDS_Active	Non-cumulative active cases.
CDS_Cases	Cumulative total cases.
CDS_Deaths	Cumulative total deaths.
CDS_Discharged	Cumulative total individuals discharged from hospital care.
CDS_GrowthFactor	Daily growth factor in cumulative cases, expressed as the ratio of the day's cumulative cases to the previous day's cumulative cases.
CDS_Hospitalized	Cumulative count of hospitalizations.
CDS_Hospitalized_Current	Non-cumulative active hospitalizations.
CDS_ICU	Cumulative count of admissions to intensive care units (ICUs).
CDS_ICU_Current	Non-cumulative active ICU patients.
CDS_Recovered	Cumulative total recoveries.
CDS_Tested	Cumulative total individuals tested.

### University of Washington's Institute for Health Metrics and Evaluation: COVID-19 Projections

#### Metrics

Projections of hospital resource use and COVID-19 deaths available daily at country and province level globally.

**NOTE:** Most recent projections available are from June 13, 2020.

Metric	Description
UniversityOfWashington_AdmisMean	Mean number of hospital admissions per day.
UniversityOfWashington_AdmisLower	Lower uncertainty bound of number of hospital admissions per day.
UniversityOfWashington_AdmisUpper	Upper uncertainty bound of number of hospital admissions per day.
UniversityOfWashington_AllbedMean	Mean number of COVID-19 hospital beds needed per day.
UniversityOfWashington_AllbedLower	Lower uncertainty bound of number of COVID-19 hospital beds needed per day.
UniversityOfWashington_AllbedUpper	Upper uncertainty bound of number of COVID-19 hospital beds needed per day.
UniversityOfWashington_BedoverMean	Mean BedOver, computed as (Number of COVID-19 hospital beds needed per day - Total hospital bed capacity - Average hospital bed use).
UniversityOfWashington_BedoverLower	Lower uncertainty bound of BedOver.
UniversityOfWashington_BedoverUpper	Upper uncertainty bound of BedOver.
UniversityOfWashington_IcubedMean	Mean number of COVID-19 ICU beds needed per day.
UniversityOfWashington_IcubedLower	Lower uncertainty bound of number of COVID-19 ICU beds needed per day.
UniversityOfWashington_IcubedUpper	Upper uncertainty bound of number of COVID-19 ICU beds needed per day.
UniversityOfWashington_IcuoverMean	Mean ICUOver, computed as (Number of COVID-19 ICU beds needed per day - Total ICU bed capacity - Average ICU bed use).
UniversityOfWashington_IcuoverLower	Lower uncertainty bound of ICUOver.
UniversityOfWashington_IcuoverUpper	Upper uncertainty bound of ICUOver.
UniversityOfWashington_InvvenMean	Mean number of invasive ventilation procedures needed per day.
UniversityOfWashington_InvvenLower	Lower uncertainty bound of number of invasive ventilation procedures needed per day.
UniversityOfWashington_InvvenUpper	Upper uncertainty bound of number of invasive ventilation procedures needed per day.
UniversityOfWashington_NewicuMean	Mean number of new ICU admissions per day.
UniversityOfWashington_NewicuLower	Lower uncertainty bound of new ICU admissions per day .
UniversityOfWashington_NewicuUpper	Upper uncertainty bound of new ICU admissions per day .

Metric	Description
UniversityOfWashington_DeathsMean	Mean number of COVID-19 deaths per day.
UniversityOfWashington_DeathsLower	Lower uncertainty bound of number of COVID-19 deaths per day.
UniversityOfWashington_DeathsUpper	Upper uncertainty bound of number of COVID-19 deaths per day.
UniversityOfWashington_TotdeaMean	Mean number of cumulative COVID-19 deaths .
UniversityOfWashington_TotdeaLower	Lower uncertainty bound of number of cumulative COVID-19 deaths .
UniversityOfWashington_TotdeaUpper	Upper uncertainty bound of number of cumulative COVID-19 deaths

## US Census Bureau: Demographic Estimates

### Metrics

Demographic data available annually for the United States at a country, state, and county level. The table below contains example metrics. The full list of metrics is available for download in [this Microsoft Excel document](#).

**NOTE:** Please set the `interval` field to `YEAR` and `start` field to a date no earlier than `2011-01-01` in the API request to ensure performance.

Metric	Description
TotalPopulation	Total population.
Male_Total_Population	Total male population.
Female_Total_Population	Total female population.
MaleAndFemale_Under18_Population	Total population, under age 18 (both sexes).
MaleAndFemale_AtLeast65_Population	Total population, at least age 65 (both sexes).

### Examples

- ▶ Example: Total population over time in Georgia and South Carolina

## US Census Bureau: International Census

### Metrics

Global demographic data and population projections available annually at country level. The full list of metrics is available for download in [this Microsoft Excel document](#).

Metric	Description
Female0to4_InternationalCensus	Total female population, with age from 0 to 4.
Male25to29_InternationalCensus	Total male population, with age from 25 to 29.
Female33_InternationalCensus	Total female population, with age 33.
FemaleAtLeast100_InternationalCensus	Total female population, with age at least 100.
Malefemale60_InternationalCensus	Total population of both sexes, with age 60.
Fertility15To19International	Age specific fertility rate for age 15-19 (births per 1,000 population).
CrudeBirthRateInternational	Live births during a given year, per 1,000 mid-year total population.
CrudeDeathRateInternational	Deaths during a given year, per 1,000 mid-year total population.
GrossReproductionInternational	Gross reproduction rate (lifetime female births per woman).
GrowthRateInternational	Average annual percent change in the population.
InfantMortalityInternational	Both sexes infant mortality rate (infant deaths per 1,000 population).
InfantMortalityFemaleInternational	Female infant mortality rate (infant deaths per 1,000 population).
InfantMortalityMaleInternational	Male infant mortality rate (infant deaths per 1,000 population).
LifeExpectancyInternational	Both sexes life expectancy at birth (years).
LifeExpectancyFemaleInternational	Female life expectancy at birth (years).
LifeExpectancyMaleInternational	Male life expectancy at birth (years).
MortalityRateUnder5International	Both sexes under-5 mortality rate (probability of dying between ages 0 and 5) per year.
MortalityRateUnder5InternationalFemale	Female sexes under-5 mortality rate (probability of dying between ages 0 and 5) per year.
MortalityRateUnder5InternationalMale	Male sexes under-5 mortality rate (probability of dying between ages 0 and 5) per year.
NaturalIncreaseRateInternational	Natural increase (births - deaths) per 1,000 population per year.
NetMigrationInternational	Difference between the number of migrants entering and those leaving a country in a year, per 1,000 mid-year population.
SexRatioInternational	Sex ratio at birth (male births per female birth).

**Examples**

- ▶ Example: Net migration ratio over time in Mexico and United States

**US Census Bureau: County Population by Age, Sex, Race, and Hispanic Origin****Metrics**

Population estimates of gender-specific, race-specific, and ethnicity-specific groups available for counties and states in the United States from 2010 to 2019.

To see the methodology adopted by the US Census Bureau to produce these estimates, please see their documentation [here](#).

**NOTE:** Please set the `interval` field to `YEAR` and `start` field to a date no earlier than `2011-01-01` in the API request to ensure performance.

The table below contains example metrics. The full list of metrics is available for download in [this Microsoft Excel document](#).

Metric	Description
MaleTotal_AnyEthnicity_WA_USCensus	Estimate of Male Hispanic/Not Hispanic population with any age and race: White alone.
FemaleTotal_AnyEthnicity_BA_USCensus	Estimate of Female Hispanic/Not Hispanic population with any age and race: Black or African American alone.
MaleTotal_AnyEthnicity_IA_USCensus	Estimate of Male Hispanic/Not Hispanic population with any age and race: American Indian and Alaska Native alone.
FemaleTotal_AnyEthnicity_AA_USCensus	Estimate of Female Hispanic/Not Hispanic population with any age and race: Asian alone.
MaleTotal_AnyEthnicity_NA_USCensus	Estimate of Male Hispanic/Not Hispanic population with any age and race: Native Hawaiian and Other Pacific Islander alone.
FemaleTotal_AnyEthnicity_TOM_USCensus	Estimate of Female Hispanic/Not Hispanic population with any age and race: Two or More Races.
MaleTotal_NotHispanic_AnyRace_USCensus	Estimate of Male Not Hispanic population with any age and race: Any race.

**Examples**

- ▶ Example: Total non-Hispanic Black or African American female population over time in Albany, New York

**The World Bank: Global Health Statistics****Metrics**

Demographic and economic data available annually at a country level. The table below contains example metrics. The full list of metrics is available for download in [this Microsoft Excel document](#).

Metric	Description
PopulationGrowth	Population growth (annual %).
SurvivalRateto65_Male	Survival to age 65, male (% of cohort).
TotalFertilityRate	Fertility rate, total (births per woman).
HandwashingFacilities_PercentPopulation	People with basic handwashing facilities including soap and water (% of population).
Physicians	Physicians (per 1,000 people).
HospitalBeds	Hospital beds (per 1,000 people).
OfficialExchangeRate	Official exchange rate (LCU per US\$, period average).
ConsumerPriceIndex	Consumer price index (2010 = 100).

**Bureau of Economic Analysis: GDP and Economic Profile by County****Metrics**

Annual or quarterly economic data at county- and state-level for United States, including compensation, GDP, and job data by industry. When a metric is called on a state-level location and at a monthly interval, if quarterly data is available, the metric will be evaluated based on quarterly data.

The table below contains example metrics. The full list of metrics is available for download in [this Microsoft Excel document](#). See more detail about the definitions and methods used by the BEA to produce this data in the Description column of the document.

Metric	Description
BEA_AverageEarningsPerJob_Dollars	Average earnings per job in dollars, calculated by dividing total earnings by total full-time and part-time employment.
BEA_AverageWagesAndSalaries_Dollars	Average wages and salaries in dollars, calculated by dividing wages and salaries by total wage and salary employment.
BEA_CompensationOfEmployees_ApparelManufacturing_Dollars	Employee compensation in dollars for the Apparel Manufacturing industry.
BEA_Employment_AirTransportation_Jobs	Number of jobs in the Air Transportation industry.
BEA_NominalGDP_Construction_Dollars	Nominal GDP of the Construction industry, in dollars.

Metric	Description
BEA_PersonalCurrentTransferReceipts_MedicalBenefits_Dollars	Personal current transfer receipts for medical benefits, in dollars. This value consists of income payments to persons for which no current services are performed and net insurance settlements.
BEA_PersonalIncome_Dollars	Personal income in dollars.
BEA_RealGDP_EducationalServices_2012Dollars	Real GDP of the Education Services industry, measured in 2012 dollars.
BEA_TotalEmployment_Jobs	Total number of employment.

**Examples**

- ▶ Example 1: Real annual GDP of the food service industry and the finance & insurance industry in Alameda county, California from 2000 to 2019
- ▶ Example 2: Quarterly data on total wages & salaries and total Social Security benefit receipts in Illinois from 2010 to 2019

**US Bureau of Labor Statistics: County Unemployment Statistics****Metrics**

Monthly labor statistics available at county, state, and national level for the United States. See more detail about the definition of unemployment and labor force [here](#).

Metric	Description
BLS_LaborForcePopulation	Population of the labor force.
BLS_EmployedPopulation	Civilian noninstitutional population aged 16 years and over that is employed.
BLS_UnemployedPopulation	Number of civilians aged 16 years or older who: had no employment during the reference week, were available for work, except for temporary illness, and had made specific efforts to find employment sometime during the 4-week period ending with the reference week.
BLS_UnemploymentRate	Unemployed population divided by labor force population, in percent.

**Examples**

- ▶ Example 1: Unemployment rate for Austin, Texas from January, 2019 to May, 2020
- ▶ Example 2: Unemployed population and labor force population for California from January, 2019 to May, 2020

**Opportunity Insights: Economic Tracker****Metrics**

This dataset provides the following high-frequency economic data for United States locations:

- Daily (Jan 25, 2020 - July 6, 2020) and weekly (July, 2020 - present) consumer spending data from Affinity Solutions available at city, county, state, and national level
- Weekly job posting data from Burning Glass available at city, state, and national level
- Weekly unemployment insurance claim data from the Department of Labor (national and state-level) and individual state agencies (county-level)
- Weekly employment levels from Paychex, Earnin, and Intuit at city, county, state, and national level
- Daily small business openings and revenue data from Womply available at city, county, state, and national level until August 9, 2020
- Daily earning and employment data for low income workers in all businesses and small businesses from Earnin and Homebase available at city, county, state, and national level until May 30, 2020

The table below contains example metrics. Note that some metrics are only available up to several weeks or months before the current date, depending on availability in the source dataset. The full list of metrics, their descriptions, and their availability at different location levels is available for download in [this Microsoft Excel document](#).

See more detail about the source and definition of these economic indicators [here](#).

Metric	Description
OIET_Affinity_SpendAcf	Seasonally adjusted credit/debit card spending relative to January 4-31, 2020 in accomodation and food service (ACF) MCCs, 7 day moving average, 7 day moving average.
OIET_BurningGlass_BgPosts	Average level of job postings relative to January 4-31, 2020.
OIET_BurningGlass_BgPostsSs30	Average level of job postings relative to January 4-31, 2020 in manufacturing (NAICS supersector 30).
OIET_UIClaims_InitialClaims	Count of newly requested claims to begin a period of unemployment insurance eligibility.
OIET_UIClaims_InitialClaimsRate	Initial claims per 100 people in the 2019 labor force.
OIET_Employment_All	Employment level relative to Jan 4-31, 2020 for all workers.
OIET_Employment_IncLow	Employment level relative to Jan 4-31, 2020 for workers in the bottom quartile of the income distribution (incomes approximately under \$27,000).
OIET_Employment_ss60	Employment level relative to Jan 4-31, 2020 for workers in professional and business services (NAICS supersector 60).
OIET_Employment_ss70	Employment level relative to Jan 4-31, 2020 for workers in leisure and hospitality (NAICS supersector 70).
OIET_WomplyRevenue_RevenueAll	Percent change in net revenue for small businesses, calculated as a seven-day moving average, seasonally adjusted, and indexed to January 4-31 2020.
OIET_WomplyMerchants_MerchantsAll	Percent change in number of small businesses open calculated as a seven-day moving average seasonally adjusted and indexed to January 4-31 2020.

**Examples**

- ▶ Example: Trend of consumer spending in healthcare overlaid with the trend of low-income group earnings in the Health Care and Social Assistance sector in California from January, 2020 to May, 2020

## Realtor.com: Housing Indicators

### Metrics

Monthly residential housing inventory and listing statistics for US counties and states.

The table below contains example metrics. The full list of metrics is available for download in [this Microsoft Excel document](#).

See more detail about the definition of inventory indicators [here](#).

Metric	Description
Realtor_AvgMedianListingPrice	Average of the monthly median listing price within the specified geography.
Realtor_AvgMedianListingPricePerSquareFeet	Average of the monthly median listing price per square foot within the specified geography.
Realtor_ActiveListingCount	Number of active listings within the specified geography.
Realtor_NewListingCount	Number of new listings added to the market within the specified geography.
Realtor_PriceIncreasedCount	Number of listings which have had their price increased within the specified geography.
Realtor_PriceReducedCount	Number of listings which have had their price reduced within the specified geography.
Realtor_PendingListingCount	Number of pending listings within the specified geography during the specified month, if a pending definition is available for that geography.
Realtor_TotalListingCount	Total number of both active listings and pending listings within the specified geography. Only available at county level.
Realtor_AvgMedianDaysOnMarket	Average of the monthly median number of days property listings spend on the market within the specified geography.
Realtor_AvgMedianSquareFeet	Average of the monthly median listing square feet within the specified geography.
Realtor_AvgPendingRatio	Average of the monthly ratio of the pending listing count to the active listing count within the specified geography. Only available at county level.
Realtor_AverageListingPrice	Average listing price within the specified geography.
Realtor_AvgPercentChangeMedianListingPriceMm	Average percentage change in the median listing price from the previous month.
Realtor_AvgPercentChangeMedianListingPriceYy	Average percentage change in the median listing price from the same month in the previous year.

### Examples

- ▶ Example: Number of real-estate listings with price increases and decreases in Arizona from January, 2019 to May, 2020

## Apple: COVID-19 Mobility Trends

### Metrics

Mobility data available daily at a country, province, and city level globally. See more detail about the collection of mobility data and definition of mobility index [here](#).

Metric	Description
Apple_DrivingMobility	Normalized driving routing requests, where 100 indicates number of requests on January 13, 2020.
Apple_WalkingMobility	Normalized walking routing requests, where 100 indicates number of requests on January 13, 2020.
Apple_TransitMobility	Normalized transit routing requests, where 100 indicates number of requests on January 13, 2020.

### Examples

- ▶ Example: Walking, driving, parks, and residential mobility trends for Washington, DC, United States in March, 2020

## Google: COVID-19 Community Mobility Reports

### Metrics

Mobility data available daily at a country, province, and city level globally. The value for each day is normalized by day of the week, where 100 indicates the median value for that day of the week from January 3, 2020 through February 6, 2020.

See more detail about the collection of mobility data and definition of mobility index [here](#).

Metric	Description
Google_GroceryMobility	Normalized mobility trends for places including grocery markets, food warehouses, farmers markets, specialty food shops, drug stores, and pharmacies.
Google_ParksMobility	Normalized mobility trends for places including local parks, national parks, public beaches, marinas, dog parks, plazas, and public gardens.
Google_TransitStationsMobility	Normalized mobility trends for places including public transit hubs, subway stations, bus stations, and train stations.
Google_RetailMobility	Normalized mobility trends for places including restaurants, cafes, shopping centers, theme parks, museums, libraries, and movie theaters.

Metric	Description
Google_ResidentialMobility	Normalized mobility trends for residences.
Google_WorkplacesMobility	Normalized mobility trends for workplaces.

## PlaceIQ Exposure Indices

### Metrics

Device count and device exposure index (DEX) data available daily at the county and state level in the United States.

The device exposure index (DEX) of a state or county location refers to the average number of distinct devices that visited any of the commercial venues that a particular smartphone at this location visited on a given day.

Device counts and DEX of a particular demographic group (based on education, income, or ethnicity) is computed by inferring the user's permanent block of residence and using 2014-2018 ACS statistics of the neighborhood. Education level (1-4) is classified based on which quartile the neighborhood's college share resides. Income level (1-4) is classified based on which quartile the neighborhood's income resides.

See more detailed description of the methodology and index definition [here](#).

The full list of metrics is available for download in [this Microsoft Excel document](#).

Metric	Description
PlaceIQ_DeviceCount	Number of devices residing in a location.
PlaceIQ_DeviceExposure	Device exposure index (DEX): average number of distinct devices that also visited any of the commercial venues that a particular device visited.
PlaceIQ_DeviceCount_Adjusted	Number of devices at this location, adjusted to counteract sample bias caused by shelter-in-place.
PlaceIQ_DeviceExposure_Adjusted	Device exposure index (DEX), adjusted to counteract sample bias caused by shelter-in-place.
PlaceIQ_DeviceCount_Education1	Device count for lowest education group, of four (4).
PlaceIQ_DeviceExposure_Education1	DEX for lowest education group, of four (4).
PlaceIQ_DeviceCount_Education1_Adjusted	Adjusted device count for lowest education group, of four (4).
PlaceIQ_DeviceExposure_Education1_Adjusted	Adjusted DEX for lowest education group, of four (4).
PlaceIQ_DeviceCount_Income2	Device count for second-lowest income group, of four (4).
PlaceIQ_DeviceExposure_RaceAsian	DEX for Asian ethnic group.
PlaceIQ_DeviceCount_RaceBlack_Adjusted	Adjusted device count for Black ethnic group.
PlaceIQ_DeviceExposure_RaceWhite_Adjusted	Adjusted DEX for White ethnic group.

### Examples

- ▶ Example: Device Exposure (adjusted) for Santa Clara county, California

## University of Oxford: Coronavirus Government Response Tracker

### Metrics

Policy indices are aggregates of individual policy indicators (see more detail in [PolicyDetail](#)) and show the level of government response along a certain policy dimension. For example, the Containment and Health index is an average of all policy values of C- and H-type policies for a location on a given day.

The full list of metrics is available for download in [this Microsoft Excel document](#).

See more detailed description of policy types and indices [here](#).

Metric	Description
OxCGRT_Policy_C1_Flag	Flag value (whether the policy is targets at a specific region or applies to the whole country) of C1 policy.
OxCGRT_Policy_C1_SchoolClosing	C1 policy index: level of the governments response along C1 policy dimension.
OxCGRT_Policy_C8_InternationalTravelControls	C8 policy index: level of the governments response along C8 policy dimension.
OxCGRT_Policy_E1_IncomeSupport	E1 policy index: level of the governments response along E1 policy dimension.
OxCGRT_Policy_ConfirmedCases	Confirmed case count.
OxCGRT_Policy_ConfirmedDeaths	Confirmed death count.
OxCGRT_Policy_StringencyIndex	Level of the governments response along stringency dimension (all C indicators and H1).
OxCGRT_Policy_StringencyIndexForDisplay	Stringency index with extrapolation and smoothing.
OxCGRT_Policy_StringencyLegacyIndex	Legacy index value of government response stringency.
OxCGRT_Policy_StringencyLegacyIndexForDisplay	Legacy stringency index with extrapolation and smoothing.

Metric	Description
OxCGRT_Policy_GovernmentResponseIndex	Level of overall governments response, taking account of all indicators.
OxCGRT_Policy_GovernmentResponseIndexForDisplay	Government response index with extrapolation and smoothing.
OxCGRT_Policy_ContainmentHealthIndex	Level of the governments response along containment and health dimension (all C and H indicators).
OxCGRT_Policy_ContainmentHealthIndexForDisplay	Containment and health index with extrapolation and smoothing.
OxCGRT_Policy_EconomicSupportIndex	Level of the governments response along economic support dimension (all E indicators).
OxCGRT_Policy_EconomicSupportIndexForDisplay	Economic support index with extrapolation and smoothing.

### Examples

- ▶ Example: Level of government response in Containment and Health over time in the United States and Canada

## IBM: Weather Company Data

### Metrics

Metric	Description
AverageDailyTemperature	Average daily temperature in Fahrenheit.
AverageDewPoint	Average dew point temperature in Fahrenheit.
AverageRelativeHumidity	Average relative humidity in percentage.
AverageSurfaceAirPressure	Surface air pressure in inches of mercury.
AveragePrecipitation	Average hourly precipitation in inches.
AverageWindSpeed	Average wind speed in miles per hour.
AverageWindDirection	Average wind direction in degrees (1-360).
AverageHorizontalVisibility	Horizontal visibility at the observation point in miles.
AverageWindGustSpeed	Average wind gust speed in miles per hour.
AverageSnow	Average hourly snowfall in inches.
AveragePrecipitationTotal	Precipitation amount in the last 24 hours in inches.
AveragePressureTendency	Change in the barometric pressure reading over the last hour: <span style="color:red">0</span> = Steady, <span style="color:orange">1</span> = Rising or Rapidly Rising, <span style="color:red">2</span> = Falling or Rapidly Falling

### Examples

- ▶ Example: Daily temperature in Santa Clara, California in May, 2020

### HEADER PARAMETERS

Content-Type <span style="color:red">required</span>	string Set this to application/json.
Accept <span style="color:red">required</span>	string Set this to application/json.

### REQUEST BODY SCHEMA: application/json

→ spec ↴	object Container of time series evaluation attributes
ids	Array of strings Unique identifiers (IDs) for the sources to evaluate. Either IDs or a filter is required for evaluating a metric. For example, ["Hubei_China", "NewYork_US"].
expressions	Array of strings The expressions to evaluate. For example: ["JHU_ConfirmedCases", "JHU_ConfirmedDeaths", "JHU_ConfirmedRecoveries"].
interval	string Interval of the data to be returned. For example: 'DAY'.
start	string Start datetime of the time range. For example: '2020-03-01'.
end	string End datetime of the time range. For example: '2020-03-30'. IMPORTANT: This <code>end</code> date field acts as an open interval. That is, if <code>end</code> is set to "2020-04-04", then only the data upto and including April 3rd is returned. If you need the data for April 4th, then you must set <code>end</code> date to "2020-04-05".

### Responses

✓ 200 OK. The request has succeeded.

RESPONSE SCHEMA: application/json

→ `result` → object  
Returned object containing time series data.

→ `id` → object  
Container of time series evaluation attributes.

→ `expression` → object

- `type` → string  
Name of the metric.
- `count` → integer  
Number of data elements in the returned array.
- `dates` → Array of strings  
Array of timestamps corresponding to the returned time series data.
- `start` → string  
Timestamp indicating the start of the returned time series data.
- `end` → string  
Timestamp indicating the end of the returned time series data.
- `data` → Array of numbers  
Array of time series data indicating the value of the metric at each timestamp in `dates`.
- `missing` → Array of integers  
Array of values indicating the percentage of data that is missing for each timestamp in `dates`. A value of 100 indicates that no data were present for the corresponding timestamp, and a value of 0 indicates that data were fully present for the corresponding timestamp.
- `interval` → string  
Interval of the data to be returned. Same as it is in the request. For example: "DAY".
- `timezone` → string  
Time zone where the returned time series data was originally recorded.

POST /api/1/outbreaklocation/evalmetrics



## Request samples

## Payload

Content type  
application/json

```
{
  - "spec": {
    + "ids": [ ... ],
    + "expressions": [ ... ],
    "interval": "string",
    "start": "string",
    "end": "string"
  }
}
```

[Copy](#) [Expand all](#) [Collapse all](#)

## Response samples

## 200

Content type  
application/json

```
{
  - "result": {
    + "id": { ... }
  }
}
```

[Copy](#) [Expand all](#) [Collapse all](#)

}

## GetProjectionHistory

This API returns a collection of time series, where each time series represents projections for a specific metric made at a specific point in time. GetProjectionHistory allows the comparison of different versions of these projections over time.

The following tables show the available time series metrics from each data source that can be evaluated using GetProjectionHistory. Use the expressions from the **Metric** column in the `metric` field of the request JSON of the `getprojectionhistory` API. For example, `{"metric": "UniversityOfWashington_AdmisMean_Hist"}`.

### University of Washington's Institute for Health Metrics and Evaluation: COVID-19 Projections

#### Metrics

Projections of hospital resource use and COVID-19 deaths available daily at country and province level globally.

**NOTE:** Most recent projections available are from June 13, 2020.

Metric	Description
UniversityOfWashington_AdmisMean_Hist	Mean number of hospital admissions per day
UniversityOfWashington_AdmisLower_Hist	Lower uncertainty bound of number of hospital admissions per day
UniversityOfWashington_AdmisUpper_Hist	Upper uncertainty bound of number of hospital admissions per day
UniversityOfWashington_AllbedMean_Hist	Mean number of COVID-19 hospital beds needed per day
UniversityOfWashington_AllbedLower_Hist	Lower uncertainty bound of number of COVID-19 hospital beds needed per day
UniversityOfWashington_AllbedUpper_Hist	Upper uncertainty bound of number of COVID-19 hospital beds needed per day
UniversityOfWashington_BedoverMean_Hist	Mean BedOver, computed as (Number of COVID-19 hospital beds needed per day - Total hospital bed capacity - Average hospital bed use)
UniversityOfWashington_BedoverLower_Hist	Lower uncertainty bound of BedOver
UniversityOfWashington_BedoverUpper_Hist	Upper uncertainty bound of BedOver
UniversityOfWashington_IcubedMean_Hist	Mean number of COVID-19 ICU beds needed per day
UniversityOfWashington_IcubedLower_Hist	Lower uncertainty bound of number of COVID-19 ICU beds needed per day
UniversityOfWashington_IcubedUpper_Hist	Upper uncertainty bound of number of COVID-19 ICU beds needed per day
UniversityOfWashington_IcuoverMean_Hist	Mean ICUOver, computed as (Number of COVID-19 ICU beds needed per day - Total ICU bed capacity - Average ICU bed use)
UniversityOfWashington_IcuoverLower_Hist	Lower uncertainty bound of ICUOver
UniversityOfWashington_IcuoverUpper_Hist	Upper uncertainty bound of ICUOver
UniversityOfWashington_InvvenMean_Hist	Mean number of invasive ventilation procedures needed per day
UniversityOfWashington_InvvenLower_Hist	Lower uncertainty bound of number of invasive ventilation procedures needed per day
UniversityOfWashington_InvvenUpper_Hist	Upper uncertainty bound of number of invasive ventilation procedures needed per day
UniversityOfWashington_NewicuMean_Hist	Mean number of new ICU admissions per day
UniversityOfWashington_NewicuLower_Hist	Lower uncertainty bound of new ICU admissions per day
UniversityOfWashington_NewicuUpper_Hist	Upper uncertainty bound of new ICU admissions per day
UniversityOfWashington_DeathsMean_Hist	Mean number of COVID-19 deaths per day
UniversityOfWashington_DeathsLower_Hist	Lower uncertainty bound of number of COVID-19 deaths per day
UniversityOfWashington_DeathsUpper_Hist	Upper uncertainty bound of number of COVID-19 deaths per day
UniversityOfWashington_TotdeaMean_Hist	Mean number of cumulative COVID-19 deaths
UniversityOfWashington_TotdeaLower_Hist	Lower uncertainty bound of number of cumulative COVID-19 deaths
UniversityOfWashington_TotdeaUpper_Hist	Upper uncertainty bound of number of cumulative COVID-19 deaths

#### Examples (Click on the arrows to expand)

The following examples show how to use the GetProjectionHistory API.

- Example 1: Retrieve projections made between April 13 and May 1 of mean total cumulative deaths in Spain from April 13 to May 13
- Example 2: Retrieve projections made between March 23 and April 2 of the upper bound of ICU beds needed over capacity in New York from March 23 to April 15

#### HEADER PARAMETERS

Content-Type <b>required</b>	string Set this to application/json.
Accept <b>required</b>	string Set this to application/json.
REQUEST BODY SCHEMA: application/json	
outbreakLocation	string Unique ID of the OutbreakLocation for which the metric should be evaluated, e.g. "California_UnitedStates"
metric	string Metric to be evaluated, e.g. "UniversityOfWashington_AdmisLower_Hist"
metricStart	string Start datetime over which the metric should be evaluated. E.g. '2020-04-01' indicates that you want to view the value of the metric beginning at '2020-04-01'.
metricEnd	string End datetime over which the metric should be evaluated. E.g. '2020-04-30' indicates that you want to view the value of the metric ending at '2020-04-30'.
observationPeriodStart	string Start datetime for which projection metrics to view. E.g. '2020-04-01' indicates that you want to view projections calculated after '2020-04-01'.
observationPeriodEnd	string (Optional) End datetime for which projection metrics to view. E.g. '2020-04-30' indicates that you want to view projections calculated before '2020-04-30'.

## Responses

✓ 200 OK. The request has succeeded.

RESPONSE SCHEMA: application/json

→ id ✓	object
→ type	string map<string, any>

POST /api/1/outbreaklocation/getprojectionhistory

## Request samples

Payload

Content type  
application/json

```
{
  "outbreakLocation": "string",
  "metric": "string",
  "metricStart": "string",
  "metricEnd": "string",
  "observationPeriodStart": "string",
  "observationPeriodEnd": "string"
}
```

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## Response samples

200

Content type  
application/json

```
{
```

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```

- "id": {
    "type": "string",
    + "value": { ... }
}

```

## LocationExposure

LocationExposure stores information based on the movement of people's mobile devices across locations over time. It stores the following:

- Location exposure index (LEX) for a pair of locations (`locationTarget`, `locationVisited`): the fraction of mobile devices that pinged in `locationTarget` on a date that also pinged in `locationVisited` at least once during the previous 14 days. The pair (`locationTarget`, `locationVisited`) can be two county locations or two state locations.
- Device count: the number of distinct mobile devices that pinged at `locationTarget` on the date.

See more detailed description of the methodology and index definition [here](#).

### GetLocationExposures

This API returns:

- `LocationExposure` objects in JSON format, each of which represents a LEX data point for a pair of locations on a given day;
- Daily device counts of the `locationTarget` field specified in the parameter.

To retrieve LEX values at the state level, all fields are optional. To retrieve LEX values at the county level, the `locationTarget` and `locationVisited` fields are required.

#### Examples (Click on the arrows to expand)

The following examples show how to use this API.

- Example 1: Get location exposure indices between San Francisco County, California and Clark County, Nevada and device counts for San Francisco County, California.
- Example 2: Get location exposure indices between California and all other states for a single date.

#### HEADER PARAMETERS

<code>Content-Type</code>	string required	Set this to application/json.
<code>Accept</code>	string required	Set this to application/json.

#### REQUEST BODY SCHEMA: application/json

<code>spec</code>	object
<code>locationTarget</code>	string ID of the OutbreakLocation for <code>locationTarget</code> , where mobile devices in question were present on the date (optional for state level). For example: <code>California_UnitedStates</code>
<code>locationVisited</code>	string ID of the OutbreakLocation for <code>locationVisited</code> , where mobile devices visited in the past 14 days (optional for state level).
<code>start</code>	string Start datetime of the time range. For example: '2020-03-01' (optional).
<code>end</code>	string End datetime of the time range. For example: '2020-03-30' (optional).

#### Responses

##### ✓ 200 OK. The request has succeeded.

<code>RESPONSE SCHEMA: application/json</code>	
<code>result</code>	object Returned object containing LEX and device counts.

<code>deviceCounts &gt;</code>	Array of objects (DeviceCounts) An array of DeviceCount objects representing the number of distinct devices that pinged at <code>locationTarget</code> on a particular day.
<code>locationExposures &gt;</code>	Array of objects (LocationExposures) An array of LocationExposure objects that each represents the fraction of devices which pinged in <code>locationTarget</code> on a certain day that also pinged in <code>locationVisited</code> at least once in the previous 14 days.

POST /api/1/locationexposure/getlocationexposures
▼

**Request samples**

Payload

Content type  
application/json

```
{
  - "spec": {
    "locationTarget": "string",
    "locationVisited": "string",
    "start": "string",
    "end": "string"
  }
}
```

[Copy](#) [Expand all](#) [Collapse all](#)

**Response samples**

200

Content type  
application/json

```
{
  - "result": {
    + "deviceCounts": [ ... ],
    + "locationExposures": [ ... ]
  }
}
```

[Copy](#) [Expand all](#) [Collapse all](#)

## PopulationData

PopulationData stores historical population measurements and estimates by age and gender for countries (using World Bank data and US Census Bureau: International Census), US counties and states (using US Census Bureau data). It also includes country-level population projections from US Census Bureau: International Census.

### Fetch

#### Fields

**NOTE:** If the field is not present in a returned object, then that field will not be returned.

Field	Data type	Description
-------	-----------	-------------

Field	Data type	Description
parent	OutbreakLocation	C3.ai Type OutbreakLocation affiliated with this population value.
year	int	Year population estimate was taken, between 2010-2019 for US Census data, and between 1960-2018 for World Bank data.
populationAge	string	Age range for the population estimate. Allowed values: <code>Total</code> , <code>Median</code> , <code>&lt;5</code> , <code>5 - 9</code> , <code>5 - 13</code> , <code>10 - 14</code> , <code>14 - 17</code> , <code>15 - 19</code> , <code>15 - 44</code> , <code>18 - 24</code> , <code>18 - 64</code> , <code>20 - 24</code> , <code>25 - 29</code> , <code>25 - 44</code> , <code>30 - 34</code> , <code>35 - 39</code> , <code>40 - 44</code> , <code>45 - 49</code> , <code>45 - 64</code> , <code>50 - 54</code> , <code>55 - 59</code> , <code>60 - 64</code> , <code>65 - 69</code> , <code>70 - 74</code> , <code>75 - 79</code> , <code>80 - 84</code> , <code>&gt;=16</code> , <code>&gt;=18</code> , <code>&gt;=65</code> , <code>&gt;=85</code> . Also allowed for US Census Bureau: International Census: <code>0</code> , <code>1</code> , <code>2</code> , ..., <code>100</code> .
gender	string	Gender of the population estimate. Allowed values: <code>Male/Female</code> , <code>Male</code> , <code>Female</code> .
race	string	Race characteristic of the population estimate. Allowed values: <code>White alone</code> , <code>Black or African American alone</code> , <code>American Indian and Alaska Native alone</code> , <code>Asian alone</code> , <code>Native Hawaiian and Other Pacific Islander alone</code> , <code>Two or More Races</code> , <code>White alone or in combination</code> , <code>Black or African American alone or in combination</code> , <code>American Indian and Alaska Native alone or in combination</code> , <code>Asian alone or in combination</code> , <code>Native Hawaiian and Other Pacific Islander alone or in combination</code> , <code>Any race</code> .
ethnicity	string	Ethnicity characteristic of the population estimate. Allowed values: <code>Hispanic</code> , <code>Not Hispanic</code> , <code>Hispanic/Not Hispanic</code> .
estimate	boolean	True if the population value is an estimate based on the American Housing Survey, false otherwise.
median	boolean	True if the value is the median age of all individuals in the location, false if the value is a population count.
value	double	Population count, or median age if <code>median</code> is <code>true</code> .
minAge	int	Lower limit of the population age range.
maxAge	int	Upper limit of the population age range.
origin	string	The source of the population data. Allowed values: <code>International Census Bureau</code> , <code>United States Census</code> , <code>World Bank</code>

### Examples (Click on the arrows to expand)

The following examples show how to use this API.

- ▶ Example 1: Fetch the number of seniors and total population using the 2010 US Census
- ▶ Example 2: Fetch the projected Canadian female population in the age group 75-79 in 2040 from US Census Bureau: International Census.

#### HEADER PARAMETERS

Content-Type required	string Set this to application/json.
Accept required	string Set this to application/json.

#### REQUEST BODY SCHEMA: application/json

→ spec ▾	object Container of query evaluation attributes
filter	string Filter expression for which Obj instances to return. For example: <code>"filter": "id == "Afghanistan" &amp;&amp; age == 45"</code> . Filter expressions must evaluate to a value type of boolean. They support basic comparison operators (e.g. ==, <, <=, >, >=, !=), arithmetic operators (e.g. +, -, /), &&,    and most non-time series functions supported by the expression engine."
include	string Specifies which fields to bring back values for in the returned objects. A list of fields. For example: <code>"include": "productType, description, origin, links.url"</code> .
limit	integer Maximum number of rows that should be returned, starting from offset.
offset	integer <int32> (The Offset Schema) Number of rows to skip.

#### Responses

✓ 200 OK. The request has succeeded.

#### RESPONSE SCHEMA: application/json

```

  |- objs >
    object
    Container of query evaluation attributes

  |- count
    integer <int32> (The Count Schema)
    Number of rows returned.

  |- hasMore
    boolean (The Hasmore Schema)
    If set to true there were more objs that were not returned.

```

**POST** /api/1/populationdata/fetch

### Request samples

#### Payload

Content type  
application/json

```
{
  - "spec": {
    "filter": "string",
    "include": "string",
    "limit": 0,
    "offset": 0
  }
}
```

[Copy](#) [Expand all](#) [Collapse all](#)

### Response samples

#### 200

Content type  
application/json

```
{
  - "objs": {
    "type": "string",
    "location": { },
    "name": "string",
    "id": "string",
    "version": "string",
    "meta": { },
    "typeIdent": "string"
  },
  "count": 0,
  "hasMore": true
}
```

[Copy](#) [Expand all](#) [Collapse all](#)

## LaborDetail

LaborDetail stores historical monthly labor force and employment data for the US counties and states from US Bureau of Labor Statistics.

### Fetch

#### Fields

**NOTE:** If the field is not present in a returned object, then that field will not be returned.

Field	Data type	Description
parent	OutbreakLocation	C3.ai Type OutbreakLocation affiliated with this employment statistic.
year	int	Year the labor statistics was taken, between 2000 to 2020.
month	int	Month the labor statistics was taken.
laborForce	int	Civilian labor force population.
employedPopulation	int	Civilian noninstitutional population aged 16 years and over that is employed.
unemployedPopulation	int	Number of civilians aged 16 years or older who: had no employment during the reference week, were available for work, except for temporary illness, and had made specific efforts to find employment sometime during the 4-week period ending with the reference week.
unemploymentRate	double	Unemployed population divided by labor force population, in percent.
origin	string	The source of the labor data. Allowed values: <a href="#">BLS</a> .

**Examples (Click on the arrows to expand)**

The following example shows how to use this API.

- ▶ Example: Fetch the unemployment rates of counties in California in March, 2020

## HEADER PARAMETERS

Content-Type <span style="color:red;">required</span>	string Set this to application/json.
Accept <span style="color:red;">required</span>	string Set this to application/json.

## REQUEST BODY SCHEMA: application/json

→ spec	object Container of query evaluation attributes
filter	string Filter expression for which Obj instances to return. For example: <code>"filter": "id == "Afghanistan" &amp;&amp; age == 45"</code> . Filter expressions must evaluate to a value type of boolean. They support basic comparison operators (e.g. ==, <, <=, >, >=, !=), arithmetic operators (e.g. +, -, /, /&,   ) and most non-time series functions supported by the expression engine.*
include	string Specifies which fields to bring back values for in the returned objects. A list of fields. For example: <code>"include": "productType, description, origin, links.url"</code> .
limit	integer Maximum number of rows that should be returned, starting from offset.
offset	integer <int32> (The Offset Schema) Number of rows to skip.

## Responses

✓ 200 OK. The request has succeeded.

## RESPONSE SCHEMA: application/json

→ objs	object Container of query evaluation attributes
→ count	integer <int32> (The Count Schema) Number of rows returned.
→ hasMore	boolean (The Hasmore Schema) If set to true there were more objs that were not returned.

POST /api/1/labordetail/fetch

## Request samples

Payload

Content type  
application/json

```
{
  - "spec": {
    "filter": "string",
    "include": "string",
    "limit": 0,
    "offset": 0
  }
}
```

[Copy](#) [Expand all](#) [Collapse all](#)

## Response samples

200

Content type  
application/json

```
{
  - "objs": {
    "type": "string",
    "location": { },
    "name": "string",
    "id": "string",
    "version": "string",
    "meta": { },
    "typeIdent": "string"
  },
  "count": 0,
  "hasMore": true
}
```

[Copy](#) [Expand all](#) [Collapse all](#)

## LineListRecord

LineListRecord stores individual-level crowdsourced information from laboratory-confirmed COVID-19 patients. Information includes gender, age, symptoms, travel history, location, reported onset, confirmation dates, and discharge status.

**NOTE:** LineListRecord data are available through April 30, 2020.

## Fetch

### Fields

**NOTE:** If the field is not present in a returned object, then that field will not be returned.

Field	Data type	Description
location	OutbreakLocation	C3.ai Type OutbreakLocation.
locationType	string	Specific location where the individual was assessed. For example: Yokohama Port, National Centre for Infectious Diseases.
isGroundZero	boolean	Is the patient located in Wuhan? Allowed values: <code>true</code> , <code>false</code> .
livesInGroundZero	boolean	Does the patient live in Wuhan? Allowed values: <code>true</code> , <code>false</code> .
traveledToGroundZero	boolean	Did the patient travel to Wuhan? Allowed values: <code>true</code> , <code>false</code> .
relevantTravelHistoryLocation	string	Details of patient travel history including locations travelled.
recordSource	string	Public source from which this patient information collected.

Field	Data type	Description
gender	string	Gender of the patient. Allowed values: <code>male</code> , <code>female</code> , <code>other</code> .
age	int	Age of the patient.
ageRange	string	Age range, if age is provided as age range.
groundZeroExposure	string	Description regarding whether the individual had exposure to the Wuhan marketplace.
chronicDisease	string	Medical history of chronic disease symptoms.
symptomStartDate	datetime	Date COVID-19 symptoms appeared.
exposureStartDate	datetime	Date COVID-19 exposure started.
exposureEndDate	datetime	Date COVID-19 exposure ended.
caseConfirmationDate	datetime	Date the case was confirmed.
symptoms	string	Description of the symptoms.
caseConfirmationDate	datetime	Date of the confirmation of the case.
caseInCountry	int	Ordinal number indicating whether this case is, e.g., 20th or 32nd, in that country.
hospitalAdmissionDate	datetime	Date admitted to hospital.
relevantTravelHistoryDates	string	Dates when the patient travelled in recent past.
outcome	string	Outcome of the treatment. Allowed values: <code>stable</code> , <code>discharge</code> , <code>death</code> , <code>""</code> (null value).
didDie	boolean	Did patient die? Allowed values: <code>true</code> , <code>false</code> .
didRecover	boolean	Did patient recover? Allowed values: <code>true</code> , <code>false</code> .
outcomeDate	datetime	Date of the outcome.
traveler	boolean	Whether the patient is a local resident or a traveler to the location.
internationalTraveler	boolean	Whether the patient is an international traveler.
domesticTraveler	boolean	Whether the patient is an domestic traveler.
notes	string	Clinical notes.
infectedBy	LineListRecord	C3.ai Type LineListRecord that represents the record of the patient who infected this patient. Available for LineListRecord data from the Data Science for COVID-19: South Korea Dataset.
contactNumber	int	The number of the patient's contacts with people. Available for LineListRecord data from the Data Science for COVID-19: South Korea Dataset.
hospitalReleaseDate	datetime	Date the patient is released from the hospital. Available for LineListRecord data from the Data Science for COVID-19: South Korea Dataset.
deceasedDate	datetime	Date of death. Available for LineListRecord data from the Data Science for COVID-19: South Korea Dataset.
infectionOrder	int	Order of infection. Possible values: <code>1</code> : patient infected in Wuhan; <code>2</code> : patient infected was from the one whose infection order is 1; <code>3</code> : patient infected was from the one whose infection order is 2.
travelHistory	PatientRoute	List of C3.ai Type PatientRoute objects associated with this patient record.
hasTravelHistory	boolean	Whether the patient has any associated PatientRoute data.
lineListSource	string	Data source for the crowdsourced line list records. Allowed values: <code>OPEN</code> (nCoV2019 Data Working Group), <code>DXY</code> (MOBS Lab).

### Examples (Click on the arrows to expand)

The following examples show how to use this API.

- ▶ Example 1: Fetch all Line List Records of males of age under 20 with travel history to Wuhan, tracked by the nCoV-2019 Data Working Group
- ▶ Example 2: Fetch first two thousand (2000) LineList records (request only)
- ▶ Example 3: Fetch the first two thousand (2000) Line List Records tracked in the nCoV-2019 Data Working Group (request only)
- ▶ Example 4: Fetch the first two thousand (2000) Line List Records tracked by MOBS Lab (request only)
- ▶ Example 5: Fetch the first two thousand (2000) male-patient Line List Records tracked by MOBS Lab (request only)
- ▶ Example 6: Python example using "offset" parameter

### HEADER PARAMETERS

Content-Type <small>required</small>	string Set this to application/json.
Accept <small>required</small>	string Set this to application/json.

### REQUEST BODY SCHEMA: application/json

spec	object Container of query evaluation attributes
------	--

include	string Filter expression for which Obj instances to return. For example: <code>"filter": "id == "Afghanistan" &amp;&amp; age == 45"</code> . Filter expressions must evaluate to a value type of boolean. They support basic comparison operators (e.g. ==, <, >, >=, !=), arithmetic operators (e.g. +, -, /), &&,    and most non-time series functions supported by the expression engine."
limit	integer Specifies which fields to bring back values for in the returned objects. A list of fields. For example: <code>"include": "productType, description, origin, links.url"</code> .
offset	integer <int32> (The Offset Schema) Maximum number of rows that should be returned, starting from offset.
	integer <int32> (The Offset Schema) Number of rows to skip.

## Responses

✓ 200 OK. The request has succeeded.

RESPONSE SCHEMA: application/json

objs	object Container of query evaluation attributes
count	integer <int32> (The Count Schema) Number of rows returned.
hasMore	boolean (The Hasmore Schema)

POST /api/1/linelistrecord/fetch

## Request samples

## Payload

Content type  
application/json

```
{
  - "spec": {
    "filter": "string",
    "include": "string",
    "limit": 0,
    "offset": 0
  }
}
```

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## Response samples

## 200

Content type  
application/json

```
{
  - "objs": {
    "type": "string",
    "location": { },
    "name": "string",
    "id": "string",
    "version": "string",
    "meta": { },
    "typeIdent": "string"
  },
  "count": 0,
  "hasMore": true
}
```

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## PatientRoute

PatientRoute records all locations (e.g. hospitals, stores, restaurants) visited by COVID-19 patients in South Korea over time.

### Fetch

#### Fields

**NOTE:** If the field is not present in a returned object, then that field will not be returned.

Field	Data type	Description
parent	LineListRecord	C3.ai Type LineListRecord representing the patient.
location	OutbreakLocation	C3.ai Type OutbreakLocation of the patient visit.
locationType	string	Type of location visited by the patient. Examples include <code>hospital</code> , <code>airport</code> , <code>bakery</code> , and <code>post_office</code> .
coordinate	LatLong	C3.ai Type LatLong representing latitude and longitude of location.
timestamp	datetime	Date when the patient visited the location.

#### Examples (Click on the arrows to expand)

The following examples show how to use this API.

- ▶ Example 1: Fetch all locations visited by monitored patients in Seoul
- ▶ Example 2: Fetch all locations visited by monitored patients in a specific coordinate range
- ▶ Example 3: Fetch all stores visited by a specific patient, along with their outcome

#### HEADER PARAMETERS

Content-Type <small>required</small>	string Set this to application/json.
Accept <small>required</small>	string Set this to application/json.

#### REQUEST BODY SCHEMA: application/json

→ spec ↴	object Container of query evaluation attributes
filter	string Filter expression for which Obj instances to return. For example: <code>"filter": "id == "Afghanistan" &amp;&amp; age == 45"</code> . Filter expressions must evaluate to a value type of boolean. They support basic comparison operators (e.g. ==, <, <=, >, >=, !=), arithmetic operators (e.g. +, -, /), &&,    and most non-time series functions supported by the expression engine.*
include	string Specifies which fields to bring back values for in the returned objects. A list of fields. For example: <code>"include": "productType, description, origin, links.url"</code> .
limit	integer Maximum number of rows that should be returned, starting from offset.
offset	integer <int32> (The Offset Schema) Number of rows to skip.

#### Responses

##### ✓ 200 OK. The request has succeeded.

RESPONSE SCHEMA: application/json
objs >
object Container of query evaluation attributes

`hasMore`

Number of rows returned.

boolean (The Hasmore Schema)  
If set to true there were more objs that were not returned.

**POST** /api/1/patientroute/fetch

### Request samples

#### Payload

Content type  
application/json

```
{
  - "spec": {
    "filter": "string",
    "include": "string",
    "limit": 0,
    "offset": 0
  }
}
```

[Copy](#) [Expand all](#) [Collapse all](#)

### Response samples

#### 200

Content type  
application/json

```
{
  - "objs": {
    "type": "string",
    "location": { },
    "name": "string",
    "id": "string",
    "version": "string",
    "meta": { },
    "typeIdent": "string"
  },
  "count": 0,
  "hasMore": true
}
```

[Copy](#) [Expand all](#) [Collapse all](#)

## BiologicalAsset

BiologicalAsset stores the metadata of the genome sequences collected from SARS-CoV-2 samples in the National Center for Biotechnology Information Virus Database. See also [Sequence](#).

### Fetch

#### Fields

**NOTE:** If the field is not present in a returned object, then that field will not be returned.

Field	Data type	Description
id	string	Genome sequence ID.
assetType	string	Biological molecule type. Allowed values: <code>protein sequence</code> , <code>nucleotide sequence</code> .
genus	string	Genus. Allowed values: <code>Betacoronavirus</code> .
family	string	Family. Allowed values: <code>Coronaviridae</code> .
species	string	The species that the BiologicalAsset relates to.
authors	string	Individuals cited as source of genome sequences.
genBankTitle	string	Sequence description in the National Center for Biotechnology Information Virus Database.
publications	string	Public source from which this patient information collected.
name	string	Name of the patient.
location	OutbreakLocation	C3.ai Type OutbreakLocation.
sequence	Sequence	C3.ai Type Sequence.
nucleotideCompleteness	string	The completeness of the BiologicalAsset, available if the asset is a nucleotide.
sequenceType	string	The type of sequence this represents. Possible values: <code>GenBank</code> and <code>RefSeq</code> .
bioSample	string	Name of the sample from which this asset is found.
host	string	The host organism from which the sample was taken. Allowed values: <code>Homo sapiens</code> .
isolationSource	string	Source from which the sample was taken. Allowed values: <code>oronasopharynx</code> , <code>blood</code> , <code>feces</code> , <code>lung</code> , <code>swab</code> , <code>lung oronasopharynx</code> .
collectionDate	datetime	Date when samples were collected.

### Examples (Click on the arrows to expand)

The following examples show how to use this API.

- ▶ Example 1: Fetch metadata for all BiologicalAsset sequences (request only)
- ▶ Example 2: Fetch metadata for all BiologicalAsset protein sequences (request only)
- ▶ Example 3: Fetch metadata for all BiologicalAsset nucleotide sequences (request only)
- ▶ Example 4: Fetch metadata for all BiologicalAsset sequences sampled from blood (request only)
- ▶ Example 5: Fetch metadata for all BiologicalAsset sequences taken in Japan and sampled from feces

#### HEADER PARAMETERS

Content-Type <span style="color:red;">required</span>	string Set this to application/json.
Accept <span style="color:red;">required</span>	string Set this to application/json.

#### REQUEST BODY SCHEMA: application/json

spec ▾	object Container of query evaluation attributes
filter	string Filter expression for which Obj instances to return. For example: <code>"filter": "id == "Afghanistan" &amp;&amp; age == 45"</code> . Filter expressions must evaluate to a value type of boolean. They support basic comparison operators (e.g. ==, <, <=, >, >=, !=), arithmetic operators (e.g. +, -, /), &&,    and most non-time series functions supported by the expression engine."
include	string Specifies which fields to bring back values for in the returned objects. A list of fields. For example: <code>"include": "productType, description, origin, links.url"</code> .
limit	integer Maximum number of rows that should be returned, starting from offset.
offset	integer <int32> (The Offset Schema) Number of rows to skip.

#### Responses

✓ 200 OK. The request has succeeded.

#### RESPONSE SCHEMA: application/json

objs ▾	object Container of query evaluation attributes
--------	--

count	integer <int32> (The Count Schema) Number of rows returned.
hasMore	boolean (The Hasmore Schema) If set to true there were more objs that were not returned.

POST /api/1/biologicalasset/fetch

### Request samples

#### Payload

Content type  
application/json

```
{
  - "spec": {
    "filter": "string",
    "include": "string",
    "limit": 0,
    "offset": 0
  }
}
```

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### Response samples

#### 200

Content type  
application/json

```
{
  - "objs": {
    "type": "string",
    "location": { },
    "name": "string",
    "id": "string",
    "version": "string",
    "meta": { },
    "typeIdent": "string"
  },
  "count": 0,
  "hasMore": true
}
```

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## Sequence

Sequence stores the genome sequences collected from SARS-CoV-2 samples in the National Center for Biotechnology Information Virus Database. See also [BiologicalAsset](#).

### Fetch

#### Fields

**NOTE:** If the field is not present in a returned object, then that field will not be returned.

Field	Data type	Description

Field	Data type	Description
id	string	Genome sequence ID.
parent	BiologicalAsset	C3.ai Type BiologicalAsset.
sequence	string	Actual genomic sequence. Should be in uppercase.
sequenceType	string	Biological molecule type. Allowed values: <code>protein</code> , <code>complete</code> , <code>partial</code> , <code>GenBank</code> .
length	int	Length of the sequence, as in <code>length(sequence)</code> .

### Examples (Click on the arrows to expand)

The following examples show how to use this API.

- ▶ Example 1: Fetch all sequences from Sequence (request only)
- ▶ Example 2: Fetch all protein sequences (request only)
- ▶ Example 3: Fetch all complete genome sequences (request only)
- ▶ Example 4: Fetch all Sequences with <= 100 Base Pairs (or Amino Acids) (request only)
- ▶ Example 5: Fetch sequence 5R7Y\_A

#### HEADER PARAMETERS

Content-Type <small>required</small>	string Set this to application/json.
Accept <small>required</small>	string Set this to application/json.

#### REQUEST BODY SCHEMA: application/json

spec ▾	object Container of query evaluation attributes
filter	string Filter expression for which Obj instances to return. For example: <code>"filter": "id == "Afghanistan" &amp;&amp; age == 45"</code> . Filter expressions must evaluate to a value type of boolean. They support basic comparison operators (e.g. ==, <, <=, >, >=, !=), arithmetic operators (e.g. +, -, /, &&,    and most non-time series functions supported by the expression engine."
include	string Specifies which fields to bring back values for in the returned objects. A list of fields. For example: <code>"include": "productType, description, origin, links.url"</code> .
limit	integer Maximum number of rows that should be returned, starting from offset.
offset	integer <int32> (The Offset Schema) Number of rows to skip.

#### Responses

✓ 200 OK. The request has succeeded.

#### RESPONSE SCHEMA: application/json

objs ▾	object Container of query evaluation attributes
count	integer <int32> (The Count Schema) Number of rows returned.
hasMore	boolean (The HasMore Schema) If set to true there were more objs that were not returned.

POST /api/1/sequence/fetch

#### Request samples

##### Payload

Content type  
application/json

Copy Expand all Collapse all

```

    - "spec": {
        "filter": "string",
        "include": "string",
        "limit": 0,
        "offset": 0
    }
}

```

## Response samples

**200**

Content type  
application/json

```

{
    - "objs": [
        "type": "string",
        "location": { },
        "name": "string",
        "id": "string",
        "version": "string",
        "meta": { },
        "typeIdent": "string"
    ],
    "count": 0,
    "hasMore": true
}

```

[Copy](#) [Expand all](#) [Collapse all](#)

## Subsequence

Subsequence stores indices of critical segments within a nucleotide or amino acid sequence, e.g., introns, exons, and proteins. Indices are 1-indexed.

### Fetch

#### Fields

**NOTE:** If the field is not present in a returned object, then that field will not be returned.

Field	Data type	Description
parent	Sequence	The Sequence this Subsequence references.
startIndex	int	The position where the value of this Subsequence begins in relation to the parent's sequence.
endIndex	int	The position where the second value of this Subsequence ends in relation to the parent's sequence.
second startIndex	int	The position where the second value of this Subsequence begins in relation to the parent's sequence, for the second subsequence. Available only if this Subsequence is a join of two substrings.
second endIndex	int	The position where the second value of this Subsequence ends in relation to the parent's sequence, for the second subsequence. Available only if this Subsequence is a join of two substrings.
value	string	The value of this Subsequence code substring. If this Subsequence is a join of two substrings, then this field is the concatenation of both substrings.

#### Examples (Click on the arrows to expand)

The following examples show how to use this API.

- ▶ Example 1: Fetch all Subsequences (request only)
- ▶ Example 2: Fetch all subsequences of genome MN975266 (request only)

#### HEADER PARAMETERS

REQUEST BODY SCHEMA: application/json

Content-Type  
required

Accept  
required

object  
Container of query evaluation attributes

filter  
string  
Filter expression for which Obj instances to return. For example: `"filter": "id == "Afghanistan" && age == 45"`. Filter expressions must evaluate to a value type of boolean. They support basic comparison operators (e.g. ==, <, <=, >, >=, !=), arithmetic operators (e.g. +, -, /), &&, || and most non-time series functions supported by the expression engine.\*

include  
string  
Specifies which fields to bring back values for in the returned objects. A list of fields. For example: `"include": "productType, description, origin, links.url"`.

limit  
integer  
Maximum number of rows that should be returned, starting from offset.

offset  
integer <int32> (The Offset Schema)  
Number of rows to skip.

## Responses

✓ 200 OK. The request has succeeded.

RESPONSE SCHEMA: application/json

object  
Container of query evaluation attributes

count  
integer <int32> (The Count Schema)  
Number of rows returned.

hasMore  
boolean (The HasMore Schema)  
If set to true there were more objs that were not returned.

POST /api/1/subsequence/fetch

## Request samples

Payload

Content type  
application/json

```
{
  "spec": {
    "filter": "string",
    "include": "string",
    "limit": 0,
    "offset": 0
  }
}
```

[Copy](#) [Expand all](#) [Collapse all](#)

## Response samples

200

Content type  
application/json

```
{
```

[Copy](#) [Expand all](#) [Collapse all](#)

```

- "objs": {
    "type": "string",
    "location": { },
    "name": "string",
    "id": "string",
    "version": "string",
    "meta": { },
    "typeIdent": "string"
},
"count": 0,
"hasMore": true
}

```

## AminoAcidLookup

AminoAcidLookup contains the lookup table to map the IUPAC Amino Acid Codes to their full names and abbreviations.

### Fetch

#### Fields

**NOTE:** If the field is not present in a returned object, then that field will not be returned.

Field	Data type	Description
id	string	The IUPAC Code.
name	string	Full name of the amino acid.
abbreviation	string	Three-letter abbreviation of the amino acid.

#### Example (Click on the arrow to expand)

The following example shows how to use this API.

##### ► Fetch all AminoAcids

###### HEADER PARAMETERS

Content-Type required	string Set this to application/json.
Accept required	string Set this to application/json.

###### REQUEST BODY SCHEMA: application/json

spec	object Container of query evaluation attributes
filter	string Filter expression for which Obj instances to return. For example: <code>"filter": "id == "Afghanistan" &amp;&amp; age == 45"</code> . Filter expressions must evaluate to a value type of boolean. They support basic comparison operators (e.g. ==, <, <=, >, >=, !=), arithmetic operators (e.g. +, -, /, &&,   ) and most non-time series functions supported by the expression engine.*
include	string Specifies which fields to bring back values for in the returned objects. A list of fields. For example: <code>"include": "productType, description, origin, links.url"</code> .
limit	integer Maximum number of rows that should be returned, starting from offset.
offset	integer <int32> (The Offset Schema) Number of rows to skip.

### Responses

✓ 200 OK. The request has succeeded.

RESPONSE SCHEMA: application/json

```

-+ objs >          object
  Container of query evaluation attributes

-+ count >         integer <int32> (The Count Schema)
  Number of rows returned.

-+ hasMore >       boolean (The Hasmore Schema)
  If set to true there were more objs that were not returned.

```

**POST /api/1/aminoacidlookup/fetch**

### Request samples

#### Payload

Content type  
application/json

```
{
  - "spec": {
    "filter": "string",
    "include": "string",
    "limit": 0,
    "offset": 0
  }
}
```

[Copy](#) [Expand all](#) [Collapse all](#)

### Response samples

#### 200

Content type  
application/json

```
{
  - "objs": {
    "type": "string",
    "location": { },
    "name": "string",
    "id": "string",
    "version": "string",
    "meta": { },
    "typeIdent": "string"
  },
  "count": 0,
  "hasMore": true
}
```

[Copy](#) [Expand all](#) [Collapse all](#)

## NucleotideLookup

NucleotideLookup contains the lookup table to map the [IUPAC Nucleotide Codes](#) to their full names and abbreviations.

## Fetch

### Fields

**NOTE:** If the field is not present in a returned object, then that field will not be returned.

Field	Data type	Description
id	string	The IUPAC Code.
name	string	Full name of the nucleotide.
abbreviation	string	Three-letter abbreviation of the nucleotide.

### Example (Click on the arrow to expand)

The following example shows how to use this API.

#### ► Fetch all Nucleotides

##### HEADER PARAMETERS

Content-Type <span style="color:red;">required</span>	string Set this to application/json.
Accept <span style="color:red;">required</span>	string Set this to application/json.

##### REQUEST BODY SCHEMA: application/json

spec	object Container of query evaluation attributes
filter	string Filter expression for which Obj instances to return. For example: <code>"filter": "id == "Afghanistan" &amp;&amp; age == 45"</code> . Filter expressions must evaluate to a value type of boolean. They support basic comparison operators (e.g. ==, <, <=, >, >=, !=), arithmetic operators (e.g. +, -, /), &&,    and most non-time series functions supported by the expression engine.*
include	string Specifies which fields to bring back values for in the returned objects. A list of fields. For example: <code>"include": "productType, description, origin, links.url"</code> .
limit	integer Maximum number of rows that should be returned, starting from offset.
offset	integer <int32> (The Offset Schema) Number of rows to skip.

### Responses

✓ 200 OK. The request has succeeded.

##### RESPONSE SCHEMA: application/json

objs	object Container of query evaluation attributes
count	integer <int32> (The Count Schema) Number of rows returned.
hasMore	boolean (The Hasmore Schema) If set to true there were more objs that were not returned.

POST /api/1/nucleotidelookup/fetch

### Request samples

#### Payload

Content type  
application/json

Copy Expand all Collapse all

```
{
  - "spec": {
    "filter": "string",
    "include": "string",
    "limit": 0,
    "offset": 0
  }
}
```

## Response samples

**200**

Content type  
application/json

[Copy](#) [Expand all](#) [Collapse all](#)

```
{
  - "objs": {
    "type": "string",
    "location": { },
    "name": "string",
    "id": "string",
    "version": "string",
    "meta": { },
    "typeIdent": "string"
  },
  "count": 0,
  "hasMore": true
}
```

## BiblioEntry

BiblioEntry stores the metadata about the journal articles in the CORD-19 Dataset.

The [fetch](#) API provides tabular journal article data, while the [getarticlemetadata](#) API provides full-text articles in JSON.

**NOTE:** Journal articles from CORD-19 are available through April 8, 2020. Additional journal articles will be made available soon.

## Fetch

### Fields

**NOTE:** If the field is not present in a returned object, then that field will not be returned.

Field	Data type	Description
id	string	Journal article ID.
sha	string	ID that links the BiblioEntry to a JSON file containing the journal article's full text.
source	string	The database from which the journal article is sourced. Allowed values: <a href="#">Elsevier</a> , <a href="#">biorkxiv</a> , <a href="#">C2I</a> , <a href="#">medrxiv</a> , <a href="#">PMC</a> , <a href="#">WHO</a> .
title	string	Title of the journal article.
doi	datetime	Journal article's BioRxiv/MedRxiv ID.
pmcid	string	Journal article's PMC ID.
pubmedId	string	Journal article's PubMed ID.
license	string	Journal article's license. Allowed values: <a href="#">biorkxiv</a> , <a href="#">els-covid</a> , <a href="#">medrvix</a> , <a href="#">cc-by</a> , <a href="#">cc-by-nc</a> , <a href="#">cc-by-nc-nd</a> , <a href="#">cc-by-nc-sa</a> , <a href="#">cc-by-nd</a> , <a href="#">cc-by-sa</a> , <a href="#">cc0</a> , <a href="#">pd</a> .
abstractText	string	Journal article's abstract text.

Field	Data type	Description
publishTime	datetime	Date the journal article was published.
authors	string	List of journal article's authors.
journal	string	Journal which published the article.
url	string	The URL of the article.
idMsftPaper	string	Journal article's Microsoft Academic Paper ID.
whoCovidence	string	Journal article's WHO ID.
hasFullText	boolean	Is the JournalArticle's full text available in the dataset? Allowed values: <code>true</code> , <code>false</code> .
fullTextFile	string	The type of the journal article. Allowed values: <code>custom_license</code> , <code>comm_use_subset</code> , <code>biorxiv_medrxiv</code> , <code>noncomm_use_subset</code> .

### Examples (Click on the arrows to expand)

The following examples show how to use this API.

- ▶ Fetch metadata for the first two thousand (2000) BiblioEntry journal articles (request only)
- ▶ Fetch metadata for the first two thousand (2000) full text BiblioEntry journal articles
- ▶ Fetch metadata for the first two thousand (2000) BiblioEntry journal articles approved for commercial use
- ▶ Fetch metadata for the first two thousand (2000) full text PMC journal articles with full text cc-by license (request only)

#### HEADER PARAMETERS

Content-Type <small>required</small>	string Set this to application/json.
Accept <small>required</small>	string Set this to application/json.

#### REQUEST BODY SCHEMA: application/json

spec	object Container of query evaluation attributes
filter	string Filter expression for which Obj instances to return. For example: <code>"filter": "id == "Afghanistan" &amp;&amp; age == 45"</code> . Filter expressions must evaluate to a value type of boolean. They support basic comparison operators (e.g. ==, <, >, >=, !=), arithmetic operators (e.g. +, -, /, &&,   ) and most non-time series functions supported by the expression engine.*
include	string Specifies which fields to bring back values for in the returned objects. A list of fields. For example: <code>"include": "productType, description, origin, links.url"</code> .
limit	integer Maximum number of rows that should be returned, starting from offset.
offset	integer <int32> (The Offset Schema) Number of rows to skip.

#### Responses

✓ 200 OK. The request has succeeded.

#### RESPONSE SCHEMA: application/json

objs	object Container of query evaluation attributes
count	integer <int32> (The Count Schema) Number of rows returned.
hasMore	boolean (The Hasmore Schema) If set to true there were more obis that were not returned.

POST /api/1/biblioentry/fetch

#### Request samples

##### Payload

Content type  
application/json

```
{
  - "spec": {
    "filter": "string",
    "include": "string",
    "limit": 0,
    "offset": 0
  }
}
```

## Response samples

**200**

Content type  
application/json

```
{
  - "objs": {
    "type": "string",
    "location": { },
    "name": "string",
    "id": "string",
    "version": "string",
    "meta": { },
    "typeIdent": "string"
  },
  "count": 0,
  "hasMore": true
}
```

## GetArticleMetadata

This API returns the full-text, in JSON, of journal articles from the CORD-19 dataset.

### Examples (Click on the arrow to expand)

The following examples show how to use this API.

- ▶ Get the full-text, in JSON, of a journal article from the CORD-19 dataset
- ▶ Get the full-text, in JSON-format, of multiple journal articles from the CORD-19 dataset

### HEADER PARAMETERS

Content-Type	string
	Set this to application/json.
Accept	string
	Set this to application/json.

### REQUEST BODY SCHEMA: application/json

ids	Array of strings
	List of BiblioEntry reference IDs.

### Responses

✓ 200 OK. The request has succeeded.

### RESPONSE SCHEMA: application/json

value	object (The Result Schema)
-------	----------------------------

**POST** /api/1/biblioentry/getarticlemetadata

▼

**Request samples****Payload**

Content type  
application/json

```
{
  - "ids": [
    "string"
  ]
}
```

[Copy](#) [Expand all](#) [Collapse all](#)
**Response samples****200**

Content type  
application/json

```
{
  "value": { }
}
```

[Copy](#) [Expand all](#) [Collapse all](#)
**TherapeuticAsset**

TherapeuticAsset stores details about the research and development (R&D) of coronavirus therapies, e.g., vaccines, diagnostics, and antibodies.

**Fetch****Fields**

**NOTE:** If the field is not present in a returned object, then that field will not be returned.

Field	Data type	Description
id	string	Therapy ID.
productType	string	Therapy's drug or platform class.
links	ExternalLink	C3.ai Type ExternalLink.
description	string	Description of the therapy.
clinicalTrialsOtherDiseases	string	Other diseases or pathogens for which the therapy has undergone or is undergoing clinical development.
developer	string	Organization that developed the therapy.
stageOfDevelopment	string	The therapy's current phase of clinical development. Allowed values: Clinical, Pre-Clinical, Compassionate Use, Phase 1/2 (not yet recruiting), Phase I, Expanded access.
fundingSources	string	The organization funding the therapy's R&D.
nextSteps	string	Anticipated next steps for the therapy's clinical development.
therapyType	string	The type of therapy. Allowed values: Vaccine, Antibodies, Antivirals, Cell-based therapies, RNA-based therapies, Scanning compounds to repurpose, Dormant Discontinued, Other.
origin	string	The source of the data containing the therapy's R&D details. Allowed values: WHO, Milken.
target	string	The virus the therapy targets or treats. Allowed values: COVID-19, MERS, SARS.

Field	Data type	Description
sources	string	URLs of public sources from which the therapy's information was collected.
fdaApprovalStatus	string	Details about the status of the therapy's FDA approval.
clinicalTrialsCovid19	string	Active clinical trials to evaluate the therapy's efficacy for treating COVID-19.
lastUpdatedNotes	string	Date on which a specific therapy was last updated.
publishedResults	string	Publications on the therapy's efficacy for treating COVID-19.

### Examples (Click on the arrows to expand)

The following examples show how to use this API.

- ▶ Fetch all therapies
- ▶ Fetch therapies tracked by Milken Institute (request only)
- ▶ Fetch therapies tracked by WHO (request only)
- ▶ Fetch vaccine therapies
- ▶ Fetch pre-clinical DNA therapies, targeting COVID-19, tracked by WHO

#### HEADER PARAMETERS

Content-Type required	string Set this to application/json.
Accept required	string Set this to application/json.

#### REQUEST BODY SCHEMA: application/json

spec	object Container of query evaluation attributes
filter	string Filter expression for which Obj instances to return. For example: <code>"filter": "id == "Afghanistan" &amp;&amp; age == 45"</code> . Filter expressions must evaluate to a value type of boolean. They support basic comparison operators (e.g. ==, <, >, >=, !=), arithmetic operators (e.g. +, -, /), &&,    and most non-time series functions supported by the expression engine.*
include	string Specifies which fields to bring back values for in the returned objects. A list of fields. For example: <code>"include": "productType, description, origin, links.url"</code> .
limit	integer Maximum number of rows that should be returned, starting from offset.
offset	integer <int32> (The Offset Schema) Number of rows to skip.

#### Responses

✓ 200 OK. The request has succeeded.

#### RESPONSE SCHEMA: application/json

objs	object Container of query evaluation attributes
count	integer <int32> (The Count Schema) Number of rows returned.
hasMore	boolean (The Hasmore Schema) If set to true there were more objs that were not returned.

POST /api/1/therapeuticasset/fetch

#### Request samples

##### Payload

Content type  
application/json

{

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```

        - "spec": {
            "filter": "string",
            "include": "string",
            "limit": 0,
            "offset": 0
        }
    }
}

```

## Response samples

**200**

Content type  
application/json

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```

{
    - "objs": {
        "type": "string",
        "location": { },
        "name": "string",
        "id": "string",
        "version": "string",
        "meta": { },
        "typeIdent": "string"
    },
    "count": 0,
    "hasMore": true
}

```

## ExternalLink

ExternalLink stores website URLs cited in the data sources containing the therapies stored in the TherapeuticAssets C3.ai Type.

### Fetch

#### Fields

**NOTE:** If the field is not present in a returned object, then that field will not be returned.

Field	Data type	Description
id	string	External link ID.
urlType	string	The type of information available at the URL. Allowed values: <a href="#">News</a> (e.g. news article, press release), <a href="#">Clinical Trial</a> , <a href="#">Published Results</a> .
url	string	The URL of the website.
therapeuticAsset	TherapeuticAsset	C3.ai Type TherapeuticAsset.
origin	string	The source of the data containing the therapy's R&D details. Allowed values: <a href="#">WHO</a> , <a href="#">Milken</a> .

#### Examples (Click on the arrows to expand)

The following examples show how to use this API.

- ▶ Fetch URLs for all therapies (request only)
- ▶ Fetch URLs for therapies tracked by Milken Institute (request only)
- ▶ Fetch URLs for clinical trials of therapies (request only)
- ▶ Fetch URLs for a particular therapy

#### HEADER PARAMETERS

Content-Type	string
	Set this to application/json.

 Accept required

string  
Set this to application/json.

REQUEST BODY SCHEMA: application/json

→ spec ↴

object  
Container of query evaluation attributes

filter	string Filter expression for which Obj instances to return. For example: <code>"filter": "id == "Afghanistan" &amp;&amp; age == 45"</code> . Filter expressions must evaluate to a value type of boolean. They support basic comparison operators (e.g. ==, <, <=, >, >=, !=), arithmetic operators (e.g. +, -, /), &&,    and most non-time series functions supported by the expression engine."
include	string Specifies which fields to bring back values for in the returned objects. A list of fields. For example: <code>"include": "productType, description, origin, links.url"</code> .
limit	integer Maximum number of rows that should be returned, starting from offset.
offset	integer <int32> (The Offset Schema) Number of rows to skip.

## Responses

✓ 200 OK. The request has succeeded.

RESPONSE SCHEMA: application/json

→ objs ↴	object Container of query evaluation attributes
→ count	integer <int32> (The Count Schema) Number of rows returned.
→ hasMore	boolean (The Hasmore Schema) If set to true there were more objs that were not returned.

POST /api/1/externallink/fetch

## Request samples

Payload

Content type  
application/json

```
{
  "spec": {
    "filter": "string",
    "include": "string",
    "limit": 0,
    "offset": 0
  }
}
```

[Copy](#) [Expand all](#) [Collapse all](#)

## Response samples

200

Content type  
application/json

```
{
```

[Copy](#) [Expand all](#) [Collapse all](#)

```

  - "objs": {
    "type": "string",
    "location": { },
    "name": "string",
    "id": "string",
    "version": "string",
    "meta": { },
    "typeIdent": "string"
  },
  "counts": 0
}

```

## Hospital

Hospital stores statistics for 6,000+ hospitals in the United States, such as the number of licensed beds, staffed beds, intensive care unit (ICU) beds, and bed utilization rate.

### Fetch

#### Fields

**NOTE:** If the field is not present in a returned object, then that field will not be returned.

Field	Data type	Description
name	string	Hospital name.
location	OutbreakLocation	C3.ai Type OutbreakLocation associated with hospital.
hospitalType	string	Hospital type. Examples include <code>Short Term Acute Care Hospital</code> , <code>Critical Access Hospital</code> , and <code>VA Hospital</code> .
address	string	Hospital address.
lat	float	Hospital's latitude.
lon	float	Hospital's longitude.
licensedBeds	int	Maximum number of beds the hospital holds the license to operate.
staffedBeds	int	Number of adult, pediatric, birthing room, and ICU beds maintained in patient care areas of the hospital.
icuBeds	int	Number of intensive care unit (ICU) beds in the hospital.
icuBedsAdult	int	Number of ICU beds for adults in the hospital.
icuBedsPedi	int	Number of pediatric ICU beds in the hospital.
icuBedsPotential	int	Potential increase in bed capacity in the hospital, computed as the number of licensed beds minus the number of staffed beds.
ventilatorUsage	int	Hospital's average number of ventilators in use.
bedUtilization	float	Hospital's average bed utilization rate, computed based on the Medicare Cost Report as the total number of patient days (excluding nursery days) divided by the available bed days.

#### Examples (Click on the arrows to expand)

The following example shows how to use this API.

► Example: Fetch all hospitals in Oklahoma

#### HEADER PARAMETERS

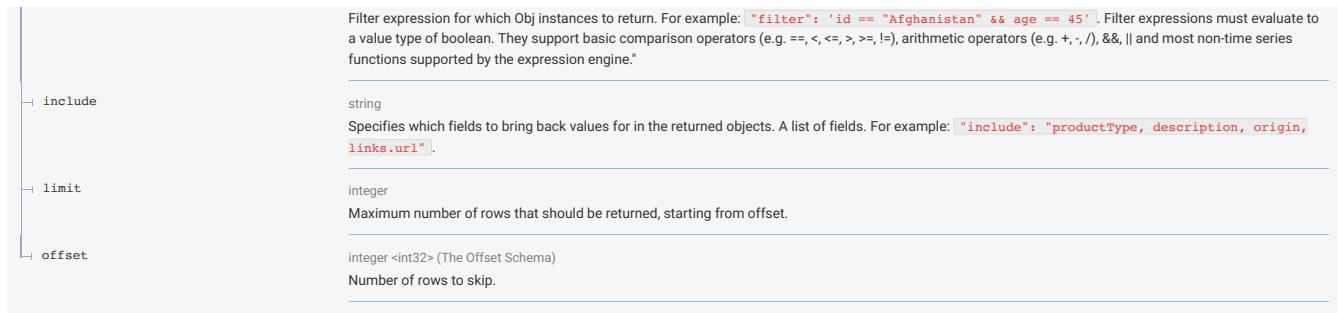
Content-Type <small>required</small>	string Set this to application/json.
Accept <small>required</small>	string Set this to application/json.

#### REQUEST BODY SCHEMA: application/json

spec	object Container of query evaluation attributes
------	--

filter

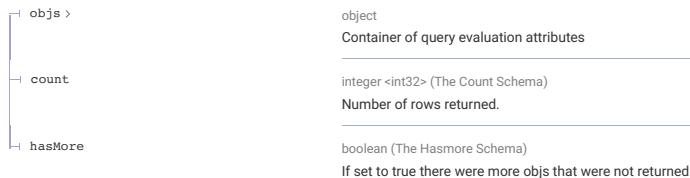
string



## Responses

✓ 200 OK. The request has succeeded.

RESPONSE SCHEMA: application/json



POST /api/1/hospital/fetch

## Request samples

## Payload

Content type  
application/json

```
{
  - "spec": {
      "filter": "string",
      "include": "string",
      "limit": 0,
      "offset": 0
    }
}
```

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## Response samples

## 200

Content type  
application/json

```
{
  - "objs": {
      "type": "string",
      "location": { },
      "name": "string",
      "id": "string",
      "version": "string",
      "meta": { },
      "typeIdent": "string"
    },
    "count": 0,
    "hasMore": true
}
```

[Copy](#) [Expand all](#) [Collapse all](#)

## Diagnosis

Diagnosis stores basic clinical data (e.g. clinical notes, demographics, test results, X-ray or CT scan images) about individual patients tested for COVID-19, from research papers and healthcare institutions.

The `fetch` API provides tabular clinical data, while the `getimageurls` API provides accessible URLs for X-ray or CT scan images.

## Fetch

### Fields

**NOTE:** If the field is not present in a returned object, then that field will not be returned.

Field	Data type	Description
source	string	Data source for the patient records. Allowed values: <code>Montreal</code> (University of Montreal), <code>Braids</code> (Carbon Health & Braids Health).
imageURL	string	URL hosting the patient's X-ray or CT scan images.
location	OutbreakLocation	C3.ai Type OutbreakLocation representing the location of the patient.
idPatient	string	Unique patient ID.
age	float	Patient's age, with noise added to protect patient privacy.
clinicalNotes	string	A short paragraph containing clinical notes about the patient.
temperature	float	Patient's temperature, in degrees Celsius.
diagnostics	DiagnosisDetail	C3.ai Type DiagnosisDetail containing associated patient-specific details.
testResults	string	Patient's test results. Examples include <code>COVID-19: Negative</code> , <code>COVID-19: Positive</code> , <code>ARDS: positive</code> , and <code>Streptococcus: positive</code> .

### Examples (Click on the arrows to expand)

The following examples show how to use this API.

- ▶ Example 1: Fetch all test results and affiliated Diagnosis Metadata information for patients tested for COVID-19
- ▶ Example 2: Fetch all test results for patients who received a positive diagnosis for some disease

#### HEADER PARAMETERS

Content-Type <span style="color:red;">required</span>	string Set this to application/json.
Accept <span style="color:red;">required</span>	string Set this to application/json.

#### REQUEST BODY SCHEMA: application/json

spec	object Container of query evaluation attributes
filter	string Filter expression for which Obj instances to return. For example: <code>"filter": "id == "Afghanistan" &amp;&amp; age == 45"</code> . Filter expressions must evaluate to a value type of boolean. They support basic comparison operators (e.g. ==, <, <=, >, >=, !=), arithmetic operators (e.g. +, -, /, *, &&,   ) and most non-time series functions supported by the expression engine.*
include	string Specifies which fields to bring back values for in the returned objects. A list of fields. For example: <code>"include": "productType, description, origin, links.url"</code> .
limit	integer Maximum number of rows that should be returned, starting from offset.
offset	integer <int32> (The Offset Schema) Number of rows to skip.

## Responses

✓ 200 OK. The request has succeeded.

RESPONSE SCHEMA: application/json

```

  |- objs >
    object
    Container of query evaluation attributes

  |- count
    integer <int32> (The Count Schema)
    Number of rows returned.

  |- hasMore
    boolean (The Hasmore Schema)
    If set to true there were more objs that were not returned.

```

POST /api/1/diagnosis/fetch

## Request samples

## Payload

Content type  
application/json

```
{
  - "spec": {
    "filter": "string",
    "include": "string",
    "limit": 0,
    "offset": 0
  }
}
```

[Copy](#) [Expand all](#) [Collapse all](#)

## Response samples

## 200

Content type  
application/json

```
{
  - "objs": {
    "type": "string",
    "location": { },
    "name": "string",
    "id": "string",
    "version": "string",
    "meta": { },
    "typeIdent": "string"
  },
  "count": 0,
  "hasMore": true
}
```

[Copy](#) [Expand all](#) [Collapse all](#)

## GetImageURLs

This API returns the image URL for each requested Diagnosis ID. The image URL can then be used to access the associated X-ray or CT scan image.

## Examples (Click on the arrow to expand)

The following example shows how to use this API.

- Example: Get the URLs of two images in the Montreal image dataset

#### HEADER PARAMETERS

Content-Type required	string Set this to application/json.
Accept required	string Set this to application/json.
<b>REQUEST BODY SCHEMA:</b> application/json	
ids	Array of strings List of diagnostic image identifiers

#### Responses

- ✓ 200 OK. The request has succeeded.

#### RESPONSE SCHEMA: application/json

type	string
value	object Map from diagnostic image identifiers to image locations

POST /api/1/diagnosis/getimageurls

#### Request samples

##### Payload

Content type  
application/json

```
{
  "ids": [
    "string"
  ]
}
```

[Copy](#) [Expand all](#) [Collapse all](#)

#### Response samples

##### 200

Content type  
application/json

```
{
  "type": "string",
  "value": {}
}
```

[Copy](#) [Expand all](#) [Collapse all](#)

## DiagnosisDetail

DiagnosisDetail stores detailed clinical data (e.g. lab tests, pre-existing conditions, symptoms) about individual patients in key-value format. DiagnosisDetail holds specific types of information depending on the source dataset and availability of data for different patients. For example, the date of testing and data on presence of pre-existing

conditions may be available for some patients, while lab tests such as blood oxygen level may be available for others.

## Fetch

### Fields

**NOTE:** If the field is not present in a returned object, then that field will not be returned.

Field	Data type	Description
source	string	Data source for the patient records. Allowed values: <code>Montreal</code> (University of Montreal), <code>Braids</code> (Carbon Health & Braids Health).
parent	Diagnosis	C3.ai Type Diagnosis representing other data related to this patient.
key	string	The data type being stored. Examples include <code>date</code> , <code>p02_saturation</code> , and <code>asthma</code> .
value	string	The value for the associated key. Examples include <code>February 6, 2020</code> , <code>91.0</code> , and <code>True</code> .

### Examples (Click on the arrows to expand)

The following example shows how to use this API.

- ▶ Example: Fetch details associated with a specific diagnosis

#### HEADER PARAMETERS

Content-Type required	string Set this to application/json.
Accept required	string Set this to application/json.

#### REQUEST BODY SCHEMA: application/json

spec	object Container of query evaluation attributes
filter	string Filter expression for which Obj instances to return. For example: <code>"filter": "id == "Afghanistan" &amp;&amp; age == 45"</code> . Filter expressions must evaluate to a value type of boolean. They support basic comparison operators (e.g. ==, <, <=, >, >=, !=), arithmetic operators (e.g. +, -, /, &&,   ) and most non-time series functions supported by the expression engine.*
include	string Specifies which fields to bring back values for in the returned objects. A list of fields. For example: <code>"include": "productType, description, origin, links.url"</code> .
limit	integer Maximum number of rows that should be returned, starting from offset.
offset	integer <int32> (The Offset Schema) Number of rows to skip.

#### Responses

✓ 200 OK. The request has succeeded.

#### RESPONSE SCHEMA: application/json

objs	object Container of query evaluation attributes
count	integer <int32> (The Count Schema) Number of rows returned.
hasMore	boolean (The HasMore Schema) If set to true there were more objs that were not returned.

POST /api/1/diagnosisdetail/fetch

#### Request samples

##### Payload

Content type  
application/json

```
{
  - "spec": {
    "filter": "string",
    "include": "string",
    "limit": 0,
    "offset": 0
  }
}
```

[Copy](#) [Expand all](#) [Collapse all](#)

## Response samples

200

Content type  
application/json

```
{
  - "objs": {
    "type": "string",
    "location": { },
    "name": "string",
    "id": "string",
    "version": "string",
    "meta": { },
    "typeIdent": "string"
  },
  "count": 0,
  "hasMore": true
}
```

[Copy](#) [Expand all](#) [Collapse all](#)

## VaccineCoverage

VaccineCoverage stores historical vaccination rates for various demographic groups in US counties and states, based on data from the US Centers for Disease Control and Prevention (CDC).

### Fetch

#### Fields

**NOTE:** If the field is not present in a returned object, then that field will not be returned.

Field	Data type	Description
location	OutbreakLocation	C3.ai Type OutbreakLocation affiliated with this vaccine coverage data.
vaxView	string	CDC VaxView source of the data. Allowed values: Child, School, Teenager, Adult, Influenza.
year	int	Year the vaccination rate was estimated.

Field	Data type	Description
timestamp	datetime	Year the vaccination rate was estimated, as a datetime.
value	double	Estimated percent of demographic group that is vaccinated.
lowerLimit	double	Lower limit of 95% confidence interval on value.
upperLimit	double	Upper limit of 95% confidence interval on value.
confidenceInterval	double	Size of confidence interval on value, i.e., there is a 95% probability that the demographic group's true vaccination rate falls within the value minus this interval and the value plus this interval.
target	double	Target vaccination rate for this population group.
sampleSize	int	Number of individuals in the sample used to estimate the population vaccination rate.
vaccineDetails	string	Details about the vaccine, e.g. >=3 doses HPV Vaccination, Tetanus (Td or Tdap) Vaccination, or >=2 doses MMR Vaccination.
demographicClass	string	Characteristic by which the population was divided into demographic groups, e.g. Poverty, Race/Ethnicity, or Urbanicity.
demographicClassDetails	string	Details about the demographic group surveyed, e.g. Ages 13-17, All kindergartners, or Hispanic.
totalPopulation	int	Total population of the demographic group at the time of survey.
surveyType	string	Type of survey conducted, e.g. Stratified 2-stage cluster sample or Census.
percentSurveyed	double	Percentage of the demographic group surveyed to determine vaccination rate estimate.
kindergartenPopulation	int	Total population of kindergarten students at the time of survey.

### Examples (Click on the arrows to expand)

The following examples show how to use this API.

- ▶ Example 1: Fetch vaccination rates of >=1 dose MenACWY vaccine in New York, United States among 13-17 year-olds
- ▶ Example 2: Fetch influenza vaccination rates in California, United States by race/ethnicity in 2018

#### HEADER PARAMETERS

Content-Type <span style="color:red;">required</span>	string Set this to application/json.
Accept <span style="color:red;">required</span>	string Set this to application/json.

#### REQUEST BODY SCHEMA: application/json

spec	object Container of query evaluation attributes
filter	string Filter expression for which Obj instances to return. For example: <code>"filter": "id == "Afghanistan" &amp;&amp; age == 45"</code> . Filter expressions must evaluate to a value type of boolean. They support basic comparison operators (e.g. ==, <, <=, >, >=, !=), arithmetic operators (e.g. +, -, /), &&,    and most non-time series functions supported by the expression engine.*
include	string Specifies which fields to bring back values for in the returned objects. A list of fields. For example: <code>"include": "productType, description, origin, links.url"</code> .
limit	integer Maximum number of rows that should be returned, starting from offset.
offset	integer <int32> (The Offset Schema) Number of rows to skip.

#### Responses

✓ 200 OK. The request has succeeded.

#### RESPONSE SCHEMA: application/json

objs	object Container of query evaluation attributes
count	integer <int32> (The Count Schema) Number of rows returned.
hasMore	boolean (The Hasmore Schema) If set to true there were more objs that were not returned.

POST /api/1/vaccinecoverage/fetch

## Request samples

### Payload

Content type  
application/json

```
{
  - "spec": {
    "filter": "string",
    "include": "string",
    "limit": 0,
    "offset": 0
  }
}
```

[Copy](#) [Expand all](#) [Collapse all](#)

## Response samples

### 200

Content type  
application/json

```
{
  - "objs": {
    "type": "string",
    "location": { },
    "name": "string",
    "id": "string",
    "version": "string",
    "meta": { },
    "typeIdent": "string"
  },
  "count": 0,
  "hasMore": true
}
```

[Copy](#) [Expand all](#) [Collapse all](#)

## ClinicalTrial

ClinicalTrial stores metadata for all clinical trials related to COVID-19 being conducted worldwide.

### Fetch

#### Fields

**NOTE:** If the field is not present in a returned object, then that field will not be returned.

Field	Data type	Description
id	string	Trial ID supplied by clinical trials registry.
url	string	Web link to entry in registry database.
pdf	string	Web link to summary of trial.
location	OutbreakLocation	C3.ai Type OutbreakLocation where trial is taking place.
startDate	datetime	Start date of the trial.
endDate	datetime	Planned or actual completion date of the trial.
trialStatus	string	Current status of the trial, e.g. recruiting, planned, or completed.

Field	Data type	Description
design	string	Randomization or other technical study criteria, e.g. Randomised or Single-arm.
blinding	string	Concealing or blinding of group allocation from one or more participants in the trial, e.g. Single, Double, or Open-Label.
arms	int	Number of treatment groups under observation.
covid19Status	string	Scope of participant conditions specified by study, e.g. Healthy (Exposed), Confirmed, or Resolved.
severity	string	Relative condition of participants under study, e.g. Non-severe, Severe, or Mixed.
patientSetting	string	Treatment environment of trial participants, e.g. Hospital, ICU, or Outpatient.
outcome	string	The result of a treatment or intervention used to measure efficacy.
treatmentType	string	The drug or therapy under evaluation.
size	int	Number of participants.

**Examples (Click on the arrows to expand)**

The following examples show how to use this API.

- ▶ Example 1: Fetch trials of azidothymidine and hydroxychloroquine treatments that started in 2020
- ▶ Example 2: Fetch completed trials involving ICU patients

**HEADER PARAMETERS**

Content-Type <small>required</small>	string Set this to application/json.
Accept <small>required</small>	string Set this to application/json.

**REQUEST BODY SCHEMA: application/json**

spec	object Container of query evaluation attributes
filter	string Filter expression for which Obj instances to return. For example: <code>"filter": "id == "Afghanistan" &amp;&amp; age == 45"</code> . Filter expressions must evaluate to a value type of boolean. They support basic comparison operators (e.g. ==, <, <=, >, >=, !=), arithmetic operators (e.g. +, -, /, *, &&,   ) and most non-time series functions supported by the expression engine."
include	string Specifies which fields to bring back values for in the returned objects. A list of fields. For example: <code>"include": "productType, description, origin, links.url"</code> .
limit	integer Maximum number of rows that should be returned, starting from offset.
offset	integer <int32> (The Offset Schema) Number of rows to skip.

**Responses**

✓ 200 OK. The request has succeeded.

**RESPONSE SCHEMA: application/json**

objs	object Container of query evaluation attributes
count	integer <int32> (The Count Schema) Number of rows returned.
hasMore	boolean (The Hasmore Schema) If set to true there were more objs that were not returned.

**POST** /api/1/clinicaltrial/fetch

**Request samples****Payload**

Content type  
application/json

[Copy](#) [Expand all](#) [Collapse all](#)

```
{
  - "spec": {
    "filter": "string",
    "include": "string",
    "limit": 0,
    "offset": 0
  }
}
```

## Response samples

[200](#)

Content type  
application/json

[Copy](#) [Expand all](#) [Collapse all](#)

```
{
  - "objs": {
    "type": "string",
    "location": { },
    "name": "string",
    "id": "string",
    "version": "string",
    "meta": { },
    "typeIdent": "string"
  },
  "count": 0,
  "hasMore": true
}
```

## LocationPolicySummary

LocationPolicySummary stores COVID-19 social distancing and health policies and regulations enacted by US states.

The `fetch` API provides current policy data, while the `allversionsforpolicy` API provides both historical and current policy data.

The `Policy` type is deprecated. To query policy data from Kaiser Family Foundation, please use `LocationPolicySummary` instead.

## Fetch

### Fields

**NOTE:** If the field is not present in a returned object, then that field will not be returned.

Field	Data type	Description
location	OutbreakLocation	C3.ai Type OutbreakLocation where the policy was enacted.
easingOrder	string	"Yes" if the location is easing their social distancing measures, "No" otherwise.
stayAtHome	string	Description of the latest status of the stay-at-home order.
mandatoryQuarantine	string	Description of status of mandatory quarantine for travelers.
nonEssentialBusiness	string	Description of restrictions on non-essential businesses.
largeGatherings	string	Description of restrictions on large gatherings.
schoolClosure	string	Description of school closures or restrictions.
restaurantLimit	string	Description of restrictions on restaurants.
PrimaryElectionPostponement	string	Description of postponement or cancellation of primary elections.

Field	Data type	Description
emergencyDeclaration	string	"Yes" if a state of emergency was declared, "No" otherwise.
waiveTreatmentCost	string	Description of policies regarding cost sharing for COVID-19 treatment.
freeVaccine	string	Description of policies requiring free cost COVID-19 vaccines when available.
waiverOfPriorAuthorizationRequirements	string	Description of policies requiring a waiver of prior authorization requirements. May be superseded by the federal Families First Coronavirus Response Act.
prescriptionRefill	string	Description of policies regarding early prescriptions refills.
premiumPaymentGracePeriod	string	Description of policies regarding premium payment grace periods.
marketplaceSpecialEnrollmentPeriod	string	"Yes" if the special enrollment period for the state's insurance marketplace extended, "No" otherwise.
section1135Waiver	string	Description of approval status of the Section 1135 waiver.
paidSickLeaves	string	Description of status of paid sick leave policies adding to federal emergency leave.
expandsAccessToTelehealthServices	string	"Yes" if expanded access to Tele-health services are issued, "No" otherwise.
lastSavedTimestamp	datetime	Datetime of last update for this version.
version	int	Incrementing version ID for all policies.
versionDate	datetime	Date of the policy version.
numSavedVersions	int	Total number of versions of this policy available with <a href="#">allversionsforpolicy</a> .
savedVersion	int	Incrementing version ID for this policy.

### Examples (Click on the arrows to expand)

The following example shows how to use this API.

- ▶ Example: Fetch all policies in Pennsylvania, US

#### HEADER PARAMETERS

Content-Type <small>required</small>	string Set this to application/json.
Accept <small>required</small>	string Set this to application/json.

#### REQUEST BODY SCHEMA: application/json

spec	object Container of query evaluation attributes
filter	string Filter expression for which Obj instances to return. For example: <code>"filter": "id == "Afghanistan" &amp;&amp; age == 45"</code> . Filter expressions must evaluate to a value type of boolean. They support basic comparison operators (e.g. ==, <, <=, >, >=, !=), arithmetic operators (e.g. +, -, /, &&,   ) and most non-time series functions supported by the expression engine."
include	string Specifies which fields to bring back values for in the returned objects. A list of fields. For example: <code>"include": "productType, description, origin, links.url"</code> .
limit	integer Maximum number of rows that should be returned, starting from offset.
offset	integer <int32> (The Offset Schema) Number of rows to skip.

#### Responses

✓ 200 OK. The request has succeeded.

#### RESPONSE SCHEMA: application/json

objs	object Container of query evaluation attributes
count	integer <int32> (The Count Schema) Number of rows returned.
hasMore	boolean (The Hasmore Schema) If set to true there were more objs that were not returned.

POST /api/1/locationpolicysummary/fetch

## Request samples

### Payload

Content type  
application/json

```
{
  - "spec": {
    "filter": "string",
    "include": "string",
    "limit": 0,
    "offset": 0
  }
}
```

[Copy](#) [Expand all](#) [Collapse all](#)

## Response samples

### 200

Content type  
application/json

```
{
  - "objs": {
    "type": "string",
    "location": { },
    "name": "string",
    "id": "string",
    "version": "string",
    "meta": { },
    "typeIdent": "string"
  },
  "count": 0,
  "hasMore": true
}
```

[Copy](#) [Expand all](#) [Collapse all](#)

## AllVersionsForPolicy

This API returns all historical versions of a policy, in addition to the current policy version returned by [\[fetch\]](#).

### Examples (Click on the arrows to expand)

The following example shows how to use this API.

- Example: Retrieve all versions of policies in California

#### HEADER PARAMETERS

Content-Type <small>required</small>	string Set this to application/json.
Accept <small>required</small>	string Set this to application/json.

#### REQUEST BODY SCHEMA: application/json

this	object Container of query evaluation attributes
------	--

id	string A policy ID
----	-----------------------

## Responses

✓ 200 OK. The request has succeeded.

RESPONSE SCHEMA: application/json

Array [

  └ LocationPolicySummary >

  object

  A LocationPolicySummary object. Click open for more details.

  object

  More LocationPolicySummary objects.

]

**POST** /api/1/locationpolicysummary/allversionsforpolicy



## Request samples

## Payload

Content type  
application/json

```
{
  - "this": {
    "id": "string"
  }
}
```

[Copy](#) [Expand all](#) [Collapse all](#)

## Response samples

## 200

Content type  
application/json

```
[
  - {
    + "LocationPolicySummary": { ... },
    "...": { }
  }
]
```

[Copy](#) [Expand all](#) [Collapse all](#)

## PolicyDetail

PolicyDetail stores country-level policy responses to COVID-19 including:

- Financial sector policies (from The World Bank: Finance Related Policy Responses to COVID-19),
- Containment and closure, economic, and health system policies (from University of Oxford: Coronavirus Government Response Tracker, OxCGRT), and
- Policies in South Korea (from Data Science for COVID-19: South Korea).

## Fetch

### Fields

**NOTE:** If the field is not present in a returned object, then that field will not be returned.

Field	Data type	Description
location	OutbreakLocation	C3.ai Type OutbreakLocation where the policy was enacted.
startDate	datetime	Date on which a specific policy took effect.
endDate	datetime	Date on which a specific policy ended.
entryDate	datetime	Date on which a specific policy was recorded (only for World Bank data).
policyType	string	Type, classification, or indicator of a policy. Allowed values for OxCGRT data: <a href="#">C1 - C8</a> , <a href="#">E1 - E4</a> , <a href="#">H1 - H5</a> . Allowed values for World Bank data: <a href="#">Banking sector</a> , <a href="#">Financial Markets/NBFI</a> , <a href="#">Insolvency</a> , <a href="#">Liquidity/funding</a> , <a href="#">Payments systems</a> , <a href="#">Other</a> . Allowed values for South Korea data: <a href="#">Health</a> , <a href="#">Social</a> , <a href="#">Technology</a> , <a href="#">Immigration</a> , <a href="#">Transformation</a> , <a href="#">Alert</a> , <a href="#">Administrative</a> , <a href="#">Education</a> .
policySubType	string	Sub-type or sub-classification of a policy, only applicable to World Bank data. Allowed values: <a href="#">Crisis management</a> , <a href="#">Integrity</a> , <a href="#">Operational continuity</a> , <a href="#">Prudential</a> , <a href="#">Support borrowers</a> , <a href="#">Market functioning</a> , <a href="#">NBFI</a> , <a href="#">Public debt management</a> , <a href="#">Asset purchases</a> , <a href="#">Liquidity (incl FX)/ELA</a> , <a href="#">Policy rate</a> , <a href="#">Cash/Check usage restrictions</a> , <a href="#">Consumer protection</a> , <a href="#">Digital payments</a> , <a href="#">Relaxation compliance</a> .
name	string	Name of the policy; examples are <a href="#">School closing</a> and <a href="#">Testing policy</a> .
value	int	Value of a specific policy (only applicable to OxCGRT data). <a href="#">0</a> = no restrictions; <a href="#">1</a> = restrictions on very large gatherings (the limit is above 1000 people); <a href="#">2</a> = restrictions on gatherings between 101-1000 people; <a href="#">3</a> = restrictions on gatherings between 11-100 people; <a href="#">4</a> = restrictions on gatherings of 10 people or less.
flag	int	Whether the policy is targets at a specific region or applies to the whole country (only applicable to OxCGRT). <a href="#">0</a> = targeted at specific geographical region; <a href="#">1</a> = applies to the whole country.
details	string	Additional details or notes respective to a specific policy.
origin	string	Source of the policy data. Allowed values are <a href="#">World Bank Finance</a> , <a href="#">South Korea</a> , <a href="#">University of Oxford</a> .

### Examples (Click on the arrows to expand)

The following examples show how to use this API.

- ▶ Example 1: Fetch all school-closing policies that restrict gatherings between 11-100 people from OxCGRT dataset
- ▶ Example 2: Fetch all banking sector prudential-related policies from World Bank Finance dataset
- ▶ Example 3: Fetch all health-related policies in South Korea from Data Science for COVID-19: South Korea Dataset

#### HEADER PARAMETERS

Content-Type <small>required</small>	string Set this to application/json.
Accept <small>required</small>	string Set this to application/json.

#### REQUEST BODY SCHEMA: application/json

spec	object Container of query evaluation attributes
filter	string Filter expression for which Obj instances to return. For example: <code>"filter": "id == "Afghanistan" &amp;&amp; age == 45"</code> . Filter expressions must evaluate to a value type of boolean. They support basic comparison operators (e.g. ==, <, >, >=, !=), arithmetic operators (e.g. +, -, /), &&,    and most non-time series functions supported by the expression engine.*
include	string Specifies which fields to bring back values for in the returned objects. A list of fields. For example: <code>"include": "productType, description, origin, links.url"</code> .
limit	integer Maximum number of rows that should be returned, starting from offset.
offset	integer <int32> (The Offset Schema) Number of rows to skip.

#### Responses

✓ 200 OK. The request has succeeded.

#### RESPONSE SCHEMA: application/json

objs	object Container of query evaluation attributes
count	integer <int32> (The Count Schema) Number of rows returned.

 hasMore

boolean (The Hasmore Schema)  
If set to true there were more objs that were not returned.

**POST** /api/1/policydetail/fetch

### Request samples

**Payload**

Content type  
application/json

```
{
  - "spec": {
    "filter": "string",
    "include": "string",
    "limit": 0,
    "offset": 0
  }
}
```

[Copy](#) [Expand all](#) [Collapse all](#)

### Response samples

**200**

Content type  
application/json

```
{
  - "objs": {
    "type": "string",
    "location": { },
    "name": "string",
    "id": "string",
    "version": "string",
    "meta": { },
    "typeIdent": "string"
  },
  "count": 0,
  "hasMore": true
}
```

[Copy](#) [Expand all](#) [Collapse all](#)

## SurveyData

SurveyData stores COVID-19-related public opinion, demographic, and symptom prevalence data collected from COVID-19 survey responses.

### Fetch

#### Fields

**NOTE:** If the field is not present in a returned object, then that field will not be returned.

Field	Data type	Description
id	string	Unique ID of the response.

Field	Data type	Description
location	OutbreakLocation	C3.ai Type OutbreakLocation (state-level) affiliated with this survey response, based on the 3-digit zip code the participant provides.
zipcodePrefix	double	Participant's self-reported 3-digit zip code.
annualHouseholdIncome	double	Participant's response to the question: What is your approximate annual household income in dollars?
birthYear2020	int	Participant's response to the question: What is your year of birth?
coronavirusConcern	double	Participant's response to the question: On a scale from 0 to 10, how concerned are you about the coronavirus? ( 0 : Not at All, 5 : Somewhat, 10 : Extremely Concerned)
coronavirusEmployment	string	Participant's response to the question: How has your employment status changed since January 1, 2020? The value of this field is a comma-separated string consisting one or more of the following choices: <code>was-full</code> : I was employed full-time on January 1, 2020. <code>was-part</code> : I was employed part-time on January 1, 2020. <code>was-jobless</code> : I was unemployed on January 1, 2020. <code>now-full</code> : I am now employed full-time. <code>now-part</code> : I am now employed part-time. <code>now-jobless</code> : I am now unemployed. <code>now-retired</code> : I am now retired. <code>was-retired</code> : I was retired on January 1, 2020. <code>was-disabled</code> : I was disabled and unable to work on January 1, 2020. <code>now-disabled</code> : I am now disabled and unable to work.
coronavirusIntent_Mask	double	Participant's response to the question: On a scale from 0 to 100, because of Coronavirus, do you intend to wear a face mask in public? ( 0 : No, 50 : Possibly / Unsure, 100 : Yes)
coronavirusIntent_SixFeet	double	Participant's response to the question: On a scale from 0 to 100, are you trying to stay 6 feet away from other people, because of Coronavirus? ( 0 : No, 50 : Possibly / Unsure, 100 : Yes)
coronavirusIntent_StayHome	double	Participant's response to the question: On a scale from 0 to 100, do you intend to stay at home as much as possible right now, because of Coronavirus? ( 0 : No, 50 : Possibly / Unsure, 100 : Yes)
coronavirusIntent_WashHands	double	Participant's response to the question: On a scale from 0 to 100, do you intend to wash your hands more than usual, for at least 20 seconds each time? ( 0 : No, 50 : Possibly / Unsure, 100 : Yes)
coronavirusLocalCommunity	double	Participant's response to the question: Do you know anyone in your local community who has contracted Coronavirus? If so, how many people? Please enter "0" if none.
coronavirusSupportSystem	string	Participant's response to the question: If you need help in the next 6 months because of the COVID-19 pandemic, who do you think is most likely to help you? The value of this field is a comma-separated string consisting one or more of the following choices: <code>fam-friend</code> : Family and friends, <code>employer</code> : Employer, <code>religious</code> : Religious community, <code>local-gov</code> : Local government, <code>state-gov</code> : State government, <code>fedgov</code> : Federal government, <code>other</code> : Other, <code>no-one</code> : No one, <code>local-community</code> : Local community groups, <code>private-org</code> : A private organization.
coronavirusSymptoms	string	Participant's response to the question: Are you personally experiencing any of the following symptoms? The value of this field is a comma-separated string consisting one or more of the following choices: <code>dry-cough</code> : Dry cough, <code>short-breath</code> : Shortness of breath, <code>diarrhea</code> : Diarrhea, <code>muscle-ache</code> : Muscle ache, <code>fatigue</code> : Fatigue, <code>nasal</code> : Runny nose or nasal congestion, <code>sore-throat</code> : Sore throat, <code>lost-smell-taste</code> : Loss of smell / taste, <code>fever</code> : Fever, <code>headache</code> : Headache, <code>nausea-vomit</code> : Nausea and/or vomiting, <code>none</code> : None.
ratioOfAdultHospitalization	string	Participant's response to the question: What proportion of 35 year olds who get Coronavirus will require hospitalization? Allowed values: <code>one-in-30k</code> , <code>one-in-1k</code> , <code>three-in-ten</code> , <code>three-percent</code> , <code>thirty-percent</code> , <code>almost-all</code> .
coronavirusWhenShouldReopen	string	Participant's response to the question: From your understanding, roughly how long should it be before restrictions on normal in-person activities are lifted in your area? Allowed values: <code>immediate</code> , <code>few-days</code> , <code>1-wk</code> , <code>2-wk</code> , <code>3-wk</code> , <code>1-mo</code> , <code>2-mo</code> , <code>3-mo</code> , <code>4-mo</code> , <code>5-mo</code> , <code>6-mo</code> , <code>1-yr</code> , <code>yr-plus</code> .
hasCoronavirusBelief	double	Participant's response to the question: On a scale from 0 to 10, do you believe you currently have Coronavirus? ( 0 : Definitely No, 5 : Unlikely but Possible, 10 : Yes)
coronaSimilarFlu	boolean	Whether the participant agrees with the statement: Coronavirus is similar to the flu: it does not kill people unless they're old or already sick.
coronaOnlyElderly	boolean	Whether the participant agrees with the statement: Young people cannot contract Coronavirus, only older people can.

Field	Data type	Description
youngInvulnerable	boolean	Whether the participant agrees with the statement: Young, healthy people can contract Coronavirus but cannot be harmed by it.
elderlyMoreRisk	boolean	Whether the participant agrees with the statement: People of all ages can contract Coronavirus, but older people are more vulnerable to becoming severely ill.
coronaAllHospitalize	boolean	Whether the participant agrees with the statement: Coronavirus can require hospitalization for people of any age, even those who were otherwise healthy.
coronaKillsMost	boolean	Whether the participant agrees with the statement: Coronavirus will kill most people who contract it.
ethnicitySpreadsCovid	boolean	Whether the participant agrees with the statement: It is much more likely to get Coronavirus from people of some ethnicities than others.
allSpreadCovid	boolean	Whether the participant agrees with the statement: People of any background are equally at risk of spreading Coronavirus.
nonNativesSpreadCovid	boolean	Whether the participant agrees with the statement: People who were born overseas are more likely to spread Coronavirus.
asymptomaticSpread	boolean	Whether the participant agrees with the statement: People can be infected with Coronavirus and feel fine but still spread it to others.
onlySickSpread	boolean	Whether the participant agrees with the statement: People who get sick from Coronavirus can spread it to others, but those who feel fine cannot.
infectFromAnimal	boolean	Whether the participant agrees with the statement: People who contract Coronavirus generally get it from infected animals and animal products.
politicalBelief	double	Participant's response to the question: On a scale from very liberal to very conservative, how would you best describe your political views? ( 0 : Very Liberal, 5 : Moderate, 10 : Very Conservative)
politicalParty	double	Participant's response to the question: On a scale from 0 to 10, in terms of politics, do you consider yourself a Democrat, Independent, or Republican? ( 0 : Strongly Democrat, 5 : Independent, 10 : Strongly Republican)
trumpApproval	double	Participant's response to the question: On a scale from 0 to 10, do you approve or disapprove of the way Donald Trump is handling his job as President? ( 0 : Strongly Disapprove, 5 : Neither Approve nor Disapprove, 10 : Strongly Approve)
religiosity	double	Participant's response to the question: On a scale from 0 to 10, how important would you say religion is in your life? ( 0 : Not Very Important, 5 : Somewhat Important, 10 : Very Important)
religion	string	Participant's self-reported religious belief. Allowed values: <span style="background-color: #f0f0f0; padding: 2px;">evangelical-protestant</span> : Evangelical Protestant, <span style="background-color: #f0f0f0; padding: 2px;">other-protestant</span> : Other Protestant, <span style="background-color: #f0f0f0; padding: 2px;">catholic</span> : Catholic, <span style="background-color: #f0f0f0; padding: 2px;">mormon</span> : Mormon, <span style="background-color: #f0f0f0; padding: 2px;">orthodox</span> : Orthodox, <span style="background-color: #f0f0f0; padding: 2px;">jewish</span> : Jewish, <span style="background-color: #f0f0f0; padding: 2px;">muslim</span> : Muslim, <span style="background-color: #f0f0f0; padding: 2px;">buddhist</span> : Buddhist, <span style="background-color: #f0f0f0; padding: 2px;">hindu</span> : Hindu, <span style="background-color: #f0f0f0; padding: 2px;">atheist</span> : Atheist, <span style="background-color: #f0f0f0; padding: 2px;">agnostic</span> : Agnostic, <span style="background-color: #f0f0f0; padding: 2px;">something-else</span> : Something Else, <span style="background-color: #f0f0f0; padding: 2px;">nothing-in-particular</span> : Nothing in Particular.
education	string	Participant's self-reported education background. Allowed values: <span style="background-color: #f0f0f0; padding: 2px;">school</span> : Some School / No Diploma, <span style="background-color: #f0f0f0; padding: 2px;">highschool</span> : High School Graduate, <span style="background-color: #f0f0f0; padding: 2px;">some-college</span> : Some College, <span style="background-color: #f0f0f0; padding: 2px;">college</span> : College Degree, <span style="background-color: #f0f0f0; padding: 2px;">postgrad</span> : Postgraduate Degree.
ethnicity	string	Participant's self-reported ethnicity. Allowed values: <span style="background-color: #f0f0f0; padding: 2px;">asian</span> : Asian, <span style="background-color: #f0f0f0; padding: 2px;">black</span> : Black, <span style="background-color: #f0f0f0; padding: 2px;">hispanic-latino</span> : Hispanic or Latino, <span style="background-color: #f0f0f0; padding: 2px;">white</span> : White, <span style="background-color: #f0f0f0; padding: 2px;">other-mixed</span> : Other/Mixed.
gender	string	Participant's self-reported gender. Allowed values: <span style="color: red;">female</span> , <span style="color: red;">male</span> , <span style="color: red;">other</span> .
startTime	datetime	Start time of the survey.

### Examples (Click on the arrows to expand)

The following example shows how to use this API.

- ▶ Example: Fetch the employment status of the participants who are located in California and who have a relatively strong intent to wear a mask in public because of COVID-19.

#### HEADER PARAMETERS

Content-Type  
required

string  
Set this to application/json.

Accept  
required

## REQUEST BODY SCHEMA: application/json

→ spec ↴

object

Container of query evaluation attributes

filter

string

Filter expression for which Obj instances to return. For example: `"filter": "id == "Afghanistan" && age == 45"`. Filter expressions must evaluate to a value type of boolean. They support basic comparison operators (e.g. ==, <, <=, >, >=, !=), arithmetic operators (e.g. +, -, /, \*, &&, ||) and most non-time series functions supported by the expression engine."

include

string

Specifies which fields to bring back values for in the returned objects. A list of fields. For example: `"include": ["productType, description, origin, links.url"]`.

limit

integer

Maximum number of rows that should be returned, starting from offset.

offset

integer <int32> (The Offset Schema)

Number of rows to skip.

## Responses

✓ 200 OK. The request has succeeded.

## RESPONSE SCHEMA: application/json

objs >

object

Container of query evaluation attributes

count

integer <int32> (The Count Schema)

Number of rows returned.

hasMore

boolean (The Hasmore Schema)

If set to true there were more objs that were not returned.

POST /api/1/surveydata/fetch

## Request samples

Payload

Content type  
application/json

```
{
  - "spec": {
    "filter": "string",
    "include": "string",
    "limit": 0,
    "offset": 0
  }
}
```

[Copy](#) [Expand all](#) [Collapse all](#)

## Response samples

200

Content type  
application/json

{

[Copy](#) [Expand all](#) [Collapse all](#)

```
- "objs": {  
    "type": "string",  
    "location": { },  
    "name": "string",  
    "id": "string",  
    "version": "string",  
    "meta": { },  
    "typeIdent": "string"  
},  
"count": 0,  
"hasMore": true
```

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