

# Using ARQ to make SPARQL queries

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## SPARQL scripts for the demographics cube (DC-DEMO-sample.ttl)

The examples below uses `arq` from Apache Jena (<http://jena.apache.org>). To install `arq` - download and unpack the latest version of `apache-jena` from (<http://jena.apache.org/download/index.cgi>). Then you need some way of invoking `arq`; I use a not-so-clever-approach: `cd ~/bin; ln -s /opt/apache-jena-2.13.0/bin/arq`.

Given a SPARQL query and RDF data, `arq` returns the result of the query. So this is the command line way of making a SPARQL query.

The use of `arq` is described many places, see for example (<http://www.learningsparql.com/>).

All `arq` commands below are to be run in the directory with the sample files, which is `inst/extdata/sample-rdf` directory or `extdata/sample-rdf` depending on the whether the development version or the installed version of the package is used.

The `cd` below in each code block is included because I could not find a quick way to get the code chunk executed in that directory. `knitr` is flexible enough to do it, I have not yet found the right way to do it. So, ignore the repeated `cd ..`

### Get dimensions

```
cd ../extdata/sample-rdf
arq --data DC-DEMO-sample.ttl --query DEMOdDimensions.rq
```

```
## -----
## | p |
## =====
## | crnd-dimension:ethnic |
## | crnd-dimension:race |
## | crnd-dimension:procedure |
## | crnd-dimension:agegr1 |
## | crnd-dimension:factor |
## | crnd-dimension:trt01a |
## | crnd-dimension:sex |
## -----
```

## Get attributes

```
cd ../extdata/sample-rdf
arq --data DC-DEMO-sample.ttl --query DEMOAttributes.rq
```

```
## -----
## | p |
## =====
## | crnd-attribute:cellpartno |
## | crnd-attribute:measurefmt |
## | crnd-attribute:colno |
## | crnd-attribute:denominator |
## | crnd-attribute:unit |
## | crnd-attribute:rowno |
## -----
```

## Get observations

The SPARQL script shows for each observation the dimension, attributes and measures in a row. Note: in the HTML version the output below can be scrolled using the left and right arrow.

```
cd ../extdata/sample-rdf
arq --data DC-DEMO-sample.ttl --query DEMOobservations.rq
```

```
## -----
## | s | ethnic | race | procedure |
## =====
## | ds:obs001 | code:ethnic-_ALL_ | code:race-_ALL_ | code:procedure-_ALL_ |
## | ds:obs002 | code:ethnic-_ALL_ | code:race-_ALL_ | code:procedure-_ALL_ |
## | ds:obs003 | code:ethnic-_ALL_ | code:race-_ALL_ | code:procedure-_ALL_ |
## | ds:obs004 | code:ethnic-_ALL_ | code:race-_ALL_ | code:procedure-_ALL_ |
## | ds:obs005 | code:ethnic-_ALL_ | code:race-_ALL_ | code:procedure-_ALL_ |
## | ds:obs006 | code:ethnic-_ALL_ | code:race-_ALL_ | code:procedure-_ALL_ |
```

[illegible]

[illegible]

```
## | ds:obs115 | code:ethnic-_NONMISS_ | code:race-_ALL_ | code
## | ds:obs116 | code:ethnic-_NONMISS_ | code:race-_ALL_ | code
## | ds:obs117 | code:ethnic-_NONMISS_ | code:race-_ALL_ | code
## | ds:obs118 | code:ethnic-_NONMISS_ | code:race-_ALL_ | code
## | ds:obs119 | code:ethnic-_NONMISS_ | code:race-_ALL_ | code
## | ds:obs120 | code:ethnic-_NONMISS_ | code:race-_ALL_ | code
## | ds:obs121 | code:ethnic-NOT_HISPANIC_OR_LATINO | code:race-_ALL_ | code
## | ds:obs122 | code:ethnic-NOT_HISPANIC_OR_LATINO | code:race-_ALL_ | code
## | ds:obs123 | code:ethnic-NOT_HISPANIC_OR_LATINO | code:race-_ALL_ | code
## | ds:obs124 | code:ethnic-NOT_HISPANIC_OR_LATINO | code:race-_ALL_ | code
## | ds:obs125 | code:ethnic-NOT_HISPANIC_OR_LATINO | code:race-_ALL_ | code
## | ds:obs126 | code:ethnic-NOT_HISPANIC_OR_LATINO | code:race-_ALL_ | code
## | ds:obs127 | code:ethnic-HISPANIC_OR_LATINO | code:race-_ALL_ | code
## | ds:obs128 | code:ethnic-HISPANIC_OR_LATINO | code:race-_ALL_ | code
## | ds:obs129 | code:ethnic-HISPANIC_OR_LATINO | code:race-_ALL_ | code
## | ds:obs130 | code:ethnic-HISPANIC_OR_LATINO | code:race-_ALL_ | code
## | ds:obs131 | code:ethnic-HISPANIC_OR_LATINO | code:race-_ALL_ | code
## | ds:obs132 | code:ethnic-HISPANIC_OR_LATINO | code:race-_ALL_ | code
## -----
```

## Get definition for all descriptive statistics - class code:procedure

The SPARQL script shows how the R function definition for the descriptive statistics is stored in the cube.

```
cd ../extdata/sample-rdf
arq --data DC-DEMO-sample.ttl --query DEMOprocedure.rq
```

```
## -----
## | procedure | prefLabel | functiondef
## =====
## | code:procedure-max | "max" | "function (x) { max(x, na.rm = TRUE) }"
## | code:procedure-std | "std" | "function (x) { sd(x, na.rm = TRUE) }"
## | code:procedure-mean | "mean" | "function (x) { mean(x, na.rm = TRUE) }"
## | code:procedure-min | "min" | "function (x) { min(x, na.rm = TRUE) }"
## | code:procedure-percent | "percent" | "function (x) { -1 }"
## | code:procedure-count | "count" | "function (x) { length(x) }"
## | code:procedure-q3 | "q3" | "function (x) { quantile(x, probs = c(0.75), type = 2, na.rm = TRUE) }"
## | code:procedure-n | "n" | "function (x) { length(x[!is.na(x)]) }"
## | code:procedure-median | "median" | "function (x) { median(x, na.rm = TRUE) }"
## | code:procedure-q1 | "q1" | "function (x) { quantile(x, probs = c(0.25), type = 2, na.rm = TRUE) }"
## -----
```

## Get the codelists

The SPARQL script shows the codelist.

```
cd ../extdata/sample-rdf
arq --data DC-DEMO-sample.ttl --query DEMOcodelist.rq
```

```
## -----
## | DataStructureDefinition | dimension | cprefLabel | c1
```

```

## =====
## | ds:dsd-DEMO          | crnd-dimension:agegr1 | "Codelist scheme: agegr1"@en | code:agegr1
## | ds:dsd-DEMO          | crnd-dimension:agegr1 | "Codelist scheme: agegr1"@en | code:agegr1
## | ds:dsd-DEMO          | crnd-dimension:agegr1 | "Codelist scheme: agegr1"@en | code:agegr1
## | ds:dsd-DEMO          | crnd-dimension:agegr1 | "Codelist scheme: agegr1"@en | code:agegr1
## | ds:dsd-DEMO          | crnd-dimension:agegr1 | "Codelist scheme: agegr1"@en | code:agegr1
## | ds:dsd-DEMO          | crnd-dimension:ethnic | "Codelist scheme: ethnic"@en | code:ethnic
## | ds:dsd-DEMO          | crnd-dimension:ethnic | "Codelist scheme: ethnic"@en | code:ethnic
## | ds:dsd-DEMO          | crnd-dimension:ethnic | "Codelist scheme: ethnic"@en | code:ethnic
## | ds:dsd-DEMO          | crnd-dimension:ethnic | "Codelist scheme: ethnic"@en | code:ethnic
## | ds:dsd-DEMO          | crnd-dimension:factor | "Codelist scheme: factor"@en | code:factor
## | ds:dsd-DEMO          | crnd-dimension:factor | "Codelist scheme: factor"@en | code:factor
## | ds:dsd-DEMO          | crnd-dimension:factor | "Codelist scheme: factor"@en | code:factor
## | ds:dsd-DEMO          | crnd-dimension:factor | "Codelist scheme: factor"@en | code:factor
## | ds:dsd-DEMO          | crnd-dimension:factor | "Codelist scheme: factor"@en | code:factor
## | ds:dsd-DEMO          | crnd-dimension:factor | "Codelist scheme: factor"@en | code:factor
## | ds:dsd-DEMO          | crnd-dimension:procedure | "Codelist scheme: procedure"@en | code:procedure
## | ds:dsd-DEMO          | crnd-dimension:procedure | "Codelist scheme: procedure"@en | code:procedure
## | ds:dsd-DEMO          | crnd-dimension:procedure | "Codelist scheme: procedure"@en | code:procedure
## | ds:dsd-DEMO          | crnd-dimension:procedure | "Codelist scheme: procedure"@en | code:procedure
## | ds:dsd-DEMO          | crnd-dimension:procedure | "Codelist scheme: procedure"@en | code:procedure
## | ds:dsd-DEMO          | crnd-dimension:procedure | "Codelist scheme: procedure"@en | code:procedure
## | ds:dsd-DEMO          | crnd-dimension:procedure | "Codelist scheme: procedure"@en | code:procedure
## | ds:dsd-DEMO          | crnd-dimension:procedure | "Codelist scheme: procedure"@en | code:procedure
## | ds:dsd-DEMO          | crnd-dimension:procedure | "Codelist scheme: procedure"@en | code:procedure
## | ds:dsd-DEMO          | crnd-dimension:race    | "Codelist scheme: race"@en    | code:race-All
## | ds:dsd-DEMO          | crnd-dimension:race    | "Codelist scheme: race"@en    | code:race-Asian
## | ds:dsd-DEMO          | crnd-dimension:race    | "Codelist scheme: race"@en    | code:race-BLack
## | ds:dsd-DEMO          | crnd-dimension:race    | "Codelist scheme: race"@en    | code:race-Native
## | ds:dsd-DEMO          | crnd-dimension:race    | "Codelist scheme: race"@en    | code:race-White
## | ds:dsd-DEMO          | crnd-dimension:race    | "Codelist scheme: race"@en    | code:race-Unknown
## | ds:dsd-DEMO          | crnd-dimension:race    | "Codelist scheme: race"@en    | code:race-Other
## | ds:dsd-DEMO          | crnd-dimension:sex     | "Codelist scheme: sex"@en     | code:sex-Female
## | ds:dsd-DEMO          | crnd-dimension:sex     | "Codelist scheme: sex"@en     | code:sex-Male
## | ds:dsd-DEMO          | crnd-dimension:sex     | "Codelist scheme: sex"@en     | code:sex-Unknown
## | ds:dsd-DEMO          | crnd-dimension:sex     | "Codelist scheme: sex"@en     | code:sex-All
## | ds:dsd-DEMO          | crnd-dimension:sex     | "Codelist scheme: sex"@en     | code:sex-None
## | ds:dsd-DEMO          | crnd-dimension:trt01a  | "Codelist scheme: trt01a"@en  | code:trt01a
## | ds:dsd-DEMO          | crnd-dimension:trt01a  | "Codelist scheme: trt01a"@en  | code:trt01a
## | ds:dsd-DEMO          | crnd-dimension:trt01a  | "Codelist scheme: trt01a"@en  | code:trt01a
## | ds:dsd-DEMO          | crnd-dimension:trt01a  | "Codelist scheme: trt01a"@en  | code:trt01a
## | ds:dsd-DEMO          | crnd-dimension:trt01a  | "Codelist scheme: trt01a"@en  | code:trt01a
## -----

```

Get the codelist definition for all descriptive statistics - class `code:procedure`

The SPARQL script shows how the R function definition for the descriptive statistics is stored in the cube.

```

cd ../extdata/sample-rdf
arq --data DC-DEMO-sample.ttl --query DEMOprocedure-codelist.rq

```

```

## -----
## | s | p | o |
## =====
## | code:procedure-min | skos:topConceptOf | code:procedure
## | code:procedure-min | skos:prefLabel | "min"
## | code:procedure-min | skos:inScheme | code:procedure
## | code:procedure-min | rrdfqbcrrnd0:RdescStatDefFun | "function (x) { min(x, na.rm = TRUE)"
## | code:procedure-min | rrdfqbcrrnd0:R-selectionvalue | "min"
## | code:procedure-min | rrdfqbcrrnd0:R-selectionoperator | "=="
## | code:procedure-min | rdfs:comment | "Descriptive statistics min"@en
## | code:procedure-min | rdf:type | skos:Concept
## | code:procedure-min | rdf:type | code:Procedure
## | code:procedure-std | skos:topConceptOf | code:procedure
## | code:procedure-std | skos:prefLabel | "std"
## | code:procedure-std | skos:inScheme | code:procedure
## | code:procedure-std | rrdfqbcrrnd0:RdescStatDefFun | "function (x) { sd(x, na.rm = TRUE)"
## | code:procedure-std | rrdfqbcrrnd0:R-selectionvalue | "std"
## | code:procedure-std | rrdfqbcrrnd0:R-selectionoperator | "=="
## | code:procedure-std | rdfs:comment | "Descriptive statistics std"@en
## | code:procedure-std | rdf:type | skos:Concept
## | code:procedure-std | rdf:type | code:Procedure
## | code:procedure-q3 | skos:topConceptOf | code:procedure
## | code:procedure-q3 | skos:prefLabel | "q3"
## | code:procedure-q3 | skos:inScheme | code:procedure
## | code:procedure-q3 | rrdfqbcrrnd0:RdescStatDefFun | "function (x) { quantile(x, probs = 0.75)"
## | code:procedure-q3 | rrdfqbcrrnd0:R-selectionvalue | "q3"
## | code:procedure-q3 | rrdfqbcrrnd0:R-selectionoperator | "=="
## | code:procedure-q3 | rdfs:comment | "Descriptive statistics q3"@en
## | code:procedure-q3 | rdf:type | skos:Concept
## | code:procedure-q3 | rdf:type | code:Procedure
## | code:procedure-median | skos:topConceptOf | code:procedure
## | code:procedure-median | skos:prefLabel | "median"
## | code:procedure-median | skos:inScheme | code:procedure
## | code:procedure-median | rrdfqbcrrnd0:RdescStatDefFun | "function (x) { median(x, na.rm = TRUE)"
## | code:procedure-median | rrdfqbcrrnd0:R-selectionvalue | "median"
## | code:procedure-median | rrdfqbcrrnd0:R-selectionoperator | "=="
## | code:procedure-median | rdfs:comment | "Descriptive statistics median"@en
## | code:procedure-median | rdf:type | skos:Concept
## | code:procedure-median | rdf:type | code:Procedure
## | code:procedure-count | skos:topConceptOf | code:procedure
## | code:procedure-count | skos:prefLabel | "count"
## | code:procedure-count | skos:inScheme | code:procedure
## | code:procedure-count | rrdfqbcrrnd0:RdescStatDefFun | "function (x) { length(x) }"
## | code:procedure-count | rrdfqbcrrnd0:R-selectionvalue | "count"
## | code:procedure-count | rrdfqbcrrnd0:R-selectionoperator | "=="
## | code:procedure-count | rdfs:comment | "Descriptive statistics count"@en
## | code:procedure-count | rdf:type | skos:Concept
## | code:procedure-count | rdf:type | code:Procedure
## | code:procedure-max | skos:topConceptOf | code:procedure
## | code:procedure-max | skos:prefLabel | "max"
## | code:procedure-max | skos:inScheme | code:procedure
## | code:procedure-max | rrdfqbcrrnd0:RdescStatDefFun | "function (x) { max(x, na.rm = TRUE)"
## | code:procedure-max | rrdfqbcrrnd0:R-selectionvalue | "max"
## | code:procedure-max | rrdfqbcrrnd0:R-selectionoperator | "=="

```

```

## | code:procedure-max      | rdfs:comment      | "Descriptive statistics max"@en
## | code:procedure-max      | rdf:type          | skos:Concept
## | code:procedure-max      | rdf:type          | code:Procedure
## | code:procedure-mean     | skos:topConceptOf | code:procedure
## | code:procedure-mean     | skos:prefLabel    | "mean"
## | code:procedure-mean     | skos:inScheme     | code:procedure
## | code:procedure-mean     | rrdqbcrnd0:RdescStatDefFun | "function (x) {      mean(x, na.rm = TR
## | code:procedure-mean     | rrdqbcrnd0:R-selectionvalue | "mean"
## | code:procedure-mean     | rrdqbcrnd0:R-selectionoperator | "=="
## | code:procedure-mean     | rdfs:comment      | "Descriptive statistics mean"@en
## | code:procedure-mean     | rdf:type          | skos:Concept
## | code:procedure-mean     | rdf:type          | code:Procedure
## | code:procedure-q1       | skos:topConceptOf | code:procedure
## | code:procedure-q1       | skos:prefLabel    | "q1"
## | code:procedure-q1       | skos:inScheme     | code:procedure
## | code:procedure-q1       | rrdqbcrnd0:RdescStatDefFun | "function (x) {      quantile(x, probs =
## | code:procedure-q1       | rrdqbcrnd0:R-selectionvalue | "q1"
## | code:procedure-q1       | rrdqbcrnd0:R-selectionoperator | "=="
## | code:procedure-q1       | rdfs:comment      | "Descriptive statistics q1"@en
## | code:procedure-q1       | rdf:type          | skos:Concept
## | code:procedure-q1       | rdf:type          | code:Procedure
## | code:procedure-n        | skos:topConceptOf | code:procedure
## | code:procedure-n        | skos:prefLabel    | "n"
## | code:procedure-n        | skos:inScheme     | code:procedure
## | code:procedure-n        | rrdqbcrnd0:RdescStatDefFun | "function (x) {      length(x[!is.na(x)
## | code:procedure-n        | rrdqbcrnd0:R-selectionvalue | "n"
## | code:procedure-n        | rrdqbcrnd0:R-selectionoperator | "=="
## | code:procedure-n        | rdfs:comment      | "Descriptive statistics n"@en
## | code:procedure-n        | rdf:type          | skos:Concept
## | code:procedure-n        | rdf:type          | code:Procedure
## | code:procedure-percent | skos:topConceptOf | code:procedure
## | code:procedure-percent | skos:prefLabel    | "percent"
## | code:procedure-percent | skos:inScheme     | code:procedure
## | code:procedure-percent | rrdqbcrnd0:RdescStatDefFun | "function (x) {      -1 }"
## | code:procedure-percent | rrdqbcrnd0:R-selectionvalue | "percent"
## | code:procedure-percent | rrdqbcrnd0:R-selectionoperator | "=="
## | code:procedure-percent | rdfs:comment      | "Descriptive statistics percent"@en
## | code:procedure-percent | rdf:type          | skos:Concept
## | code:procedure-percent | rdf:type          | code:Procedure
## -----

```

## Get definition for all variables used for descriptive statistics - class `code:factor`

The SPARQL script shows how the R function definition for the descriptive statistics is stored in the cube.

```

cd ../extdata/sample-rdf
arq --data DC-DEMO-sample.ttl --query DEMOfactor.rq

```

```

## -----
## | factor                | prefLabel      | DataSetRefD2RQ          | Rselectionvalue |
## |=====|
## | code:factor-_ALL_    | "_ALL_"        |                          |                  |
## | code:factor-proportion | "proportion"   |                          | "proportion"    |

```



```
## | code:factor-weightbl | "weightbl" | rrdfqbcrrnd0:ADSL_WEIGHTBL | "weightbl" |
## | code:factor-_NONMISS_ | "_NONMISS_" | | | |
## | code:factor-quantity | "quantity" | | | "quantity" |
## | code:factor-age | "age" | rrdfqbcrrnd0:ADSL_AGE | "age" |
## -----
```

## Get the codelist definition for all variables used for descriptive statistics - class code:factor

The SPARQL script shows how the R function definition for the descriptive statistics is stored in the cube.

```
cd ../extdata/sample-rdf
arq --data DC-DEMO-sample.ttl --query DEMOfactor-codelist.rq
```

```
## -----
## | s | p | o |
## =====
## | code:factor-weightbl | skos:topConceptOf | code:factor |
## | code:factor-weightbl | skos:prefLabel | "weightbl" |
## | code:factor-weightbl | skos:inScheme | code:factor |
## | code:factor-weightbl | rrdfqbcrrnd0:R-selectionvalue | "weightbl" |
## | code:factor-weightbl | rrdfqbcrrnd0:R-selectionoperator | "==" |
## | code:factor-weightbl | rrdfqbcrrnd0:DataSetRefD2RQ | rrdfqbcrrnd0:ADSL_WEIGHTBL |
## | code:factor-weightbl | rdfs:comment | "Coded values from data source. No record" |
## | code:factor-weightbl | rdf:type | skos:Concept |
## | code:factor-weightbl | rdf:type | code:Factor |
## | code:factor-age | skos:topConceptOf | code:factor |
## | code:factor-age | skos:prefLabel | "age" |
## | code:factor-age | skos:inScheme | code:factor |
## | code:factor-age | rrdfqbcrrnd0:R-selectionvalue | "age" |
## | code:factor-age | rrdfqbcrrnd0:R-selectionoperator | "==" |
## | code:factor-age | rrdfqbcrrnd0:DataSetRefD2RQ | rrdfqbcrrnd0:ADSL_AGE |
## | code:factor-age | rdfs:comment | "Coded values from data source. No record" |
## | code:factor-age | rdf:type | skos:Concept |
## | code:factor-age | rdf:type | code:Factor |
## | code:factor-_ALL_ | skos:topConceptOf | code:factor |
## | code:factor-_ALL_ | skos:prefLabel | "_ALL_" |
## | code:factor-_ALL_ | skos:inScheme | code:factor |
## | code:factor-_ALL_ | rdfs:comment | "NON-CDISC: Represents all codelist categories" |
## | code:factor-_ALL_ | rdf:type | skos:Concept |
## | code:factor-_ALL_ | rdf:type | code:Factor |
## | code:factor-quantity | skos:topConceptOf | code:factor |
## | code:factor-quantity | skos:prefLabel | "quantity" |
## | code:factor-quantity | skos:inScheme | code:factor |
## | code:factor-quantity | rrdfqbcrrnd0:R-selectionvalue | "quantity" |
## | code:factor-quantity | rrdfqbcrrnd0:R-selectionoperator | "==" |
## | code:factor-quantity | rdfs:comment | "Coded values from data source. No record" |
## | code:factor-quantity | rdf:type | skos:Concept |
## | code:factor-quantity | rdf:type | code:Factor |
## | code:factor-_NONMISS_ | skos:topConceptOf | code:factor |
## | code:factor-_NONMISS_ | skos:prefLabel | "_NONMISS_" |
## | code:factor-_NONMISS_ | skos:inScheme | code:factor |
## | code:factor-_NONMISS_ | rrdfqbcrrnd0:R-selectionfunction | "is.na" |
```

```
## | code:factor-_NONMISS_ | rdfs:comment | "NON-CDISC: Represents the non-missing"
## | code:factor-_NONMISS_ | rdf:type | skos:Concept
## | code:factor-_NONMISS_ | rdf:type | code:Factor
## | code:factor-proportion | skos:topConceptOf | code:factor
## | code:factor-proportion | skos:prefLabel | "proportion"
## | code:factor-proportion | skos:inScheme | code:factor
## | code:factor-proportion | rrdqbcrnd0:R-selectionvalue | "proportion"
## | code:factor-proportion | rrdqbcrnd0:R-selectionoperator | "=="
## | code:factor-proportion | rdfs:comment | "Coded values from data source. No record"
## | code:factor-proportion | rdf:type | skos:Concept
## | code:factor-proportion | rdf:type | code:Factor
## -----
```

## Get definition for descriptive statistics median

The SPARQL script shows how the function definition for the descriptive statistics is stored in the cube.

```
cd ../extdata/sample-rdf
arq --data DC-DEMO-sample.ttl --query DEMOprocedure-median.rq
```

```
## -----
## | s | p | o |
## =====
## | code:procedure-median | skos:topConceptOf | code:procedure
## | code:procedure-median | skos:prefLabel | "median"
## | code:procedure-median | skos:inScheme | code:procedure
## | code:procedure-median | rrdqbcrnd0:RdescStatDefFun | "function (x) { median(x, na.rm = T"
## | code:procedure-median | rrdqbcrnd0:R-selectionvalue | "median"
## | code:procedure-median | rrdqbcrnd0:R-selectionoperator | "=="
## | code:procedure-median | rdfs:comment | "Descriptive statistics median"@en
## | code:procedure-median | rdf:type | skos:Concept
## | code:procedure-median | rdf:type | code:Procedure
## -----
```

## Get information for selection of data

The SPARQL script shows how the information for selecting data for derivation of univariate statistics is present in the cube.

```
cd ../extdata/sample-rdf
arq --data DC-DEMO-sample.ttl --query DEMOobservations-R-selection.rq
```

```
## -----
## | obs | rrdqbcrnd0Rcolumnname | Rselectionoperator | Rselectionvalue |
## =====
## | ds:obs027 | "trt01a" | "==" | "Xanomeline High Dose" |
## | ds:obs056 | "agegr1" | "==" | "65-80" |
## | ds:obs056 | "trt01a" | "==" | "Xanomeline Low Dose" |
## -----
```

## Get information on the underlying data in D2RQ format

The following two SPARQL scripts are from taken from `create-ADSL-ttl.Rmd`.

First get the mapping information.

```
cd ../extdata/sample-rdf
arq --data adsl-map.ttl --query ADSL-mapping.rq
```

```
## -----
## | mapColumn                | d2rqcolumn      | d2rqdatatype |
## =====
## | <adsl-map.ttl#ADSL_STUDYID> | "ADSL.STUDYID"  |              |
## | <adsl-map.ttl#ADSL_DURDSGR1> | "ADSL.DURDSGR1" |              |
## | <adsl-map.ttl#ADSL_TRT01A> | "ADSL.TRTO1A"   |              |
## | <adsl-map.ttl#ADSL_VISIT1DT> | "ADSL.VISIT1DT" | xsd:double   |
## | <adsl-map.ttl#ADSL_AGEGR1N> | "ADSL.AGEGR1N"  | xsd:double   |
## | <adsl-map.ttl#ADSL_RACE> | "ADSL.RACE"     |              |
## | <adsl-map.ttl#ADSL_USUBJID> | "ADSL.USUBJID"  |              |
## | <adsl-map.ttl#ADSL_MMSETOT> | "ADSL.MMSETOT"  | xsd:double   |
## | <adsl-map.ttl#ADSL_ETHNIC> | "ADSL.ETHNIC"   |              |
## | <adsl-map.ttl#ADSL_DISONSDT> | "ADSL.DISONSDT" | xsd:double   |
## | <adsl-map.ttl#ADSL_AGE> | "ADSL.AGE"      | xsd:double   |
## | <adsl-map.ttl#ADSL_RFENDT> | "ADSL.RFENDT"   | xsd:double   |
## | <adsl-map.ttl#ADSL_WEIGHTBL> | "ADSL.WEIGHTBL" | xsd:double   |
## | <adsl-map.ttl#ADSL_DCDECOD> | "ADSL.DCDECOD"  |              |
## | <adsl-map.ttl#ADSL_DISCONFL> | "ADSL.DISCONFL" |              |
## | <adsl-map.ttl#ADSL_TRTEDT> | "ADSL.TRTEDT"   | xsd:double   |
## | <adsl-map.ttl#ADSL_TRTDUR> | "ADSL.TRTDUR"   | xsd:double   |
## | <adsl-map.ttl#ADSL_COMP24FL> | "ADSL.COMP24FL" |              |
## | <adsl-map.ttl#ADSL_COMP16FL> | "ADSL.COMP16FL" |              |
## | <adsl-map.ttl#ADSL_SEX> | "ADSL.SEX"      |              |
## | <adsl-map.ttl#ADSL_AVGDD> | "ADSL.AVGDD"    | xsd:double   |
## | <adsl-map.ttl#ADSL_BMIBL> | "ADSL.BMIBL"    | xsd:double   |
## | <adsl-map.ttl#ADSL_RFSTDTC> | "ADSL.RFSTDTC"  |              |
## | <adsl-map.ttl#ADSL_SAFFL> | "ADSL.SAFFL"    |              |
## | <adsl-map.ttl#ADSL_RFENDTC> | "ADSL.RFENDTC"  |              |
## | <adsl-map.ttl#ADSL_DURDIS> | "ADSL.DURDIS"   | xsd:double   |
## | <adsl-map.ttl#ADSL_ARM> | "ADSL.ARM"      |              |
## | <adsl-map.ttl#ADSL_SUBJID> | "ADSL.SUBJID"   |              |
## | <adsl-map.ttl#ADSL_COMP8FL> | "ADSL.COMP8FL"  |              |
## | <adsl-map.ttl#ADSL_SITEID> | "ADSL.SITEID"   |              |
## | <adsl-map.ttl#ADSL_DCREASCD> | "ADSL.DCREASCD" |              |
## | <adsl-map.ttl#ADSL_TRT01P> | "ADSL.TRTO1P"   |              |
## | <adsl-map.ttl#ADSL_VISNUMEN> | "ADSL.VISNUMEN" | xsd:double   |
## | <adsl-map.ttl#ADSL_TRT01PN> | "ADSL.TRTO1PN"  | xsd:double   |
## | <adsl-map.ttl#ADSL_BMIBLGR1> | "ADSL.BMIBLGR1" |              |
## | <adsl-map.ttl#ADSL_HEIGHTBL> | "ADSL.HEIGHTBL" | xsd:double   |
## | <adsl-map.ttl#ADSL_ITTFL> | "ADSL.ITTFL"    |              |
## | <adsl-map.ttl#ADSL_DSRAEFL> | "ADSL.DSRAEFL"  |              |
## | <adsl-map.ttl#ADSL_EDUCLVL> | "ADSL.EDUCLVL"  | xsd:double   |
## | <adsl-map.ttl#ADSL_CUMDOSE> | "ADSL.CUMDOSE"  | xsd:double   |
## | <adsl-map.ttl#ADSL_TRTSDT> | "ADSL.TRTSMT"   | xsd:double   |
## | <adsl-map.ttl#ADSL_DTHFL> | "ADSL.DTHFL"    |              |
```

```
## | <adsl-map.ttl#ADSL_TRT01AN> | "ADSL.TR01AN" | xsd:double
## | <adsl-map.ttl#ADSL_EFFFL> | "ADSL.EFFFL" |
## | <adsl-map.ttl#ADSL_AGEU> | "ADSL.AGEU" |
## | <adsl-map.ttl#ADSL_RACEN> | "ADSL.RACEN" | xsd:double
## | <adsl-map.ttl#ADSL_SITEGR1> | "ADSL.SITEGR1" |
## | <adsl-map.ttl#ADSL_AGEGR1> | "ADSL.AGEGR1" |
## -----
```

Then dump the contents of a record in the database.

```
cd ../extdata/sample-rdf
arg --data adsl.ttl --query ADSL-record.rq
```

[illegible]

## Get underlying data for one cube observation

[illegible]

[illegible]



[illegible]

[illegible]



[illegible]

[illegible]

[illegible]



[illegible]

[illegible]

```
## | <http://www.example.org/datasets/ADSL/01-710-1368> | <http://www.example.org/datasets/vocab/ADSL_01-710-1368>  
## | <http://www.example.org/datasets/ADSL/01-710-1368> | <http://www.example.org/datasets/vocab/ADSL_I<br></code>
```

[illegible]



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## How to run this .Rmd file

.. add text ..