

WIKIDATA: SEARCHING WIKIDATA WITH SPARQL QUERIES

TUTORIAL BY THE PHILADELPHIA WIKISALON



What is Wikidata?



- Database containing **structured data** describing things (objects, people, places, events, books) in terms of relationships between items, properties and values
- **Computer-readable statements that support machine-based queries**
- Language-independent platform that displays language specific to localized region or device settings

Wikidata Example Record – Neda Al-Hilali

Neda Al-Hilali (Q11049174)

textile artist edit

Neda Alhilali | Neda Al Hilali

[In more languages](#)

Language	Label	Description	Also known as
English	Neda Al-Hilali	textile artist	Neda Alhilali Neda Al Hilali

has works in the collection edit

Smithsonian American Art Museum

[1 reference](#)

reference URL	https://americanart.si.edu/collection/s/search/artist/?id=27649
retrieved	15 October 2021

[+ add reference](#)

[+ add value](#)

Wikidata Example Record – Neda Al-Hilali

- Read through the *entire Wikidata entry* to get an understanding of all the sections.
- Statements “read” across the page: first the property is shown (P), next the value (Q) and any modifiers, then possible actions. An “edit” button is located at the top right of each statement.
- Each property and value has its own unique identifier that is used in Wikidata queries.

Statements

instance of P31	human Q5 ▶ 1 reference	edit
+ add value		
sex or gender P21	female Q6581072 ▶ 1 reference	edit
+ add value		
country of citizenship P27	Czech Republic Q213 ▼ 0 references	edit
+ add reference		
+ add value		

Potential Uses for Wikidata Queries



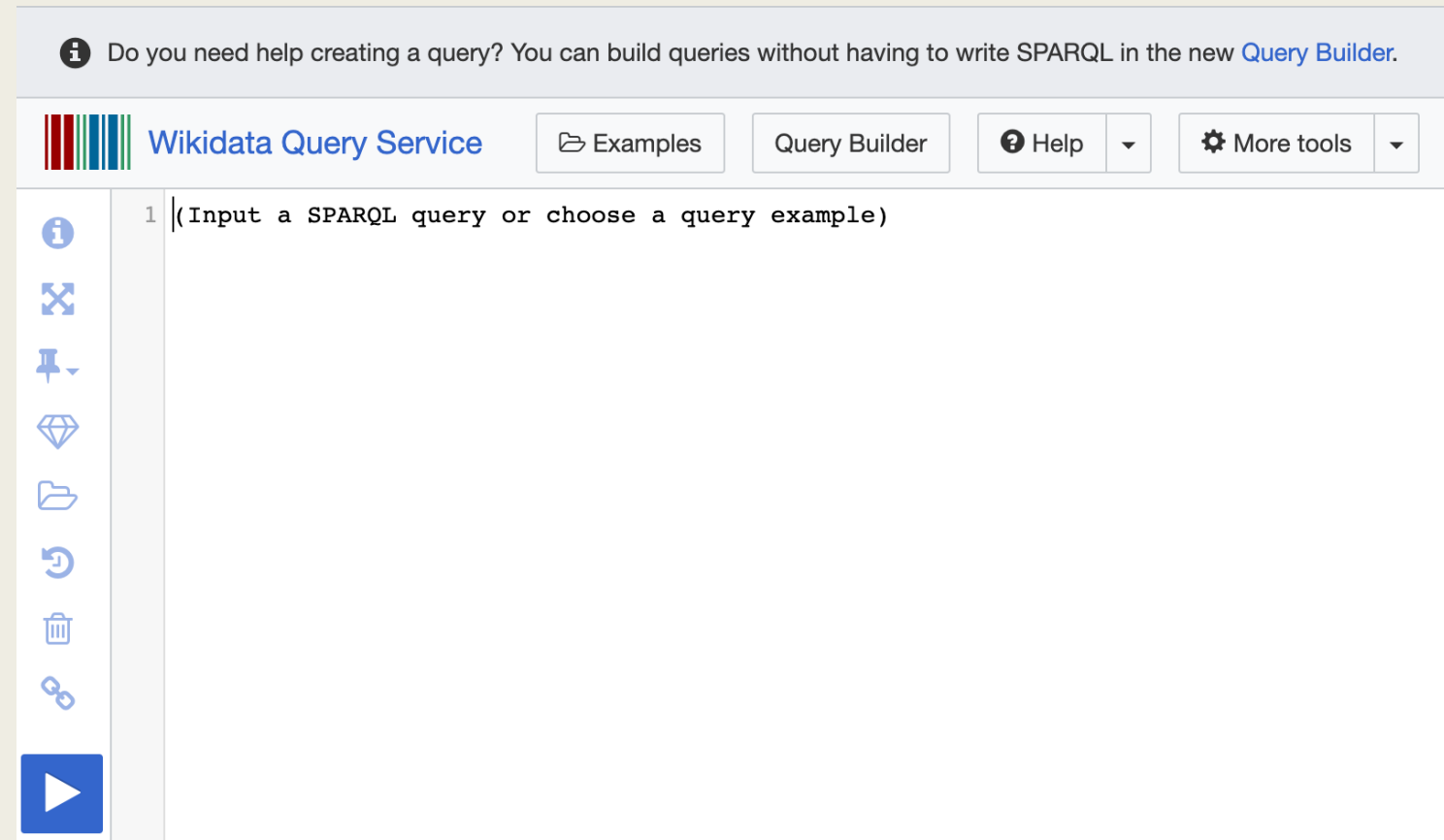
- Pre-drafting a spreadsheet of entities for use in an edit-a-thon
- Checking a dataset to ensure that results are accurate and complete
- Checking against another SPARQL result set from another knowledgebase
- Building a map display to visualize geographic data
- Generating a CSV, TSV or JSON file to export to another system or program, such as Open Refine, Open Street Map, Tableau, Gephi, etc.

Ways to Use the Wikidata Query Service

<https://query.wikidata.org/>

Wikidata Query Service (WDQS) – an advanced query tool that constructs queries using a structured language called SPARQL (SPARQL Protocol and RDF Query Language) that can ask questions from knowledge databases and return large sets of results. WDQS is accessible via the left side menu on any Wikidata item.

This demo will show two ways to query the database.



The screenshot shows the Wikidata Query Service interface. At the top, there is a notification: "Do you need help creating a query? You can build queries without having to write SPARQL in the new [Query Builder](#)." Below this, the header includes the Wikidata logo, the text "Wikidata Query Service", and navigation buttons for "Examples", "Query Builder", "Help", and "More tools". The main area is a text input field with a placeholder text: "(Input a SPARQL query or choose a query example)". On the left side, there is a vertical menu with icons for information, share, pin, diamond, folder, refresh, trash, and link, along with a blue play button at the bottom.

Using Wikidata Query Builder

Query Builder Help More tools

Build queries without SPARQL

Create queries visually with a few clicks. No knowledge of SPARQL required.

Query

Find all items...

With **Without** **matching** **References**

Include related values in the search (recommended)

and **or**

With **Without** **matching** **References**

Include related values in the search (recommended)

and **or**

With **Without** **matching** **References**

Include related values in the search (recommended)

Use the drop-down boxes to select properties and values. Add conditions to limit the results set. Click on **and/or** to expand or restrict results.

Click the **blue arrow** to run the query.

This query asks for the names of women (gender = female) on the focus list of WikiProject Craft who also have works in the Philadelphia Museum of Art.

Results: Wikidata Query Builder

Results	
item	itemLabel
Q2900288	Betye Saar
Q90022993	Syd Carpenter
Q6779852	Mary Jackson
Q21550637	Rebecca Medel
Q20256999	Marianne Strengell
Q4727179	Alison Saar
Q6551788	Linda MacNeil
Q16151751	Harriete Estel Berman
Q19276795	Eleanor Moty
Q16192925	Joyce J. Scott
Q64225721	Evelyn Svec Ward
Q2883927	Barbara Chase-Riboud
Q5431220	Faith Ringgold

Results for women (gender = female) on the focus list of WikiProject Craft who also have works in the Philadelphia Museum of Art.


Results download and other editing options are on a pop-out right sidebar.

Click on “**Show Query in the Query Service**” to access the same query showing the SPARQL Code.

Writing Queries in SPARQL

- SELECT fetches the values of specific fields in the database
 - List the columns that you would like to see in your result table
- WHERE puts restrictions or conditions on the values to be retrieved
 - Item has a property (P#) equal to a value (Q#)
- FILTER filters for items with a specific value
 - FILTER on a condition/mathematical expression (=, !=, <, >, etc.) – useful for equal/unequal
 - FILTER NOT EXISTS – no property linked to that item – useful for missing properties/images
- Boolean operators can be used to restrict or expand search results
 - AND – Restricts the result set (Must contain Value A AND B) = **IMPLICIT**
 - UNION - Expands the results set (Can contain either Value A OR B) = **“OR”**
- SERVICE – The service will return labels for the properties requested
 - wikibase:label – returns the **label** of the entity, or name
- #defaultView – Sets the default view of the results, e.g., List or Map
 - #defaultView:Map requires coordinates to be selected in the query
- LIMIT – Places a limit on the number of results returned; helps to avoid timeouts
- ORDER BY – Orders the result set by a specific field value
 - ASC (?parameter) for ascending
 - DESC (?parameter) for descending

Query #1 – Fellows of the American Crafts Council

 Wikidata Query Service Examples Query Builder Help More tools

```
1 #Fellows of the Craft Council (humans)
2
3 #defaultView:List
4 SELECT ?item ?itemLabel
5 WHERE {
6   {
7     SELECT ?item WHERE {
8       ?item wdt:P166 wd:Q106595976 .
9       ?item wdt:P31 wd:Q5;
10    }
11  }
12  SERVICE wikibase:label { bd:serviceParam wikibase:language "[AUTO_LANGUAGE],en,es,fr,de" }
13 }
14 ORDER BY ?itemLabel
```

Asks for the names (itemLabel) of people [instanceOf (P31) = human (Q5)] who won the award (P166) of a fellowship (Fellows of the American Craft Council (Q106595976)) and returns a list ordered alphabetically by label (first name first)

<https://w.wiki/5mna>

<https://bit.ly/ACC-Fellows>

Results #1 - Fellows of the American Crafts Council

item	itemLabel
Q105325223	Adda Husted Andersen
Q2890302	Adela Akers
Q4685337	Adrian Saxe
Q4697035	Aileen Osborn Webb
Q4701113	Akio Takamori
Q106629588	Albert Green
Q106629589	Albert LeCoff
Q4348019	Albert Paley
Q16018486	Alice Kagawa Parrott
Q106629590	Alice Rooney
Q23688793	Alma Eikerman
Q98833555	Alphonse Mattia

Results list ordered alphabetically by label (first name first). Can be downloaded in various formats.

326 Results

Query #2 – ACC Fellows Without Images



Wikidata Query Service

Examples

Query Builder

Help

More tools



```
1 #Fellows of the American Craft Council (humans) with no image property in Wikidata
2
3 #defaultView:List
4 SELECT ?item ?itemLabel
5 WHERE {
6   {
7     SELECT ?item WHERE {
8       ?item wdt:P166 wd:Q106595976 .
9       ?item wdt:P31 wd:Q5;
10      FILTER NOT EXISTS { ?item wdt:P18 []}
11    }
12  }
13  SERVICE wikibase:label { bd:serviceParam wikibase:language "[AUTO_LANGUAGE],en,es,fr,de" }
14 }
15 ORDER BY ?itemLabel
16
```

Asks for the names (itemLabel) of people [instanceOf (P31) = human (Q5)] who won the award (P166) of a fellowship (Fellows of the American Craft Council (Q106595976)) but **do not have an image property (P18)** in Wikidata, and returns a list ordered alphabetically by label (first name first)

<https://w.wiki/5mnX>

<https://bit.ly/ACC-Fellows-NoImage>

Results #2 – ACC Fellows Without Images

item	itemLabel
Q105325223	Adda Husted Andersen
Q2890302	Adela Akers
Q4685337	Adrian Saxe
Q4697035	Aileen Osborn Webb
Q4701113	Akio Takamori
Q106629588	Albert Green
Q106629589	Albert LeCoff
Q106629590	Alice Rooney
Q23688793	Alma Eikerman

These results are a subset of Results #1. These items **do not have** Commons images linked in Wikidata. (278 out of 326 total)

278 Results

Key Statements for People

- instance of (P31)
 - human (Q5)
- sex or gender (P21)
- occupation (Q12737077)
- educated at (P69)
- award received (P166)
- image (P18)
- on focus list of Wikimedia Project (P5008)
 - WikiProject Craft (Q110249806)

Key Statements for Organizations

- instance of (P31)
 - Organization
 - Institution
- inception (P571)
- country (P17)
 - United States of America (Q30)
- headquarters location (P159)
- coordinate location (P625)
- official website (Q22137024)
- on focus list of Wikimedia Project (P5008)
 - WikiProject Craft (Q110249806)

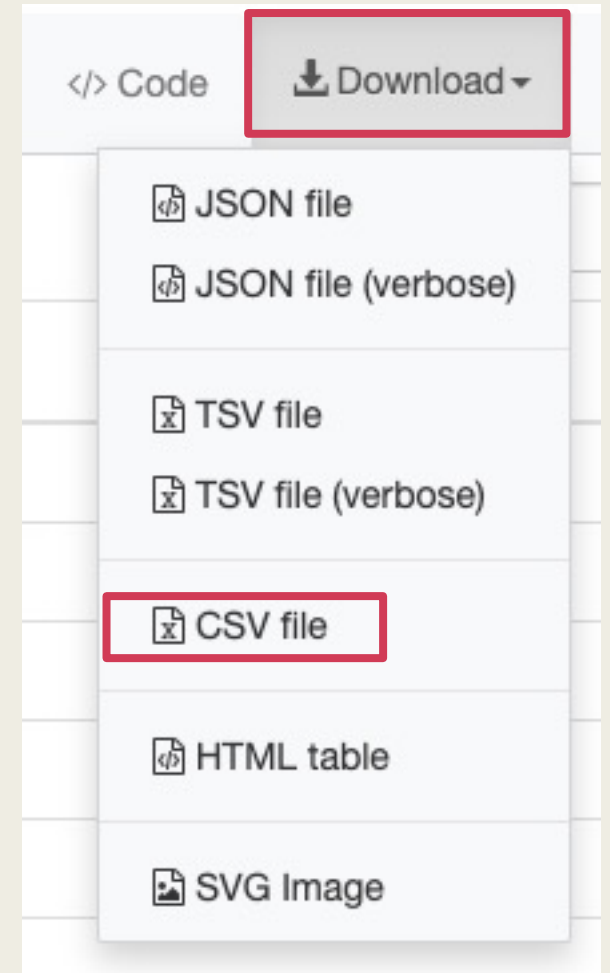
How to Save Your Queries

- Save the full text of the query by copying and pasting the code to a text document.
- Save the full URL of the query by copying and pasting to a text document.
- Save a short link to the full query by clicking the link on the **left side** of the query pane.



How to Save Your Results

- Click the **Download** button below the query pane and choose the appropriate file type.
- TSV or CSV files are most useful to open with programs such as Excel, Google Sheets, Numbers, OpenRefine, etc.



Suggested Best Practices



[Noun Light 3408497](#)

- Keep a cheatsheet of key statements, properties and values for your project nearby.
- Check various items in your result set to ensure you have pulled the correct data.
- Use the hash (#) to add comments to your SPARQL queries for clarity and documentation.
- Keep a word or text document to record your SPARQL search queries with notes.
- Save your queries for later use.
- Use the **Duplicate** command on a tab in your browser to spawn a new tab with a copy of your query so that you can make edits.
- Take breaks and rest your mind when needed!

For More Information

- Wikidata Query Tutorials
 - Instructional Videos
 - Short (Fast Introduction) – [Wikidata SPARQL Query Tutorial](#) (U. Edinburgh)
 - Long (Excellent Resource) – [Querying Wikidata with SPARQL for Absolute Beginners](#) (WMF)
 - [Wikidata SPARQL Tutorial](#) and [Many varied Wikidata SPARQL Examples](#) to play with
 - [Vizquery](#) – A *visual* query tool that does not require SPARQL
- WikiProject Craft: https://en.wikipedia.org/wiki/Wikipedia:WikiProject_Craft
- Related Demonstrations
 - [Philadelphia WikiSalon Demonstration Archive](#)
 - [Creating New Wikidata Entries](#)
 - [Editing and Enhancing Wikidata Entries](#)
- Join us at the monthly Philadelphia WikiSalon!
 - Wikipedia: Meetup/Philadelphia - <https://en.wikipedia.org/wiki/Wikipedia:Meetup/Philadelphia>