



Institute of **Translational** Health Sciences
ACCELERATING RESEARCH. IMPROVING HEALTH.



NATIONAL CENTER
FOR DATA TO HEALTH

LEAF USER GUIDE

Version 1.3



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1. LEAF INTRODUCTION

Leaf is a powerful self-service tool which provides UChicago investigators a user-friendly interface for querying de-identified electronic health record (EHR) data sourced from the UChicago Medicine (UCM) patient population. Leaf interacts directly with a regularly refreshed subset of data, derived from the EHR and encoded in the OMOP Common Data Model (CDM), and gives users the ability to build and explore cohorts in real time. Simple drag-and-drop functionality lets users quickly build an ad hoc query of the EHR and execute the query and provide a breakdown of the cohort it discovered. The data in Leaf (including demographics, encounters, procedures, diagnoses, labs, medications) can help investigators answer a variety of preparatory-to-research questions about the patient population. The primary use case for Leaf is cohort discovery. For example, Leaf is a useful tool to help an investigator determine if there are enough patients within the hospital system who have a given set of conditions matching the recruitment criteria for a trial. It can also help with planning and designing an existing study or submitting a grant proposal.



Please note, Leaf includes patient data from 1/1/2012 to the present date.

2. ACCESSING LEAF


Leaf is only available to UChicago affiliates with valid **BSD** account credentials at this time. Phases 2 and 3 will include expansion of this user group (Pritzker and UCM affiliates) .

The website to access Leaf is: <https://bsdleaf.cri.uchicago.edu/>

After logging into Leaf, users will need to agree to the usage terms shown below:



ITHS
Institute of Translational Health Sciences
ACCELERATING RESEARCH. IMPROVING HEALTH.



Patient data restricted to De-identified mode only

Research - Deidentified

OBLIGATIONS OF Leaf SYSTEM USER

- Performance of Activities.** System User may access Leaf to view the minimum necessary data to conduct cohort discovery. System User agrees to submit an official request for data through the Analytics Core (<https://hub.uchospitals.edu/dept/dna/SitePages/ACRES.aspx>) for data use or disclosure exceeding cohort discovery.
- Nondisclosure Except As Provided in Agreement.** System User shall not abstract, use, or further disclose the data except as permitted or required by this Agreement or as described in an IRB approved protocol.
- Identification of Individual.** System User may not use the data to identify or contact any individual who is the subject of the PHI from which the data was created without a signed HIPAA Authorization from the individual.
- Reporting.** System User shall report to the HIPAA Program Office at 773-864-9716 within twenty-four (24) hours of System User becoming aware of any use or disclosure of the data in violation of this Agreement or applicable law.
- Knowledge of Non-Compliance.** Any non-compliance by System User with this Agreement or with HIPAA or the HIPAA Regulations automatically will be considered a breach or violation of a material term of this Agreement if System User knew or reasonably should have known of such non-compliance and failed to immediately take reasonable steps to cure the non-compliance.

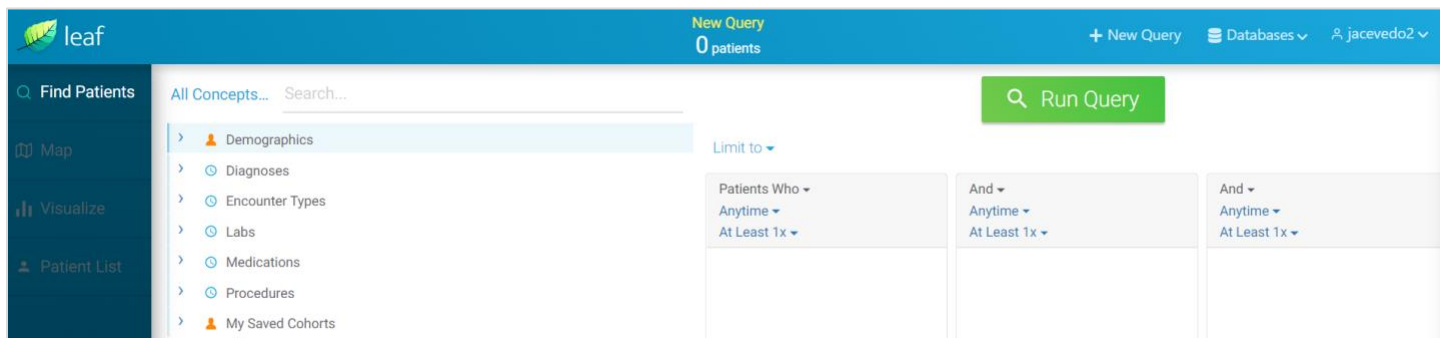
System User Acknowledgement

I am authorized to view the data described in the Agreement for the purposes described in the Agreement. By accepting this document, I acknowledge and agree to abide by the restrictions on the use and disclosure of the data viewed in accordance with the Agreement.

I Agree

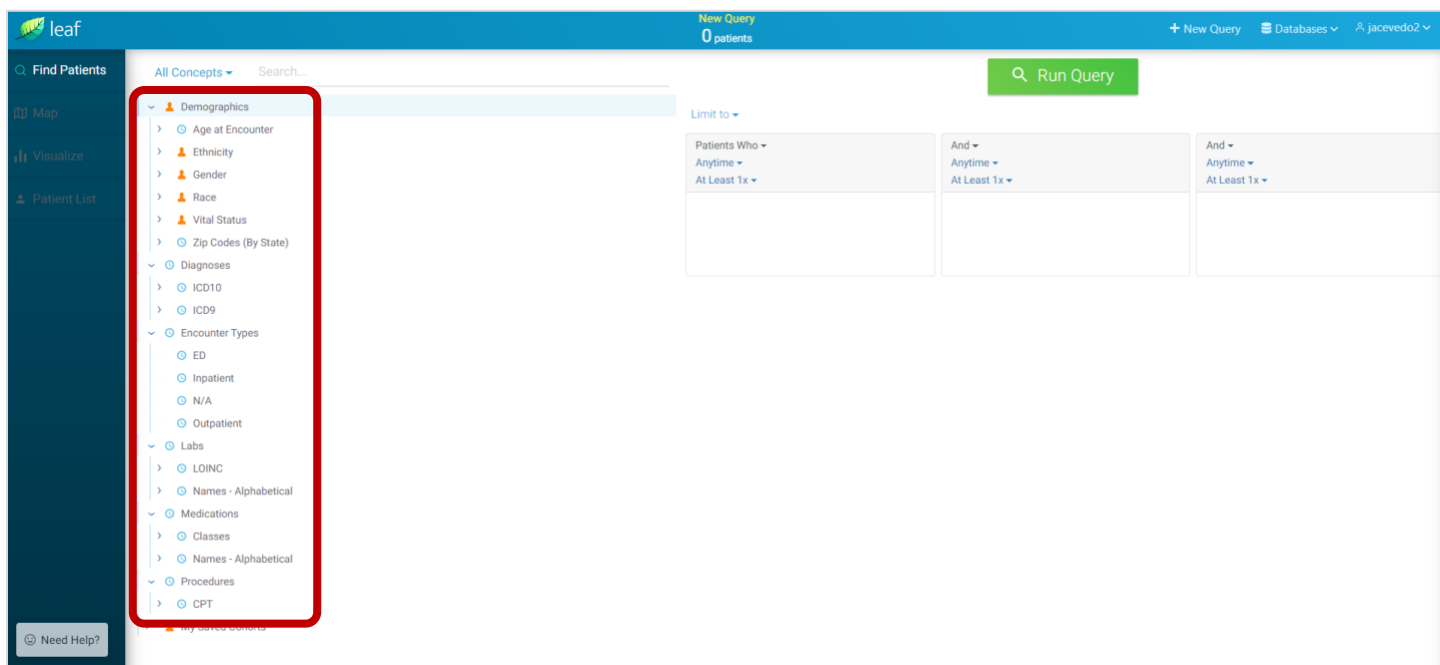
3. LEAF QUERIES

After logging in, a query building canvas is displayed. There is a list of concepts along the left-hand side of the screen where users have the ability to search for concepts by keyword, drill into concepts in a hierarchical tree structure, and then drag those concepts to the groups on the right-hand side of the screen, building a query to obtain the cohort counts.



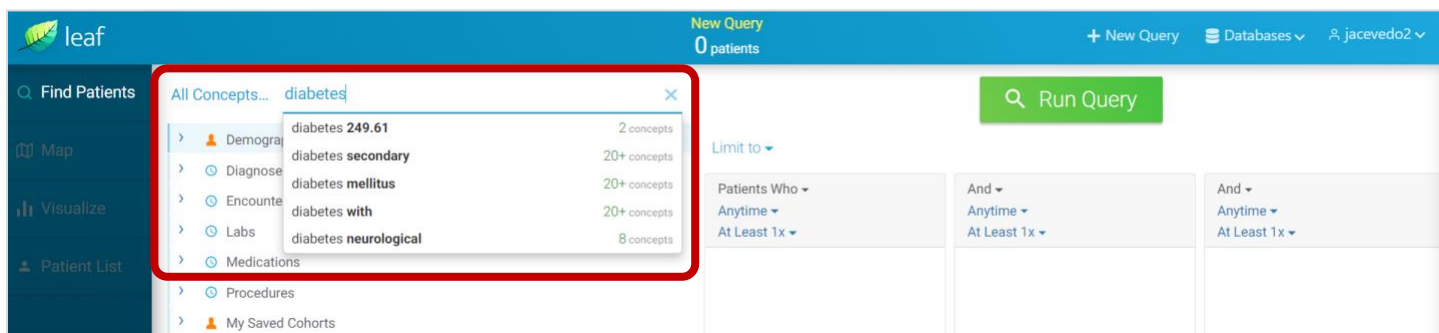
4. CONCEPT TREES

Shown below are the current first level concepts of the concept hierarchy. Further concept levels are available by drilling into each level by clicking on the > arrow to the left of the concept level.

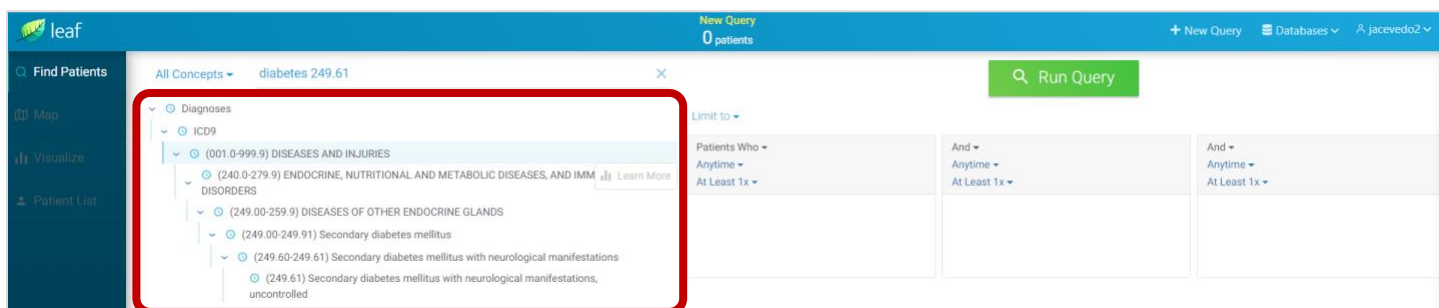


5. SEARCHING CONCEPTS

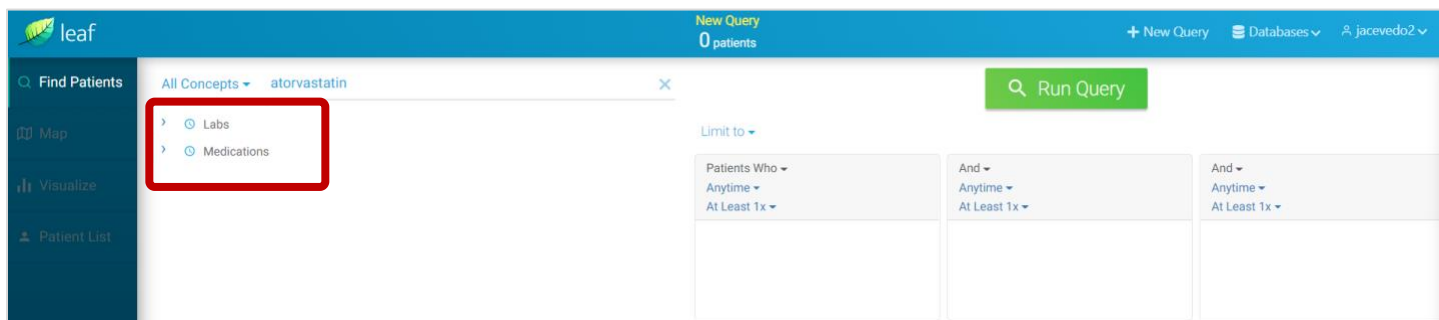
The search box (shown below) can be used to search for specific terms in the concept hierarchy. Here is an example of searching for the term **diabetes**. The search box shows all the possible concept entries that match the searched term.



And selecting the entry **diabetes 249.61** will display the diagnosis concept tree hierarchy for that term:

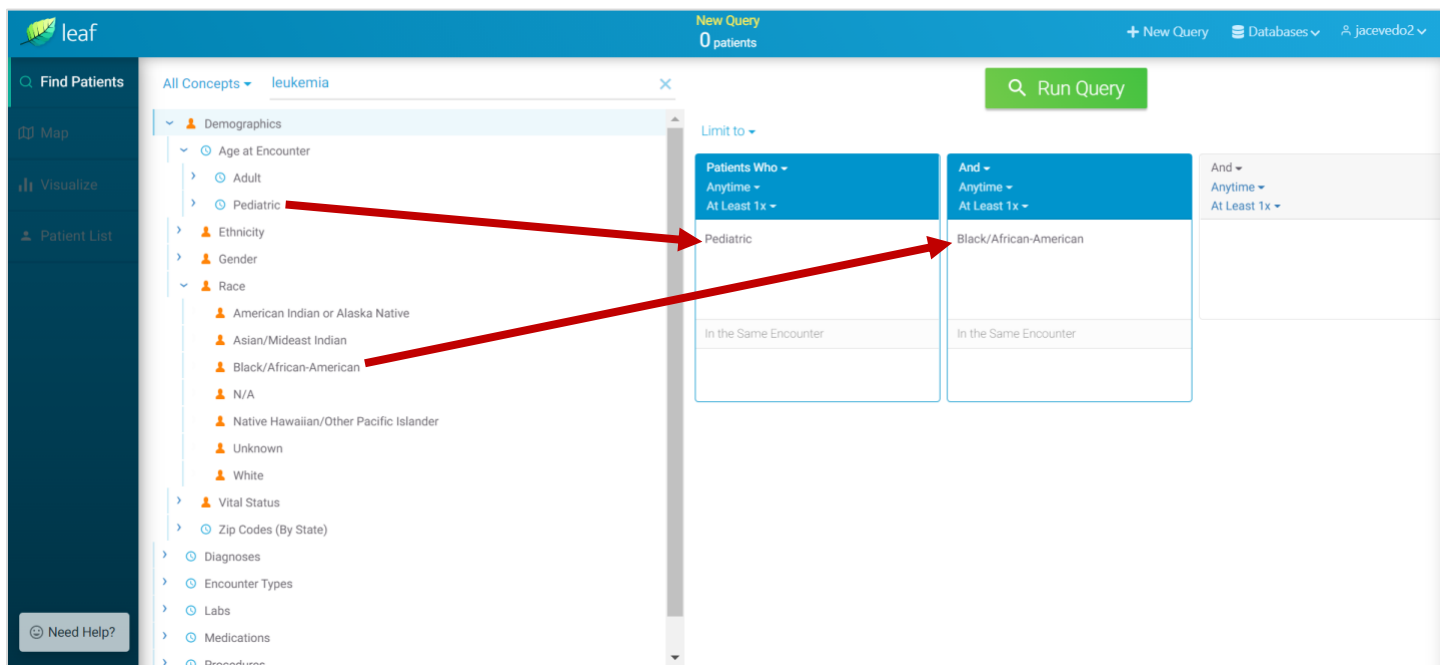


NOTE: Search terms can appear in several branches of the concept hierarchy tree. For example, searching the term **atorvastatin** will produce results on both the **Labs** branch and **Medications** branch. Keep this in mind when viewing the search results:

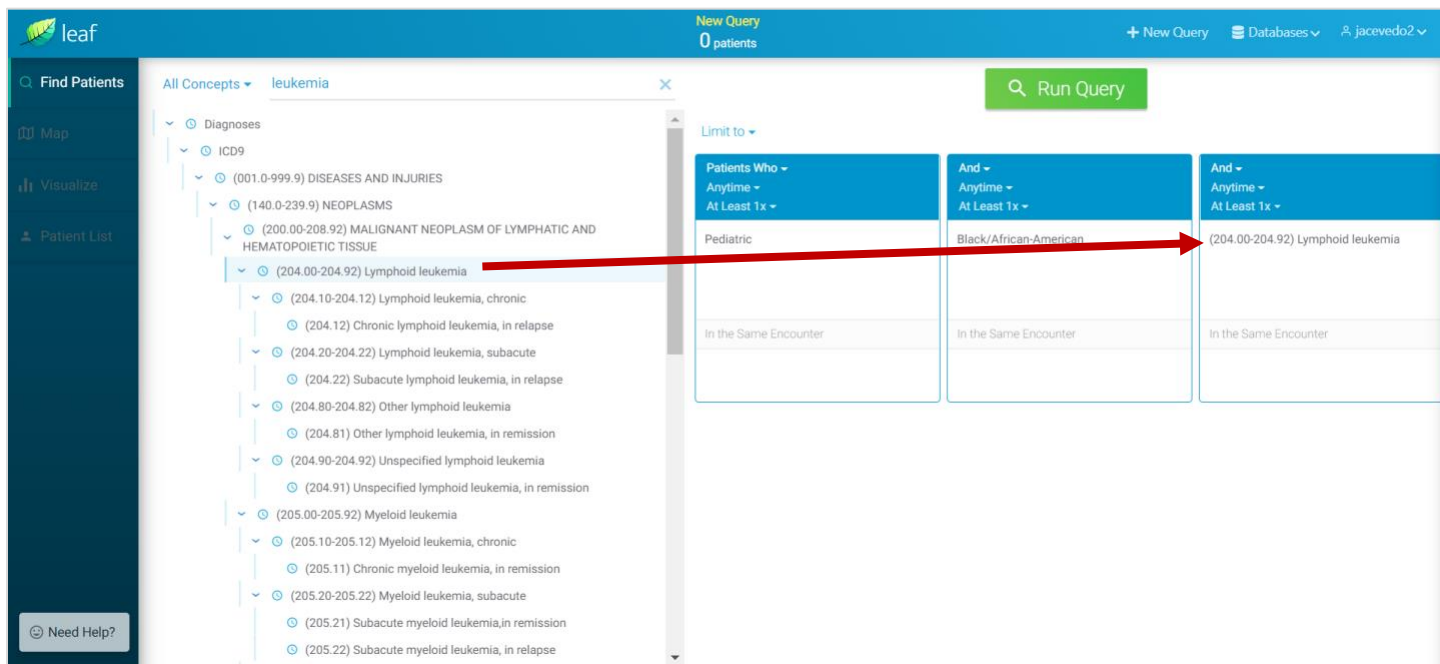


6. CREATING QUERIES

In this example, we expanded the **Demographics > Age at Encounter**, clicked on the term **Pediatric**, and dragged it over to the right-hand side first group box. Likewise, we expanded **> Race**, clicked on **Black/African American**, and dragged it over to the second group box:

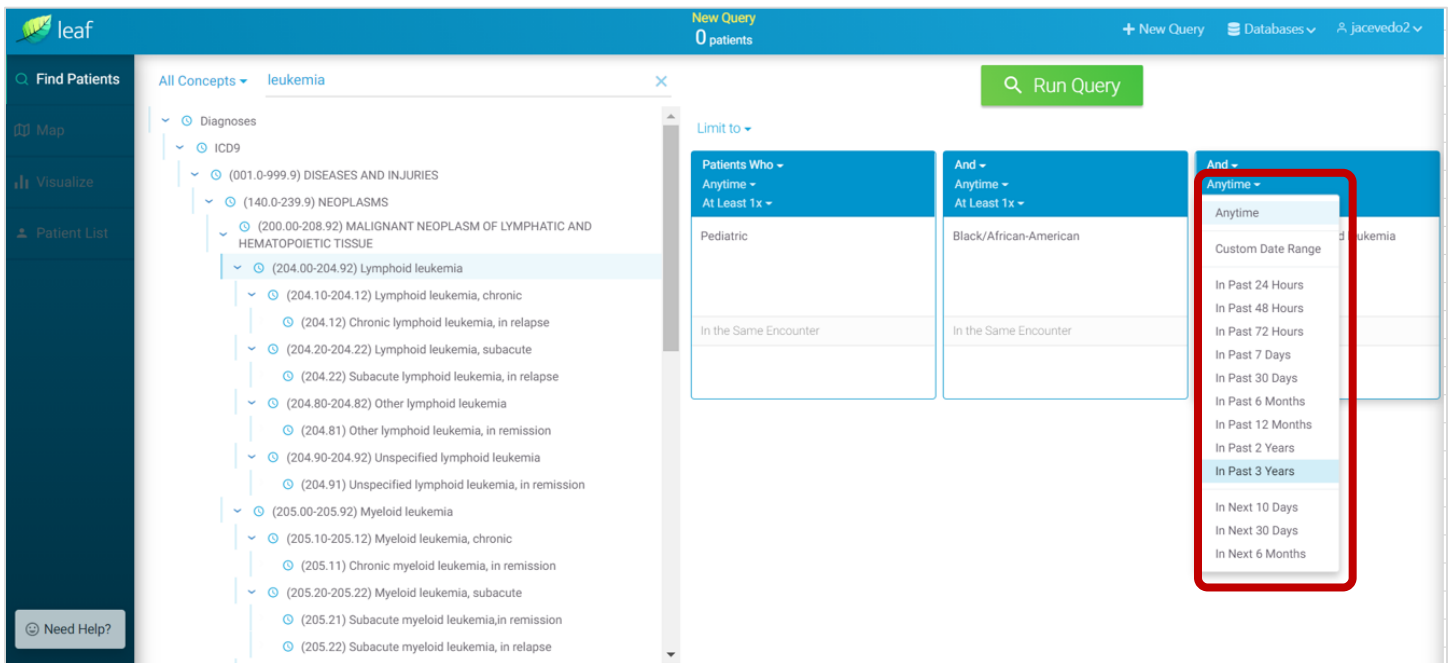


Next, we searched **leukemia**, while maintaining our **Age** and **Race** selections. We selected **Lymphoid Leukemia** from the **Diagnosis** branch, and dragged it over to the right-hand side third group box:

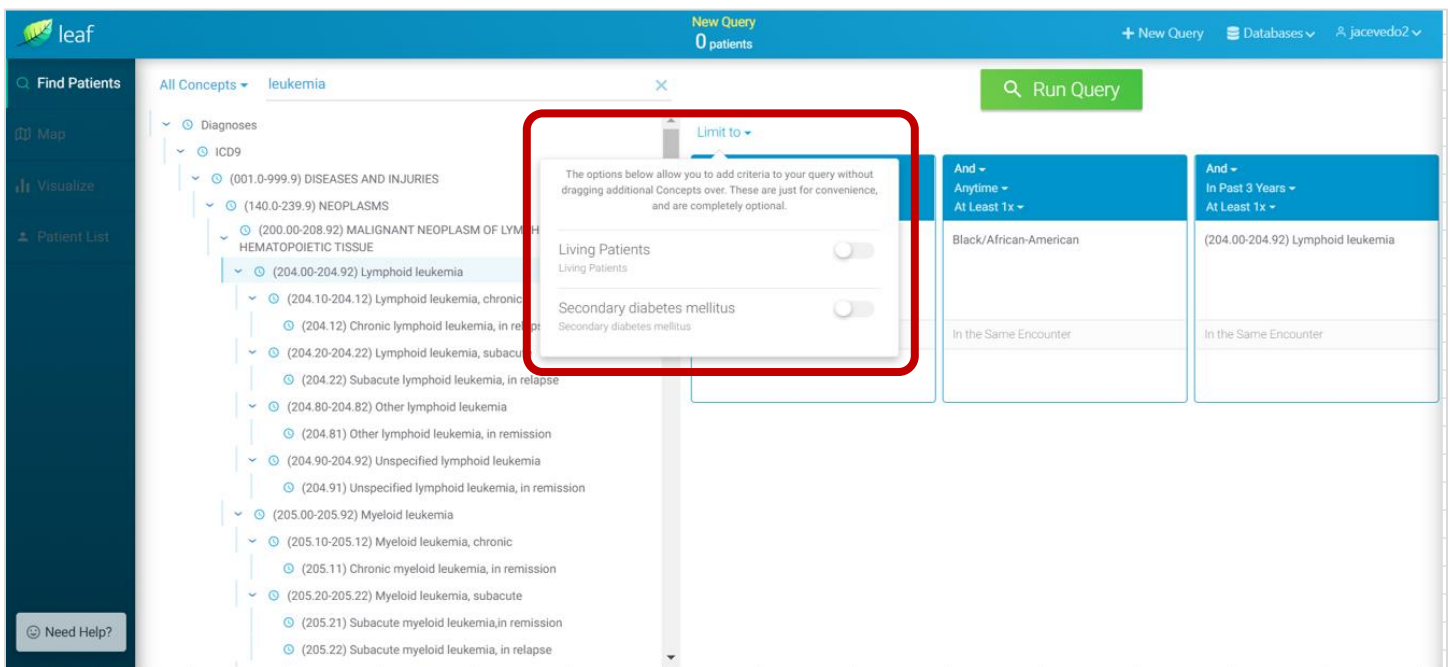


Additional concept tree terms can be added to each of the group boxes depending on your search needs. Please note, terms follow AND or AND NOT across the group boxes, and within the boxes, the operator is an OR.

Additional filters are available for each group box. For example, we could limit when the diagnosis occurred:

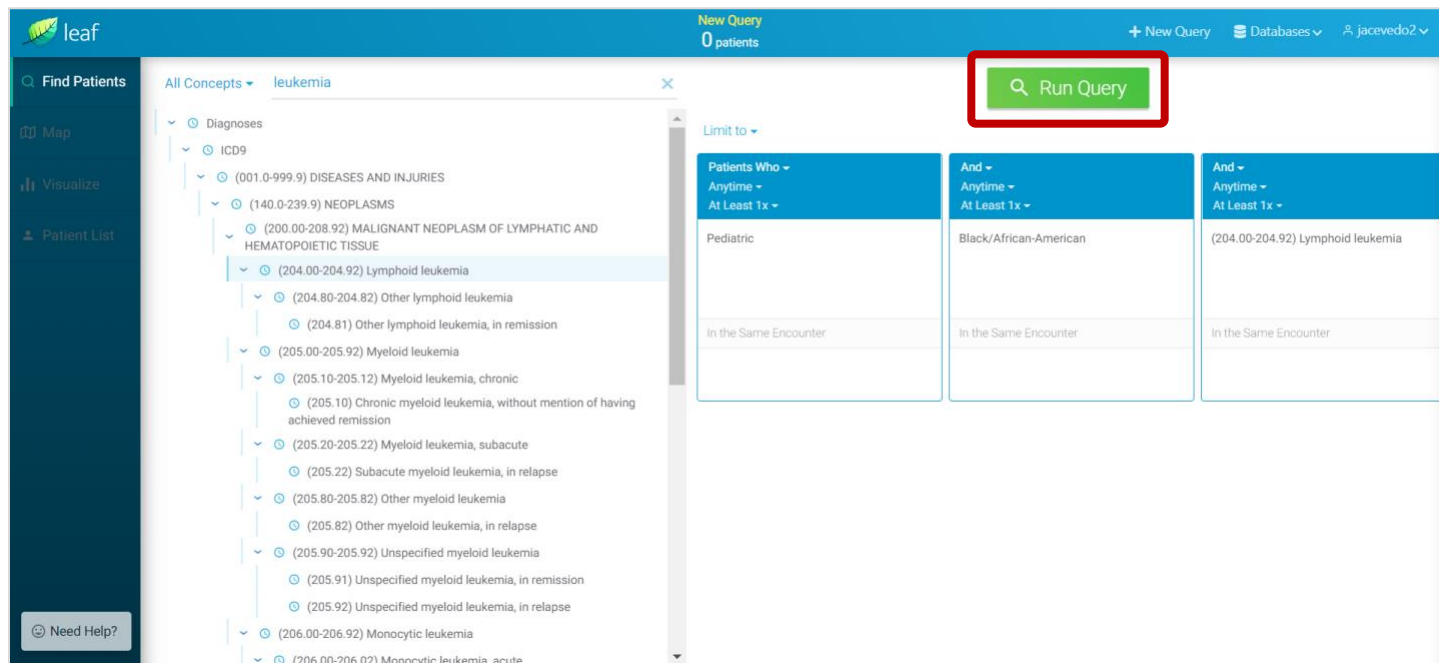


Additional filters are available in this section. For example, we could limit out search to living patients:

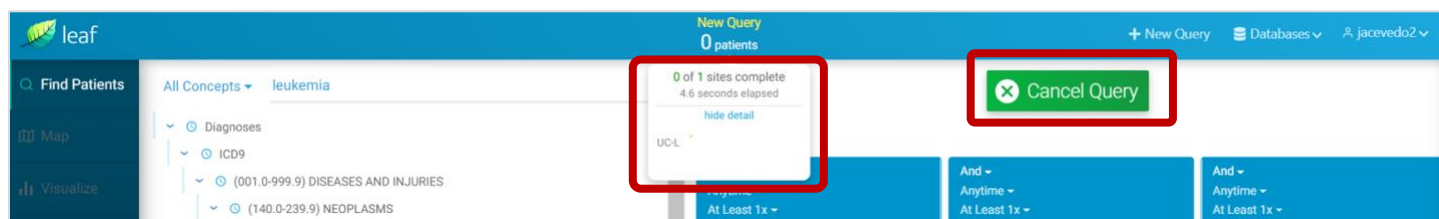


7. RUNNING QUERIES

Now that we have built our query, we are ready to run the query and view the search results. Click **Run Query**:



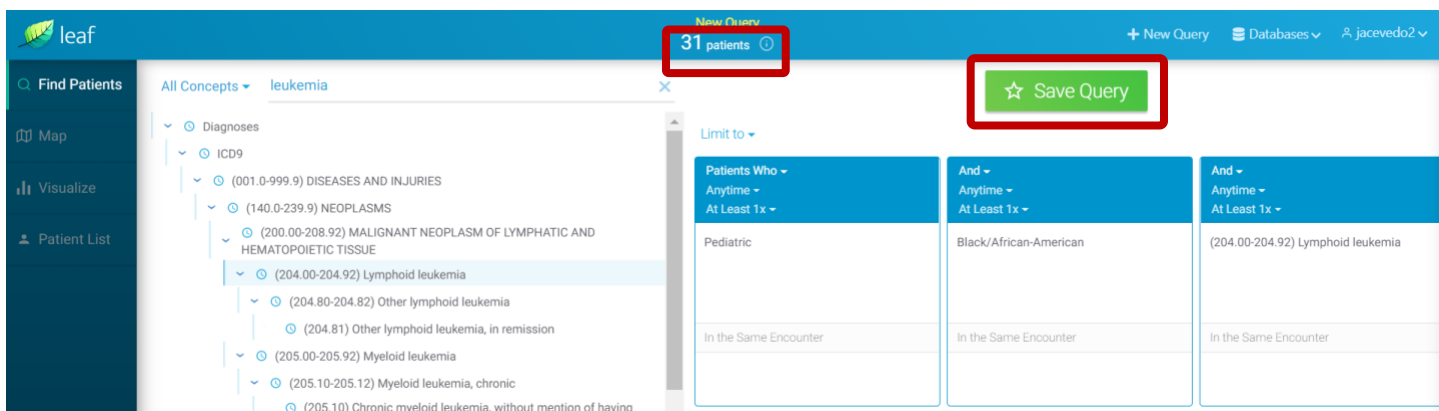
Depending upon the complexity of the query and the attributes selected, queries may take a while to run; the time elapsed is shown. The query can be cancelled at any time by clicking **Cancel Query**:



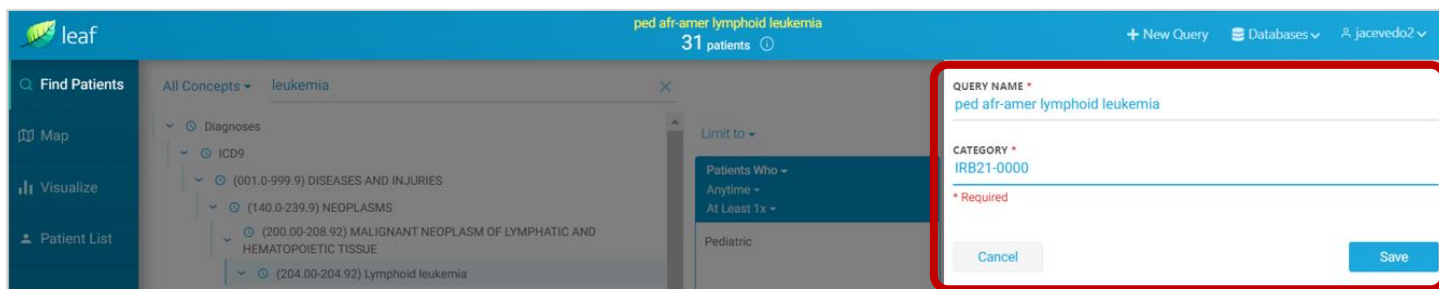
8. QUERY RESULTS

When the query is finished running, the total count of patients found, with our search terms, will be displayed at the top, center. *Reminder, Leaf includes patient data from 1/1/2012 to the present date.*

We can also choose to save our query:



Provide a **Query Name**, **Category**, and click **Save**:



leaf ped afr-amer lymphoid leukemia 31 patients

+ New Query Databases jacevedo2

Find Patients All Concepts leukemia

Diagnoses ICD9 (001.0-999.9) DISEASES AND INJURIES (140.0-239.9) NEOPLASMS (200.00-208.92) MALIGNANT NEOPLASM OF LYMPHATIC AND HEMATOPOIETIC TISSUE (204.00-204.92) Lymphoid leukemia

Limit to Patients Who Anytime At Least 1x Pediatric

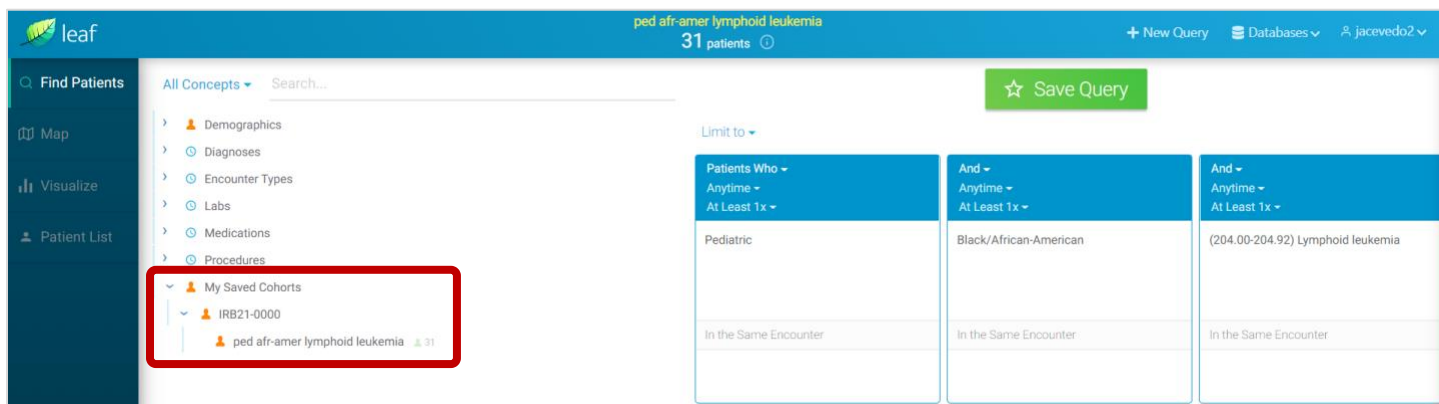
QUERY NAME * ped afr-amer lymphoid leukemia

CATEGORY * IRB21-0000

* Required

Cancel Save

Saved queries will appear at the very bottom of the concept hierarchy tree:



leaf ped afr-amer lymphoid leukemia 31 patients

+ New Query Databases jacevedo2

Find Patients All Concepts Search...

Demographics Diagnoses Encounter Types Labs Medications Procedures

My Saved Cohorts

IRB21-0000

ped afr-amer lymphoid leukemia 31

Save Query

Limit to Patients Who Anytime At Least 1x Pediatric

And Anytime At Least 1x Black/African-American

And Anytime At Least 1x (204.00-204.92) Lymphoid leukemia

In the Same Encounter In the Same Encounter In the Same Encounter

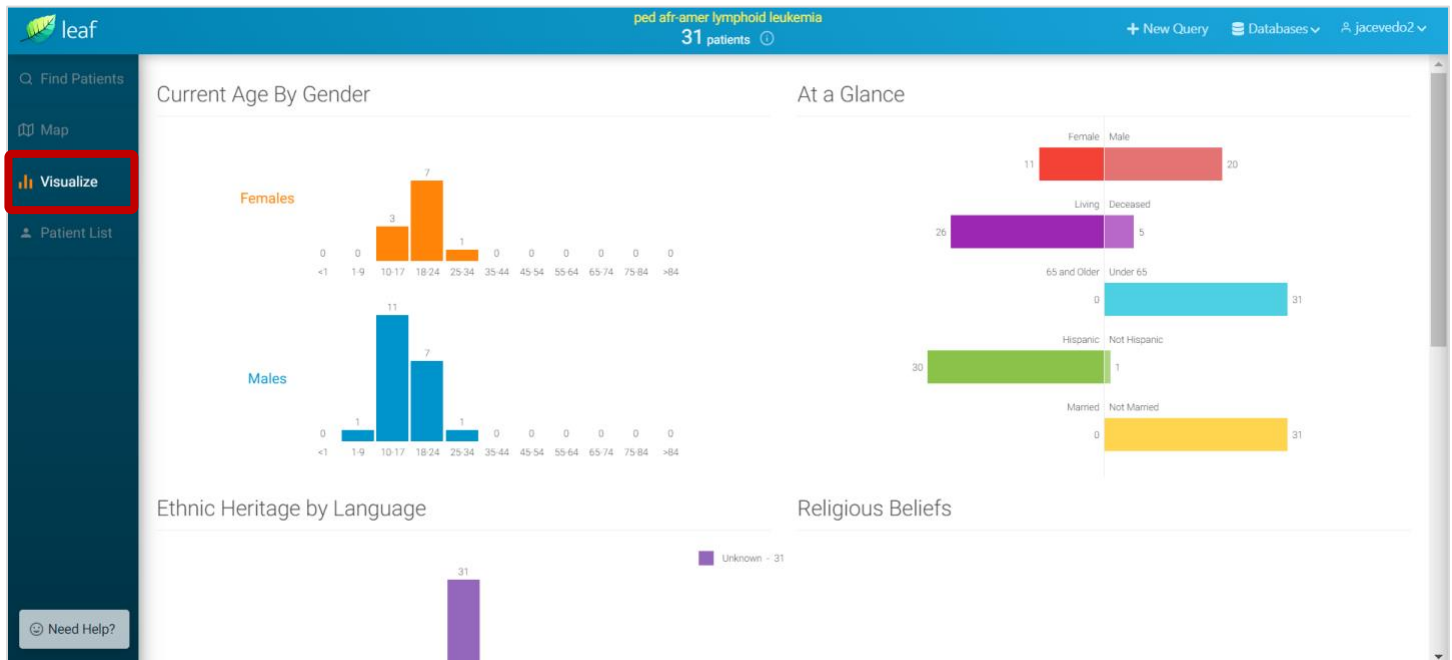
It is also recommended to save queries in the event that you would like to submit a request for a full data set.

9. SAVED QUERIES

To obtain results for long/large queries, the use of 'Saved Queries' is suggested as an alternative method. For example, when trying to find all patients who've had renal cancer along with a several surgical procedures, first search for all patients who've had renal cancer, and save that query. Then perform another query that includes the saved renal cancer query while applying additional filters for the surgical procedures of interest.

10. VISUALIZE

On the left-hand side menu, the **Visualize** feature will display the graphical stats of the patients found in your query:



11. PATIENT LIST

On the left-hand side menu, the **Patient List** feature will display the de-identified patients found in your query:

The screenshot shows the Leaf application interface with the 'Patient List' feature selected in the left-hand menu. The main area displays a table of 31 de-identified patients with 31 rows of data. The table columns are:

- Person Id
- Patient Of
- Address Postal Code
- Address State
- Age
- Ethnicity
- Gender
- Language
- Marital Status
- Race
- Religion

Person Id	Patient Of	Address Postal Code	Address State	Age	Ethnicity	Gender	Language	Marital Status	Race	Religion
-670300071	University of Chicago	606	Illinois	21	Hispanic or Latino	Male	Unknown	Unknown	Black or African American	Unknown
451983823	University of Chicago	606	Illinois	15	Hispanic or Latino	Male	Unknown	Unknown	Black or African American	Unknown
1668309300	University of Chicago	606	Illinois	13	Hispanic or Latino	Female	Unknown	Unknown	Black or African American	Unknown
-1091491350	University of Chicago	463	Indiana	18	Hispanic or Latino	Female	Unknown	Unknown	Black or African American	Unknown
29801803	University of Chicago	606	Illinois	23	Hispanic or Latino	Male	Unknown	Unknown	Black or African American	Unknown
1109565245	University of Chicago	606	Illinois	13	Hispanic or Latino	Male	Unknown	Unknown	Black or African American	Unknown
-1313873030	University of Chicago	606	Illinois	17	Hispanic or Latino	Male	Unknown	Unknown	Black or African American	Unknown
-283500519	University of Chicago	606	Illinois	22	Hispanic or Latino	Male	Unknown	Unknown	Black or African American	Unknown
126206749	University of Chicago	606	Illinois	18	Hispanic or Latino	Male	Unknown	Unknown	Black or African American	Unknown
-1818784342	University of Chicago	606	Illinois	19	Hispanic or Latino	Female	Unknown	Unknown	Black or African American	Unknown
-647150551	University of Chicago	606	Illinois	24	Hispanic or Latino	Male	Unknown	Unknown	Black or African American	Unknown
-552963925	University of Chicago	609	Illinois	12	Hispanic or Latino	Male	Unknown	Unknown	Black or African American	Unknown

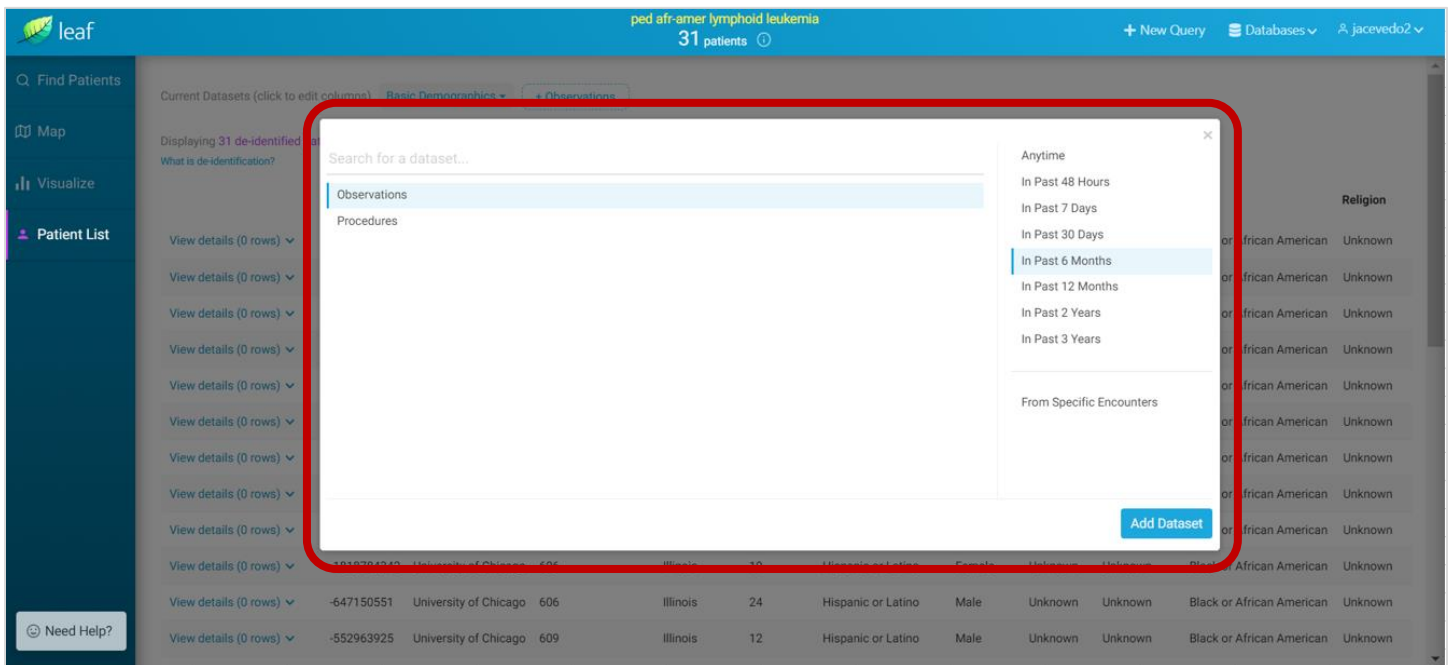
Please note, although your query will display the total number of patients found, viewability is limited to 500 records. Any dates will be date-shifted as well.

You can choose to display or hide columns on the screen with this selection feature:

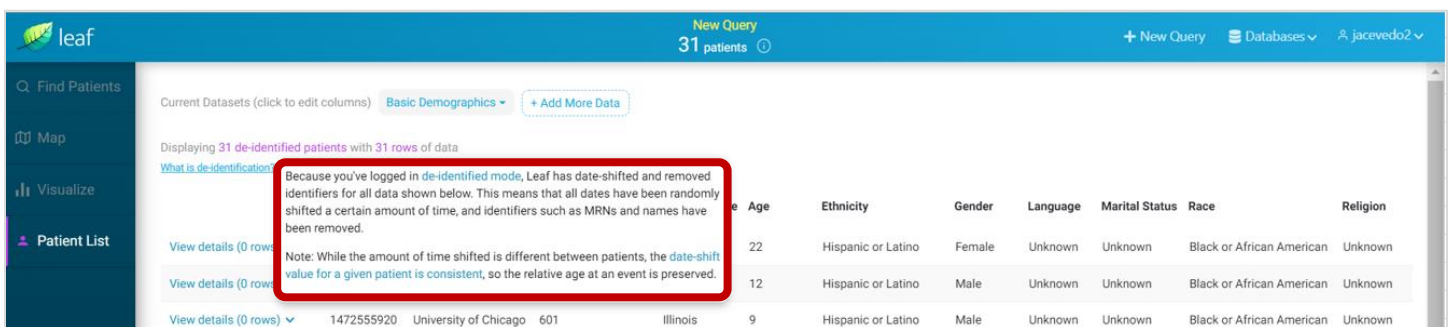
The screenshot shows the Leaf application interface. The top navigation bar includes the 'leaf' logo, a query title 'ped afrr-amer lymphoid leukemia', a patient count '31 patients', and buttons for '+ New Query', 'Databases', and a user profile 'jacevedo2'. The left sidebar contains navigation options: 'Find Patients', 'Map', 'Visualize', and 'Patient List'. The main content area displays a table of patient data. A red box highlights the 'Basic Demographics' column selection menu, which is open. This menu lists various demographic fields with toggle switches to show or hide them in the table. The fields listed are: Person Id, Patient Of, Address Postal Code, Address State, Age, Ethnicity, Gender, Language, Marital Status, Race, and Religion. The table below shows patient records with columns for these fields and more. The first few rows of the table are:

Person Id	Address Postal Code	Address State	Age	Ethnicity	Gender	Language	Marital Status	Race	Religion	
-6703000			21	Hispanic or Latino	Male	Unknown	Unknown	Black or African American	Unknown	
4519808			15	Hispanic or Latino	Male	Unknown	Unknown	Black or African American	Unknown	
1668309			13	Hispanic or Latino	Female	Unknown	Unknown	Black or African American	Unknown	
-1091401			18	Hispanic or Latino	Female	Unknown	Unknown	Black or African American	Unknown	
2980100			23	Hispanic or Latino	Male	Unknown	Unknown	Black or African American	Unknown	
1109505			13	Hispanic or Latino	Male	Unknown	Unknown	Black or African American	Unknown	
-1313800			17	Hispanic or Latino	Male	Unknown	Unknown	Black or African American	Unknown	
-283500519	University of Chicago	606	Illinois	22	Hispanic or Latino	Male	Unknown	Unknown	Black or African American	Unknown
126206749	University of Chicago	606	Illinois	18	Hispanic or Latino	Male	Unknown	Unknown	Black or African American	Unknown
-1818784342	University of Chicago	606	Illinois	19	Hispanic or Latino	Female	Unknown	Unknown	Black or African American	Unknown
-647150551	University of Chicago	606	Illinois	24	Hispanic or Latino	Male	Unknown	Unknown	Black or African American	Unknown
-552963925	University of Chicago	609	Illinois	12	Hispanic or Latino	Male	Unknown	Unknown	Black or African American	Unknown

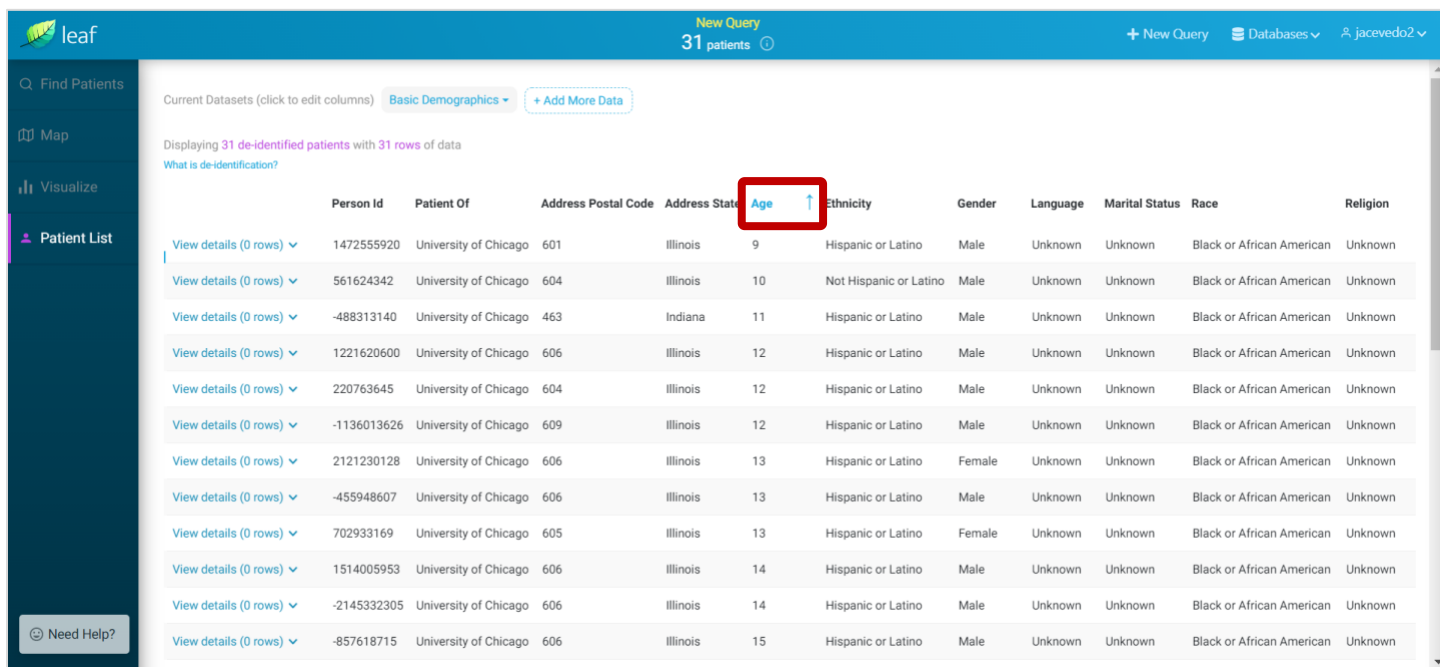
You can also choose to add additional datasets based on **Observations** and **Procedures**:



What is **de-identification**? See explanation below:



You can also click on any of the column headings to sort the dataset by that element:



leaf New Query 31 patients ⓘ + New Query Databases ▾ jacevedo2 ▾

Find Patients Map Visualize **Patient List**

Current Datasets (click to edit columns) Basic Demographics ▾ + Add More Data

Displaying 31 de-identified patients with 31 rows of data
What is de-identification?

	Person Id	Patient Of	Address Postal Code	Address State	Age	Ethnicity	Gender	Language	Marital Status	Race	Religion
View details (0 rows) ▾	1472555920	University of Chicago	601	Illinois	9	Hispanic or Latino	Male	Unknown	Unknown	Black or African American	Unknown
View details (0 rows) ▾	561624342	University of Chicago	604	Illinois	10	Not Hispanic or Latino	Male	Unknown	Unknown	Black or African American	Unknown
View details (0 rows) ▾	-488313140	University of Chicago	463	Indiana	11	Hispanic or Latino	Male	Unknown	Unknown	Black or African American	Unknown
View details (0 rows) ▾	1221620600	University of Chicago	606	Illinois	12	Hispanic or Latino	Male	Unknown	Unknown	Black or African American	Unknown
View details (0 rows) ▾	220763645	University of Chicago	604	Illinois	12	Hispanic or Latino	Male	Unknown	Unknown	Black or African American	Unknown
View details (0 rows) ▾	-1136013626	University of Chicago	609	Illinois	12	Hispanic or Latino	Male	Unknown	Unknown	Black or African American	Unknown
View details (0 rows) ▾	2121230128	University of Chicago	606	Illinois	13	Hispanic or Latino	Female	Unknown	Unknown	Black or African American	Unknown
View details (0 rows) ▾	-455948607	University of Chicago	606	Illinois	13	Hispanic or Latino	Male	Unknown	Unknown	Black or African American	Unknown
View details (0 rows) ▾	702933169	University of Chicago	605	Illinois	13	Hispanic or Latino	Female	Unknown	Unknown	Black or African American	Unknown
View details (0 rows) ▾	1514005953	University of Chicago	606	Illinois	14	Hispanic or Latino	Male	Unknown	Unknown	Black or African American	Unknown
View details (0 rows) ▾	-2145332305	University of Chicago	606	Illinois	14	Hispanic or Latino	Male	Unknown	Unknown	Black or African American	Unknown
View details (0 rows) ▾	-857618715	University of Chicago	606	Illinois	15	Hispanic or Latino	Male	Unknown	Unknown	Black or African American	Unknown

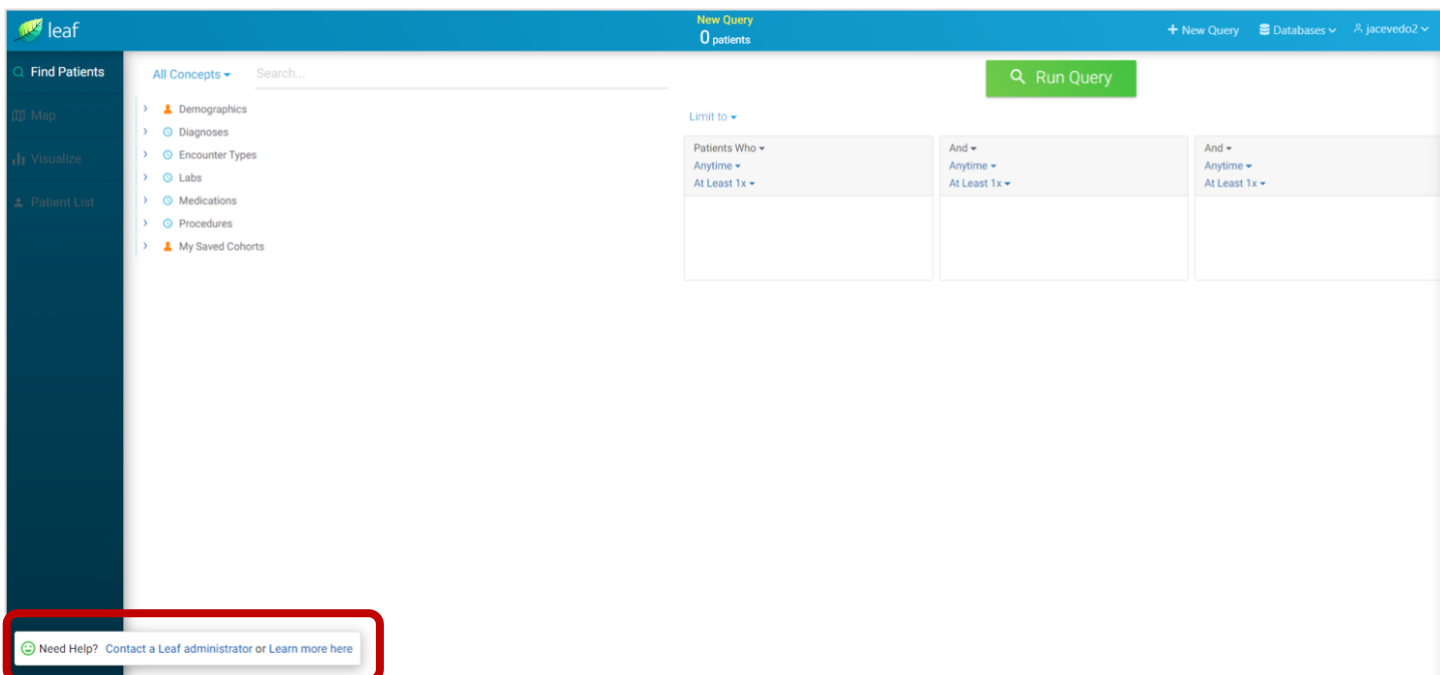
Need Help?

12. LEAF SUPPORT

Leaf is supported and administered by the Biological Sciences [Center for Research Informatics](#) (CRI). The CRI is responsible for the maintenance and the administration of the application.

Documentation

For a link to support documentation, please click on the **Need Help?** button on the lower left-hand side of the screen (shown below).



leaf New Query 0 patients ⓘ + New Query Databases ▾ jacevedo2 ▾

Find Patients Map Visualize **Patient List**

All Concepts ▾ Search...

- Demographics
- Diagnoses
- Encounter Types
- Labs
- Medications
- Procedures
- My Saved Cohorts

Limit to ▾

Patients Who ▾
Anytime ▾
At Least 1x ▾

And ▾
Anytime ▾
At Least 1x ▾

And ▾
Anytime ▾
At Least 1x ▾

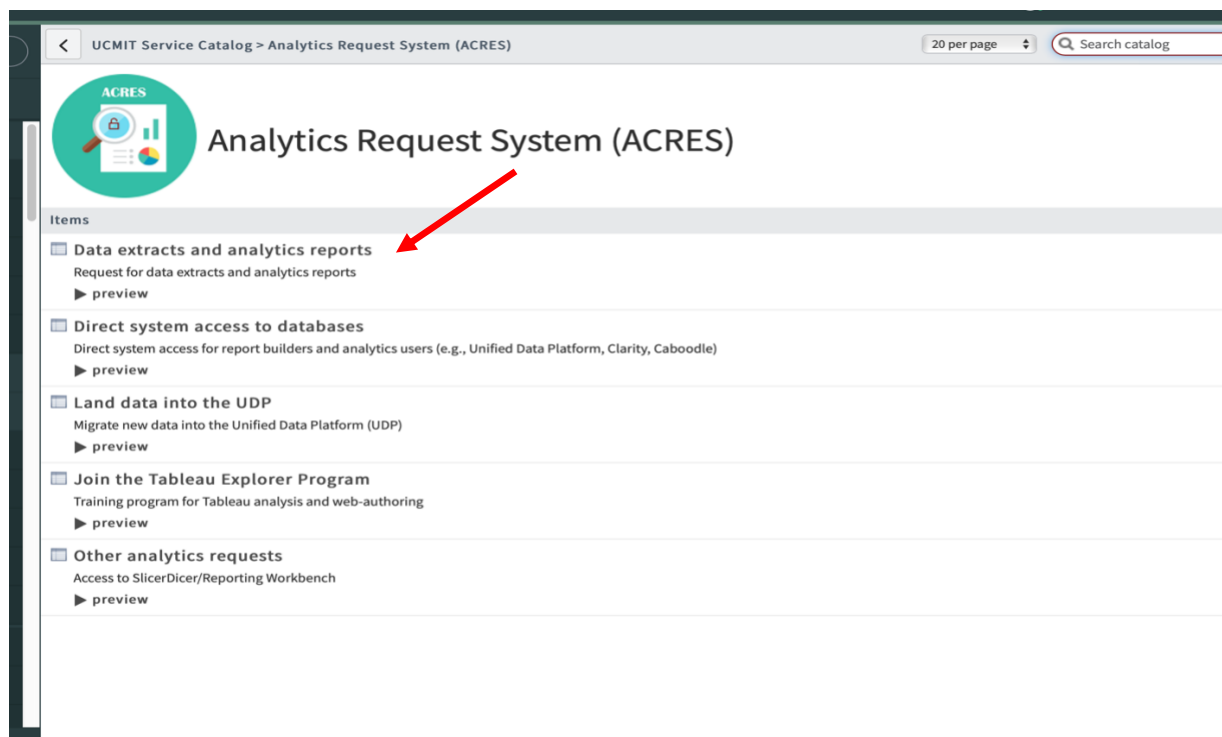
Run Query

Need Help? [Contact a Leaf administrator](#) or [Learn more here](#)

Request Assistance

To request assistance with Leaf (**access related or questions**) please submit a request at: <https://bit.ly/30d629A>. See steps below.

Choose Data extracts and analytic reports



The form will populate with your user information. Please complete the additional fields according to the screenshots below.

Please ensure the **Requester Department or Workgroup** field is completed.

<div>* Requested For</div> <div>Tiffany Cyrus</div> <div>Requester ID</div> <div>tcyrus</div> <div>Requester Job Title</div> <div>IT Project Management, Sr. Analyst - ITIPMP2E</div>	<div>* Requested By</div> <div>Tiffany Cyrus</div> <div>Requester Email</div> <div>tcyrus@bsd.uchicago.edu</div> <div>* Requester Department or Workgroup</div> <div></div>
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1. Request Form

* Is this request to modify an existing report?

No

* How often would you like this data to be refreshed?

One-Time Request

* What format would you like this one-time data extract request?

CSV File

* Is this request related to Soarian data?

No

* Is data from this request to support human-subject research?

No

* Will DATA or RESULTS of this request be presented or shared outside the organization?

▼ Data and Results Definitions

DATA: Raw data from internal UCM databases

RESULTS: Interpretation, insights, or analysis drawn from raw data

No, neither DATA or RESULTS will be presented or shared outside the

* Does data from this request contain Personally Identifiable Information (including PHI, such as MRN, patient names, dates of service; to see full list of PHI, select "Yes"), finance, employee/human resources, UCM confidential or strategic data?

No

Does data from this request contain any "restricted" or "internal use only" information as defined under the UCM IT Data Classification Policy?

▼

UCM IT Data Classification Policy

-- None --

* Has a request similar to this one been successfully completed in the past?

No

* Have you already spoken with a fulfillment team regarding this request?

Yes

* Please select the team with whom you have spoken regarding this request:

Center for Research Informatics (Julie Johnson/Tiffany Cyrus)

* Is this an urgent request?

No

* How will these data be used?

Assistance with Leaf

* Please specify the particular columns and data elements you are requesting through the use of a template, screenshot or a detailed list below (if helpful, please use the attachment feature on the top right of this page):

▼ Warning:

Do not attach documents with PHI.

NA

I hereby acknowledge that any devices used to view, process, store, or transmit sensitive data are encrypted as required by the Information Security Office and the Privacy Office. UCM-IT or BSD-IS can assist with device encryption. In addition, I attest to follow all applicable organizational policies on data use, disclosure, and HIPAA compliance. Furthermore, I will direct any approved recipient of these data to the applicable policies.

* ☒ Check to acknowledge

Applicable Internal Policies

▼

Please click here to see the [Applicable Internal Policies](#)

Select **Order Now** to submit the request.

TC Tiffany Cyrus

Search catalog

Order this Item

Order Now

Add to Cart

Shopping Cart

Empty

is required before submitting

Search

Info

r Workgroup

Your request will be routed to the CRI and a member of our team will contact you to assist with your request.

To request a **full data set**, please ensure that you have saved your queries and submit a request following the regular request process at <https://cri.uchicago.edu/crdw/#getstarted>

13. DOCUMENT CHANGE HISTORY

VERSION	DATE	STAFF NAME	CHANGE DETAILS
Leaf User Guide V1.0 052021	5/20/21	Julissa Acevedo	Initial Document
Leaf User Guide V1.1 070921	7/9/21	Julissa Acevedo	Emphasized data is from 2012, page 3 and 8.
Leaf User Guide V1.2 011222	1/12/22	Tiffany Cyrus	#2 Accessing Leaf/#8 Query Results/#13 Leaf Support
Leaf User Guide V1.3 012722	1/27/22	Brian Furner Tiffany Cyrus	Updates and map feature removal Added steps for requesting support