

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 DEMOdimensions.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:obs103 | code:ethnic-_ALL_ | code:race-_ALL_ | code:procedure-_ALL_ |
## | ds:obs014 | code:ethnic-_ALL_ | code:race-_ALL_ | code:procedure-_ALL_ |
## | ds:obs089 | code:ethnic-_ALL_ | code:race-AMERICAN_INDIAN_OR_ALASKA_NATIVE | code:procedure-_ALL_ |
## | ds:obs019 | code:ethnic-_ALL_ | code:race-_ALL_ | code:procedure-_ALL_ |
## | ds:obs031 | code:ethnic-_ALL_ | code:race-_ALL_ | code:procedure-_ALL_ |
## | ds:obs013 | code:ethnic-_ALL_ | code:race-_ALL_ | code:procedure-_ALL_ |
```

##	ds:obs124	code:ethnic-NOT_HISPANIC_OR_LATINO	code:race-_ALL_	code
##	ds:obs084	code:ethnic-_ALL_	code:race-BLACK_OR_AFRICAN_AMERICAN	code
##	ds:obs129	code:ethnic-HISPANIC_OR_LATINO	code:race-_ALL_	code
##	ds:obs088	code:ethnic-_ALL_	code:race-AMERICAN_INDIAN_OR_ALASKA_NATIVE	code
##	ds:obs041	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs123	code:ethnic-NOT_HISPANIC_OR_LATINO	code:race-_ALL_	code
##	ds:obs094	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs098	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs048	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs093	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs097	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs021	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs058	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs132	code:ethnic-HISPANIC_OR_LATINO	code:race-_ALL_	code
##	ds:obs027	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs020	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs056	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs130	code:ethnic-HISPANIC_OR_LATINO	code:race-_ALL_	code
##	ds:obs051	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs007	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs055	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs076	code:ethnic-_ALL_	code:race-WHITE	code
##	ds:obs117	code:ethnic-_NONMISS_	code:race-_ALL_	code
##	ds:obs072	code:ethnic-_ALL_	code:race-_NONMISS_	code
##	ds:obs001	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs026	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs006	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs106	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs061	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs065	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs111	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs071	code:ethnic-_ALL_	code:race-_NONMISS_	code
##	ds:obs116	code:ethnic-_NONMISS_	code:race-_ALL_	code
##	ds:obs075	code:ethnic-_ALL_	code:race-WHITE	code
##	ds:obs100	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs105	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs060	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs016	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs064	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs036	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs110	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs126	code:ethnic-NOT_HISPANIC_OR_LATINO	code:race-_ALL_	code
##	ds:obs081	code:ethnic-_ALL_	code:race-BLACK_OR_AFRICAN_AMERICAN	code
##	ds:obs010	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs085	code:ethnic-_ALL_	code:race-AMERICAN_INDIAN_OR_ALASKA_NATIVE	code
##	ds:obs035	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs120	code:ethnic-_NONMISS_	code:race-_ALL_	code
##	ds:obs080	code:ethnic-_ALL_	code:race-BLACK_OR_AFRICAN_AMERICAN	code
##	ds:obs033	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs090	code:ethnic-_ALL_	code:race-AMERICAN_INDIAN_OR_ALASKA_NATIVE	code
##	ds:obs015	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs043	code:ethnic-_ALL_	code:race-_ALL_	code
##	ds:obs125	code:ethnic-NOT_HISPANIC_OR_LATINO	code:race-_ALL_	code
##	ds:obs042	code:ethnic-_ALL_	code:race-_ALL_	code

##		ds:obs095		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs099		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs052		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs029		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs023		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs059		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs028		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs022		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs009		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs057		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs038		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs003		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs119		code:ethnic-_NONMISS_		code:race-_ALL_		code
##		ds:obs078		code:ethnic-_ALL_		code:race-WHITE		code
##		ds:obs008		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs108		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs118		code:ethnic-_NONMISS_		code:race-_ALL_		code
##		ds:obs067		code:ethnic-_ALL_		code:race-_NONMISS_		code
##		ds:obs018		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs113		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs073		code:ethnic-_ALL_		code:race-WHITE		code
##		ds:obs002		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs102		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs077		code:ethnic-_ALL_		code:race-WHITE		code
##		ds:obs107		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs062		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs030		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs066		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs112		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs128		code:ethnic-HISPANIC_OR_LATINO		code:race-_ALL_		code
##		ds:obs083		code:ethnic-_ALL_		code:race-BLACK_OR_AFRICAN_AMERICAN		code
##		ds:obs101		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs012		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs017		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs087		code:ethnic-_ALL_		code:race-AMERICAN_INDIAN_OR_ALASKA_NATIVE		code
##		ds:obs037		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs122		code:ethnic-NOT_HISPANIC_OR_LATINO		code:race-_ALL_		code
##		ds:obs127		code:ethnic-HISPANIC_OR_LATINO		code:race-_ALL_		code
##		ds:obs011		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs082		code:ethnic-_ALL_		code:race-BLACK_OR_AFRICAN_AMERICAN		code
##		ds:obs086		code:ethnic-_ALL_		code:race-AMERICAN_INDIAN_OR_ALASKA_NATIVE		code
##		ds:obs047		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs121		code:ethnic-NOT_HISPANIC_OR_LATINO		code:race-_ALL_		code
##		ds:obs092		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs096		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs046		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs045		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs131		code:ethnic-HISPANIC_OR_LATINO		code:race-_ALL_		code
##		ds:obs091		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs040		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs044		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs050		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs054		code:ethnic-_ALL_		code:race-_ALL_		code
##		ds:obs005		code:ethnic-_ALL_		code:race-_ALL_		code

```
## | ds:obs053 | code:ethnic-_ALL_ | code:race-_ALL_ | code
## | ds:obs025 | code:ethnic-_ALL_ | code:race-_ALL_ | code
## | ds:obs115 | code:ethnic-_NONMISS_ | code:race-_ALL_ | code
## | ds:obs070 | code:ethnic-_ALL_ | code:race-_NONMISS_ | code
## | ds:obs074 | code:ethnic-_ALL_ | code:race-WHITE | code
## | ds:obs104 | code:ethnic-_ALL_ | code:race-_ALL_ | code
## | ds:obs024 | code:ethnic-_ALL_ | code:race-_ALL_ | code
## | ds:obs063 | code:ethnic-_ALL_ | code:race-_ALL_ | code
## | ds:obs034 | code:ethnic-_ALL_ | code:race-_ALL_ | code
## | ds:obs039 | code:ethnic-_ALL_ | code:race-_ALL_ | code
## | ds:obs069 | code:ethnic-_ALL_ | code:race-_NONMISS_ | code
## | ds:obs004 | code:ethnic-_ALL_ | code:race-_ALL_ | code
## | ds:obs079 | code:ethnic-_ALL_ | code:race-BLACK_OR_AFRICAN_AMERICAN | code
## | ds:obs109 | code:ethnic-_ALL_ | code:race-_ALL_ | code
## | ds:obs068 | code:ethnic-_ALL_ | code:race-_NONMISS_ | code
## | ds:obs032 | code:ethnic-_ALL_ | code:race-_ALL_ | code
## | ds:obs049 | code:ethnic-_ALL_ | code:race-_ALL_ | code
## | ds:obs114 | code:ethnic-_ALL_ | 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), 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), 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
```

```
## -----
## | codeList | codelevel | codelist | prefLabel
```

```

## =====
## | code:ethnic | code:factor-quantity | code:factor | "quantity"
## | code:ethnic | code:procedure-max | code:procedure | "max"
## | code:ethnic | code:procedure-q3 | code:procedure | "q3"
## | code:ethnic | code:sex-F | code:sex | "F"
## | code:ethnic | code:agegr1-_65 | code:agegr1 | "<65"
## | code:ethnic | code:factor-proportion | code:factor | "proportion"
## | code:ethnic | code:agegr1-_80 | code:agegr1 | ">80"
## | code:ethnic | code:race-_ALL_ | code:race | "_ALL_"
## | code:ethnic | code:procedure-mean | code:procedure | "mean"
## | code:ethnic | code:trt01a-_ALL_ | code:trt01a | "_ALL_"
## | code:ethnic | code:sex-M | code:sex | "M"
## | code:ethnic | code:ethnic-HISPANIC_OR_LATINO | code:ethnic | "HISPANIC OR LATINO"
## | code:ethnic | code:race-NATIVE_HAWAIIAN_OR_OTHER_PACIFIC_ISLANDER | code:race | "NATIVE HAWAIIAN OR OTHER PACIFIC ISLANDER"
## | code:ethnic | code:ethnic-NOT_HISPANIC_OR_LATINO | code:ethnic | "NOT HISPANIC OR LATINO"
## | code:ethnic | code:procedure-median | code:procedure | "median"
## | code:ethnic | code:ethnic-_NONMISS_ | code:ethnic | "_NONMISS_"
## | code:ethnic | code:procedure-q1 | code:procedure | "q1"
## | code:ethnic | code:trt01a-Xanomeline_High_Dose | code:trt01a | "Xanomeline_High_Dose"
## | code:ethnic | code:agegr1-_ALL_ | code:agegr1 | "_ALL_"
## | code:ethnic | code:sex-UN | code:sex | "UN"
## | code:ethnic | code:sex-_ALL_ | code:sex | "_ALL_"
## | code:ethnic | code:race-ASIAN | code:race | "ASIAN"
## | code:ethnic | code:race-WHITE | code:race | "WHITE"
## | code:ethnic | code:trt01a-_NONMISS_ | code:trt01a | "_NONMISS_"
## | code:ethnic | code:sex-_NONMISS_ | code:sex | "_NONMISS_"
## | code:ethnic | code:factor-age | code:factor | "age"
## | code:ethnic | code:ethnic-_ALL_ | code:ethnic | "_ALL_"
## | code:ethnic | code:procedure-n | code:procedure | "n"
## | code:ethnic | code:race-AMERICAN_INDIAN_OR_ALASKA_NATIVE | code:race | "AMERICAN INDIAN OR ALASKA NATIVE"
## | code:ethnic | code:trt01a-Placebo | code:trt01a | "Placebo"
## | code:ethnic | code:factor-weightbl | code:factor | "weightbl"
## | code:ethnic | code:trt01a-Xanomeline_Low_Dose | code:trt01a | "Xanomeline_Low_Dose"
## | code:ethnic | code:factor-_ALL_ | code:factor | "_ALL_"
## | code:ethnic | code:procedure-percent | code:procedure | "percent"
## | code:ethnic | code:agegr1-65-80 | code:agegr1 | "65-80"
## | code:ethnic | code:procedure-min | code:procedure | "min"
## | code:ethnic | code:race-_NONMISS_ | code:race | "_NONMISS_"
## | code:ethnic | code:agegr1-_NONMISS_ | code:agegr1 | "_NONMISS_"
## | code:ethnic | code:race-BLACK_OR_AFRICAN_AMERICAN | code:race | "BLACK OR AFRICAN AMERICAN"
## | code:ethnic | code:factor-_NONMISS_ | code:factor | "_NONMISS_"
## | code:ethnic | code:sex-U | code:sex | "U"
## | code:ethnic | code:procedure-count | code:procedure | "count"
## | code:ethnic | code:procedure-std | code:procedure | "std"
## | code:agegr1 | code:factor-quantity | code:factor | "quantity"
## | code:agegr1 | code:procedure-max | code:procedure | "max"
## | code:agegr1 | code:procedure-q3 | code:procedure | "q3"
## | code:agegr1 | code:sex-F | code:sex | "F"
## | code:agegr1 | code:agegr1-_65 | code:agegr1 | "<65"
## | code:agegr1 | code:factor-proportion | code:factor | "proportion"
## | code:agegr1 | code:agegr1-_80 | code:agegr1 | ">80"
## | code:agegr1 | code:race-_ALL_ | code:race | "_ALL_"
## | code:agegr1 | code:procedure-mean | code:procedure | "mean"
## | code:agegr1 | code:trt01a-_ALL_ | code:trt01a | "_ALL_"

```

##		code:agegr1		code:sex-M		code:sex		"M"
##		code:agegr1		code:ethnic-HISPANIC_OR_LATINO		code:ethnic		"HISPANIC O
##		code:agegr1		code:race-NATIVE_HAWAIIAN_OR_OTHER_PACIFIC_ISLANDER		code:race		"NATIVE HAW
##		code:agegr1		code:ethnic-NOT_HISPANIC_OR_LATINO		code:ethnic		"NOT HISPAN
##		code:agegr1		code:procedure-median		code:procedure		"median"
##		code:agegr1		code:ethnic-_NONMISS_		code:ethnic		"_NONMISS
##		code:agegr1		code:procedure-q1		code:procedure		"q1"
##		code:agegr1		code:trt01a-Xanomeline_High_Dose		code:trt01a		"Xanomeline
##		code:agegr1		code:agegr1-_ALL_		code:agegr1		"_ALL_"
##		code:agegr1		code:sex-UN		code:sex		"UN"
##		code:agegr1		code:sex-_ALL_		code:sex		"_ALL_"
##		code:agegr1		code:race-ASIAN		code:race		"ASIAN"
##		code:agegr1		code:race-WHITE		code:race		"WHITE"
##		code:agegr1		code:trt01a-_NONMISS_		code:trt01a		"_NONMISS_
##		code:agegr1		code:sex-_NONMISS_		code:sex		"_NONMISS_
##		code:agegr1		code:factor-age		code:factor		"age"
##		code:agegr1		code:ethnic-_ALL_		code:ethnic		"_ALL_"
##		code:agegr1		code:procedure-n		code:procedure		"n"
##		code:agegr1		code:race-AMERICAN_INDIAN_OR_ALASKA_NATIVE		code:race		"AMERICAN I
##		code:agegr1		code:trt01a-Placebo		code:trt01a		"Placebo"
##		code:agegr1		code:factor-weightbl		code:factor		"weightbl"
##		code:agegr1		code:trt01a-Xanomeline_Low_Dose		code:trt01a		"Xanomeline
##		code:agegr1		code:factor-_ALL_		code:factor		"_ALL_"
##		code:agegr1		code:procedure-percent		code:procedure		"percent"
##		code:agegr1		code:agegr1-65-80		code:agegr1		"65-80"
##		code:agegr1		code:procedure-min		code:procedure		"min"
##		code:agegr1		code:race-_NONMISS_		code:race		"_NONMISS_
##		code:agegr1		code:agegr1-_NONMISS_		code:agegr1		"_NONMISS_
##		code:agegr1		code:race-BLACK_OR_AFRICAN_AMERICAN		code:race		"BLACK OR A
##		code:agegr1		code:factor-_NONMISS_		code:factor		"_NONMISS_
##		code:agegr1		code:sex-U		code:sex		"U"
##		code:agegr1		code:procedure-count		code:procedure		"count"
##		code:agegr1		code:procedure-std		code:procedure		"std"
##		code:procedure		code:factor-quantity		code:factor		"quantity"
##		code:procedure		code:procedure-max		code:procedure		"max"
##		code:procedure		code:procedure-q3		code:procedure		"q3"
##		code:procedure		code:sex-F		code:sex		"F"
##		code:procedure		code:agegr1-_65		code:agegr1		"<65"
##		code:procedure		code:factor-proportion		code:factor		"proportion
##		code:procedure		code:agegr1-_80		code:agegr1		">80"
##		code:procedure		code:race-_ALL_		code:race		"_ALL_"
##		code:procedure		code:procedure-mean		code:procedure		"mean"
##		code:procedure		code:trt01a-_ALL_		code:trt01a		"_ALL_"
##		code:procedure		code:sex-M		code:sex		"M"
##		code:procedure		code:ethnic-HISPANIC_OR_LATINO		code:ethnic		"HISPANIC O
##		code:procedure		code:race-NATIVE_HAWAIIAN_OR_OTHER_PACIFIC_ISLANDER		code:race		"NATIVE HAW
##		code:procedure		code:ethnic-NOT_HISPANIC_OR_LATINO		code:ethnic		"NOT HISPAN
##		code:procedure		code:procedure-median		code:procedure		"median"
##		code:procedure		code:ethnic-_NONMISS_		code:ethnic		"_NONMISS_
##		code:procedure		code:procedure-q1		code:procedure		"q1"
##		code:procedure		code:trt01a-Xanomeline_High_Dose		code:trt01a		"Xanomeline
##		code:procedure		code:agegr1-_ALL_		code:agegr1		"_ALL_"
##		code:procedure		code:sex-UN		code:sex		"UN"
##		code:procedure		code:sex-_ALL_		code:sex		"_ALL_"

##		code:procedure		code:race-ASIAN		code:race		"ASIAN"
##		code:procedure		code:race-WHITE		code:race		"WHITE"
##		code:procedure		code:trt01a-_NONMISS_		code:trt01a		"_NONMISS_"
##		code:procedure		code:sex-_NONMISS_		code:sex		"_NONMISS_"
##		code:procedure		code:factor-age		code:factor		"age"
##		code:procedure		code:ethnic-_ALL_		code:ethnic		"_ALL_"
##		code:procedure		code:procedure-n		code:procedure		"n"
##		code:procedure		code:race-AMERICAN_INDIAN_OR_ALASKA_NATIVE		code:race		"AMERICAN_INDIAN_OR_ALASKA_NATIVE"
##		code:procedure		code:trt01a-Placebo		code:trt01a		"Placebo"
##		code:procedure		code:factor-weighttbl		code:factor		"weighttbl"
##		code:procedure		code:trt01a-Xanomeline_Low_Dose		code:trt01a		"Xanomeline_Low_Dose"
##		code:procedure		code:factor-_ALL_		code:factor		"_ALL_"
##		code:procedure		code:procedure-percent		code:procedure		"percent"
##		code:procedure		code:agegr1-65-80		code:agegr1		"65-80"
##		code:procedure		code:procedure-min		code:procedure		"min"
##		code:procedure		code:race-_NONMISS_		code:race		"_NONMISS_"
##		code:procedure		code:agegr1-_NONMISS_		code:agegr1		"_NONMISS_"
##		code:procedure		code:race-BLACK_OR_AFRICAN_AMERICAN		code:race		"BLACK_OR_AFRICAN_AMERICAN"
##		code:procedure		code:factor-_NONMISS_		code:factor		"_NONMISS_"
##		code:procedure		code:sex-U		code:sex		"U"
##		code:procedure		code:procedure-count		code:procedure		"count"
##		code:procedure		code:procedure-std		code:procedure		"std"
##		code:factor		code:factor-quantity		code:factor		"quantity"
##		code:factor		code:procedure-max		code:procedure		"max"
##		code:factor		code:procedure-q3		code:procedure		"q3"
##		code:factor		code:sex-F		code:sex		"F"
##		code:factor		code:agegr1-_65		code:agegr1		"<65"
##		code:factor		code:factor-proportion		code:factor		"proportion"
##		code:factor		code:agegr1-_80		code:agegr1		">80"
##		code:factor		code:race-_ALL_		code:race		"_ALL_"
##		code:factor		code:procedure-mean		code:procedure		"mean"
##		code:factor		code:trt01a-_ALL_		code:trt01a		"_ALL_"
##		code:factor		code:sex-M		code:sex		"M"
##		code:factor		code:ethnic-HISPANIC_OR_LATINO		code:ethnic		"HISPANIC_OR_LATINO"
##		code:factor		code:race-NATIVE_HAWAIIAN_OR_OTHER_PACIFIC_ISLANDER		code:race		"NATIVE_HAWAIIAN_OR_OTHER_PACIFIC_ISLANDER"
##		code:factor		code:ethnic-NOT_HISPANIC_OR_LATINO		code:ethnic		"NOT_HISPANIC_OR_LATINO"
##		code:factor		code:procedure-median		code:procedure		"median"
##		code:factor		code:ethnic-_NONMISS_		code:ethnic		"_NONMISS_"
##		code:factor		code:procedure-q1		code:procedure		"q1"
##		code:factor		code:trt01a-Xanomeline_High_Dose		code:trt01a		"Xanomeline_High_Dose"
##		code:factor		code:agegr1-_ALL_		code:agegr1		"_ALL_"
##		code:factor		code:sex-UN		code:sex		"UN"
##		code:factor		code:sex-_ALL_		code:sex		"_ALL_"
##		code:factor		code:race-ASIAN		code:race		"ASIAN"
##		code:factor		code:race-WHITE		code:race		"WHITE"
##		code:factor		code:trt01a-_NONMISS_		code:trt01a		"_NONMISS_"
##		code:factor		code:sex-_NONMISS_		code:sex		"_NONMISS_"
##		code:factor		code:factor-age		code:factor		"age"
##		code:factor		code:ethnic-_ALL_		code:ethnic		"_ALL_"
##		code:factor		code:procedure-n		code:procedure		"n"
##		code:factor		code:race-AMERICAN_INDIAN_OR_ALASKA_NATIVE		code:race		"AMERICAN_INDIAN_OR_ALASKA_NATIVE"
##		code:factor		code:trt01a-Placebo		code:trt01a		"Placebo"
##		code:factor		code:factor-weighttbl		code:factor		"weighttbl"
##		code:factor		code:trt01a-Xanomeline_Low_Dose		code:trt01a		"Xanomeline_Low_Dose"

##		code:factor		code:factor-_ALL_		code:factor		"_ALL_"
##		code:factor		code:procedure-percent		code:procedure		"percent"
##		code:factor		code:agegr1-65-80		code:agegr1		"65-80"
##		code:factor		code:procedure-min		code:procedure		"min"
##		code:factor		code:race-_NONMISS_		code:race		"_NONMISS_"
##		code:factor		code:agegr1-_NONMISS_		code:agegr1		"_NONMISS_"
##		code:factor		code:race-BLACK_OR_AFRICAN_AMERICAN		code:race		"BLACK OR AFRICAN AMERICAN"
##		code:factor		code:factor-_NONMISS_		code:factor		"_NONMISS_"
##		code:factor		code:sex-U		code:sex		"U"
##		code:factor		code:procedure-count		code:procedure		"count"
##		code:factor		code:procedure-std		code:procedure		"std"
##		code:trt01a		code:factor-quantity		code:factor		"quantity"
##		code:trt01a		code:procedure-max		code:procedure		"max"
##		code:trt01a		code:procedure-q3		code:procedure		"q3"
##		code:trt01a		code:sex-F		code:sex		"F"
##		code:trt01a		code:agegr1-_65		code:agegr1		"<65"
##		code:trt01a		code:factor-proportion		code:factor		"proportion"
##		code:trt01a		code:agegr1-_80		code:agegr1		">80"
##		code:trt01a		code:race-_ALL_		code:race		"_ALL_"
##		code:trt01a		code:procedure-mean		code:procedure		"mean"
##		code:trt01a		code:trt01a-_ALL_		code:trt01a		"_ALL_"
##		code:trt01a		code:sex-M		code:sex		"M"
##		code:trt01a		code:ethnic-HISPANIC_OR_LATINO		code:ethnic		"HISPANIC OR LATINO"
##		code:trt01a		code:race-NATIVE_HAWAIIAN_OR_OTHER_PACIFIC_ISLANDER		code:race		"NATIVE HAWAIIAN OR OTHER PACIFIC ISLANDER"
##		code:trt01a		code:ethnic-NOT_HISPANIC_OR_LATINO		code:ethnic		"NOT HISPANIC OR LATINO"
##		code:trt01a		code:procedure-median		code:procedure		"median"
##		code:trt01a		code:ethnic-_NONMISS_		code:ethnic		"_NONMISS_"
##		code:trt01a		code:procedure-q1		code:procedure		"q1"
##		code:trt01a		code:trt01a-Xanomeline_High_Dose		code:trt01a		"Xanomeline High Dose"
##		code:trt01a		code:agegr1-_ALL_		code:agegr1		"_ALL_"
##		code:trt01a		code:sex-UN		code:sex		"UN"
##		code:trt01a		code:sex-_ALL_		code:sex		"_ALL_"
##		code:trt01a		code:race-ASIAN		code:race		"ASIAN"
##		code:trt01a		code:race-WHITE		code:race		"WHITE"
##		code:trt01a		code:trt01a-_NONMISS_		code:trt01a		"_NONMISS_"
##		code:trt01a		code:sex-_NONMISS_		code:sex		"_NONMISS_"
##		code:trt01a		code:factor-age		code:factor		"age"
##		code:trt01a		code:ethnic-_ALL_		code:ethnic		"_ALL_"
##		code:trt01a		code:procedure-n		code:procedure		"n"
##		code:trt01a		code:race-AMERICAN_INDIAN_OR_ALASKA_NATIVE		code:race		"AMERICAN INDIAN OR ALASKA NATIVE"
##		code:trt01a		code:trt01a-Placebo		code:trt01a		"Placebo"
##		code:trt01a		code:factor-weightbl		code:factor		"weightbl"
##		code:trt01a		code:trt01a-Xanomeline_Low_Dose		code:trt01a		"Xanomeline Low Dose"
##		code:trt01a		code:factor-_ALL_		code:factor		"_ALL_"
##		code:trt01a		code:procedure-percent		code:procedure		"percent"
##		code:trt01a		code:agegr1-65-80		code:agegr1		"65-80"
##		code:trt01a		code:procedure-min		code:procedure		"min"
##		code:trt01a		code:race-_NONMISS_		code:race		"_NONMISS_"
##		code:trt01a		code:agegr1-_NONMISS_		code:agegr1		"_NONMISS_"
##		code:trt01a		code:race-BLACK_OR_AFRICAN_AMERICAN		code:race		"BLACK OR AFRICAN AMERICAN"
##		code:trt01a		code:factor-_NONMISS_		code:factor		"_NONMISS_"
##		code:trt01a		code:sex-U		code:sex		"U"
##		code:trt01a		code:procedure-count		code:procedure		"count"
##		code:trt01a		code:procedure-std		code:procedure		"std"

##		code:sex		code:factor-quantity		code:factor		"quantity"
##		code:sex		code:procedure-max		code:procedure		"max"
##		code:sex		code:procedure-q3		code:procedure		"q3"
##		code:sex		code:sex-F		code:sex		"F"
##		code:sex		code:agegr1-_65		code:agegr1		"<65"
##		code:sex		code:factor-proportion		code:factor		"proportion"
##		code:sex		code:agegr1-_80		code:agegr1		">80"
##		code:sex		code:race-_ALL_		code:race		"_ALL_"
##		code:sex		code:procedure-mean		code:procedure		"mean"
##		code:sex		code:trt01a-_ALL_		code:trt01a		"_ALL_"
##		code:sex		code:sex-M		code:sex		"M"
##		code:sex		code:ethnic-HISPANIC_OR_LATINO		code:ethnic		"HISPANIC OR LATINO"
##		code:sex		code:race-NATIVE_HAWAIIAN_OR_OTHER_PACIFIC_ISLANDER		code:race		"NATIVE HAWAIIAN OR OTHER PACIFIC ISLANDER"
##		code:sex		code:ethnic-NOT_HISPANIC_OR_LATINO		code:ethnic		"NOT HISPANIC OR LATINO"
##		code:sex		code:procedure-median		code:procedure		"median"
##		code:sex		code:ethnic-_NONMISS_		code:ethnic		"_NONMISS_"
##		code:sex		code:procedure-q1		code:procedure		"q1"
##		code:sex		code:trt01a-Xanomeline_High_Dose		code:trt01a		"Xanomeline_High_Dose"
##		code:sex		code:agegr1-_ALL_		code:agegr1		"_ALL_"
##		code:sex		code:sex-UN		code:sex		"UN"
##		code:sex		code:sex-_ALL_		code:sex		"_ALL_"
##		code:sex		code:race-ASIAN		code:race		"ASIAN"
##		code:sex		code:race-WHITE		code:race		"WHITE"
##		code:sex		code:trt01a-_NONMISS_		code:trt01a		"_NONMISS_"
##		code:sex		code:sex-_NONMISS_		code:sex		"_NONMISS_"
##		code:sex		code:factor-age		code:factor		"age"
##		code:sex		code:ethnic-_ALL_		code:ethnic		"_ALL_"
##		code:sex		code:procedure-n		code:procedure		"n"
##		code:sex		code:race-AMERICAN_INDIAN_OR_ALASKA_NATIVE		code:race		"AMERICAN INDIAN OR ALASKA NATIVE"
##		code:sex		code:trt01a-Placebo		code:trt01a		"Placebo"
##		code:sex		code:factor-weighttbl		code:factor		"weighttbl"
##		code:sex		code:trt01a-Xanomeline_Low_Dose		code:trt01a		"Xanomeline_Low_Dose"
##		code:sex		code:factor-_ALL_		code:factor		"_ALL_"
##		code:sex		code:procedure-percent		code:procedure		"percent"
##		code:sex		code:agegr1-65-80		code:agegr1		"65-80"
##		code:sex		code:procedure-min		code:procedure		"min"
##		code:sex		code:race-_NONMISS_		code:race		"_NONMISS_"
##		code:sex		code:agegr1-_NONMISS_		code:agegr1		"_NONMISS_"
##		code:sex		code:race-BLACK_OR_AFRICAN_AMERICAN		code:race		"BLACK OR AFRICAN AMERICAN"
##		code:sex		code:factor-_NONMISS_		code:factor		"_NONMISS_"
##		code:sex		code:sex-U		code:sex		"U"
##		code:sex		code:procedure-count		code:procedure		"count"
##		code:sex		code:procedure-std		code:procedure		"std"
##		code:race		code:factor-quantity		code:factor		"quantity"
##		code:race		code:procedure-max		code:procedure		"max"
##		code:race		code:procedure-q3		code:procedure		"q3"
##		code:race		code:sex-F		code:sex		"F"
##		code:race		code:agegr1-_65		code:agegr1		"<65"
##		code:race		code:factor-proportion		code:factor		"proportion"
##		code:race		code:agegr1-_80		code:agegr1		">80"
##		code:race		code:race-_ALL_		code:race		"_ALL_"
##		code:race		code:procedure-mean		code:procedure		"mean"
##		code:race		code:trt01a-_ALL_		code:trt01a		"_ALL_"
##		code:race		code:sex-M		code:sex		"M"

##	code:race	code:ethnic-HISPANIC_OR_LATINO	code:ethnic	"HISPANIC OR LATINO"
##	code:race	code:race-NATIVE_HAWAIIAN_OR_OTHER_PACIFIC_ISLANDER	code:race	"NATIVE_HAWAIIAN_OR_OTHER_PACIFIC_ISLANDER"
##	code:race	code:ethnic-NOT_HISPANIC_OR_LATINO	code:ethnic	"NOT_HISPANIC_OR_LATINO"
##	code:race	code:procedure-median	code:procedure	"median"
##	code:race	code:ethnic-_NONMISS_	code:ethnic	"_NONMISS_"
##	code:race	code:procedure-q1	code:procedure	"q1"
##	code:race	code:trt01a-Xanomeline_High_Dose	code:trt01a	"Xanomeline_High_Dose"
##	code:race	code:agegr1-_ALL_	code:agegr1	"_ALL_"
##	code:race	code:sex-UN	code:sex	"UN"
##	code:race	code:sex-_ALL_	code:sex	"_ALL_"
##	code:race	code:race-ASIAN	code:race	"ASIAN"
##	code:race	code:race-WHITE	code:race	"WHITE"
##	code:race	code:trt01a-_NONMISS_	code:trt01a	"_NONMISS_"
##	code:race	code:sex-_NONMISS_	code:sex	"_NONMISS_"
##	code:race	code:factor-age	code:factor	"age"
##	code:race	code:ethnic-_ALL_	code:ethnic	"_ALL_"
##	code:race	code:procedure-n	code:procedure	"n"
##	code:race	code:race-AMERICAN_INDIAN_OR_ALASKA_NATIVE	code:race	"AMERICAN_INDIAN_OR_ALASKA_NATIVE"
##	code:race	code:trt01a-Placebo	code:trt01a	"Placebo"
##	code:race	code:factor-weightbl	code:factor	"weightbl"
##	code:race	code:trt01a-Xanomeline_Low_Dose	code:trt01a	"Xanomeline_Low_Dose"
##	code:race	code:factor-_ALL_	code:factor	"_ALL_"
##	code:race	code:procedure-percent	code:procedure	"percent"
##	code:race	code:agegr1-65-80	code:agegr1	"65-80"
##	code:race	code:procedure-min	code:procedure	"min"
##	code:race	code:race-_NONMISS_	code:race	"_NONMISS_"
##	code:race	code:agegr1-_NONMISS_	code:agegr1	"_NONMISS_"
##	code:race	code:race-BLACK_OR_AFRICAN_AMERICAN	code:race	"BLACK_OR_AFRICAN_AMERICAN"
##	code:race	code:factor-_NONMISS_	code:factor	"_NONMISS_"
##	code:race	code:sex-U	code:sex	"U"
##	code:race	code:procedure-count	code:procedure	"count"
##	code:race	code:procedure-std	code:procedure	"std"
##	-----			

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	rrdfqbcrnd0:RdescStatDefFun	"function (x) { min(x, na.rm = TRUE)"
##	code:procedure-min	rrdfqbcrnd0:R-selectionvalue	"min"
##	code:procedure-min	rrdfqbcrnd0: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		rrdfqbcrnd0:RdescStatDefFun		"function (x) { sd(x, na.rm = TRUE
##		code:procedure-std		rrdfqbcrnd0:R-selectionvalue		"std"
##		code:procedure-std		rrdfqbcrnd0: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		rrdfqbcrnd0:RdescStatDefFun		"function (x) { quantile(x, probs :
##		code:procedure-q3		rrdfqbcrnd0:R-selectionvalue		"q3"
##		code:procedure-q3		rrdfqbcrnd0: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		rrdfqbcrnd0:RdescStatDefFun		"function (x) { median(x, na.rm = "
##		code:procedure-median		rrdfqbcrnd0:R-selectionvalue		"median"
##		code:procedure-median		rrdfqbcrnd0: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		rrdfqbcrnd0:RdescStatDefFun		"function (x) { length(x) }"
##		code:procedure-count		rrdfqbcrnd0:R-selectionvalue		"count"
##		code:procedure-count		rrdfqbcrnd0: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		rrdfqbcrnd0:RdescStatDefFun		"function (x) { max(x, na.rm = TRUE
##		code:procedure-max		rrdfqbcrnd0:R-selectionvalue		"max"
##		code:procedure-max		rrdfqbcrnd0: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		rrdfqbcrnd0:RdescStatDefFun		"function (x) { mean(x, na.rm = TRUE
##		code:procedure-mean		rrdfqbcrnd0:R-selectionvalue		"mean"
##		code:procedure-mean		rrdfqbcrnd0: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 = 0.25) }"
## | 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) { sum(x) / length(x) }"
## | 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" | rrdqbcrnd0:ADSL_WEIGHTBL | "weightbl" |
## | code:factor-_NONMISS_ | "_NONMISS_" | | |
## | code:factor-quantity | "quantity" | | "quantity" |
## | code:factor-age | "age" | rrdqbcrnd0: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 | rrdfqbcrnd0:R-selectionvalue | "weightbl" |
## | code:factor-weightbl | rrdfqbcrnd0:R-selectionoperator | "==" |
## | code:factor-weightbl | rrdfqbcrnd0:DataSetRefD2RQ | rrdfqbcrnd0: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 | rrdfqbcrnd0:R-selectionvalue | "age" |
## | code:factor-age | rrdfqbcrnd0:R-selectionoperator | "==" |
## | code:factor-age | rrdfqbcrnd0:DataSetRefD2RQ | rrdfqbcrnd0: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 | rrdfqbcrnd0:R-selectionvalue | "quantity" |
## | code:factor-quantity | rrdfqbcrnd0: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_ | rrdfqbcrnd0:R-selectionfunction | "is.na" |
## | code:factor-_NONMISS_ | rdfs:comment | "NON-CDISC: Represents the non-missing categories" |
## | 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 | rrdfqbcrnd0:R-selectionvalue | "proportion" |
## | code:factor-proportion | rrdfqbcrnd0: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	rrdfqbcrnd0:RdescStatDefFun	"function (x) { median(x, na.rm = T
code:procedure-median	rrdfqbcrnd0:R-selectionvalue	"median"
code:procedure-median	rrdfqbcrnd0: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	rrdfqbcrnd0Rcolumnname	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_COMP24FL> | "ADSL.COMP24FL" |
## | <adsl-map.ttl#ADSL_DCREASCD> | "ADSL.DCREASCD" |
## | <adsl-map.ttl#ADSL_DTHFL> | "ADSL.DTHFL" |
## | <adsl-map.ttl#ADSL_TRTSDT> | "ADSL.TRSDT" | xsd:double
## | <adsl-map.ttl#ADSL_RFENDT> | "ADSL.RFENDT" | xsd:double
## | <adsl-map.ttl#ADSL_DCDECOD> | "ADSL.DCDECOD" |
## | <adsl-map.ttl#ADSL_RFENDTC> | "ADSL.RFENDTC" |
## | <adsl-map.ttl#ADSL_CUMDOSE> | "ADSL.CUMDOSE" | xsd:double
## | <adsl-map.ttl#ADSL_TRT01A> | "ADSL.TR01A" |
## | <adsl-map.ttl#ADSL_AGEGR1> | "ADSL.AGEGR1" |
## | <adsl-map.ttl#ADSL_USUBJID> | "ADSL.USUBJID" |
## | <adsl-map.ttl#ADSL_TRT01PN> | "ADSL.TR01PN" | xsd:double
## | <adsl-map.ttl#ADSL_ITTFL> | "ADSL.ITTFL" |
## | <adsl-map.ttl#ADSL_SITEGR1> | "ADSL.SITEGR1" |
## | <adsl-map.ttl#ADSL_SEX> | "ADSL.SEX" |
## | <adsl-map.ttl#ADSL_ETHNIC> | "ADSL.ETHNIC" |
## | <adsl-map.ttl#ADSL_COMP8FL> | "ADSL.COMP8FL" |
## | <adsl-map.ttl#ADSL_RFSTDTC> | "ADSL.RFSTDTC" |
## | <adsl-map.ttl#ADSL_AGE> | "ADSL.AGE" | xsd:double
## | <adsl-map.ttl#ADSL_VISNUMEN> | "ADSL.VISNUMEN" | xsd:double
## | <adsl-map.ttl#ADSL_EFFFL> | "ADSL.EFFFL" |
## | <adsl-map.ttl#ADSL_SAFFL> | "ADSL.SAFFL" |
## | <adsl-map.ttl#ADSL_HEIGHTBL> | "ADSL.HEIGHTBL" | xsd:double
## | <adsl-map.ttl#ADSL_MMSETOT> | "ADSL.MMSETOT" | xsd:double
## | <adsl-map.ttl#ADSL_STUDYID> | "ADSL.STUDYID" |
## | <adsl-map.ttl#ADSL_RACEN> | "ADSL.RACEN" | xsd:double
## | <adsl-map.ttl#ADSL_DISONSDT> | "ADSL.DISONSDT" | xsd:double
## | <adsl-map.ttl#ADSL_BMIBL> | "ADSL.BMIBL" | xsd:double
## | <adsl-map.ttl#ADSL_DSRAEFL> | "ADSL.DSRAEFL" |
## | <adsl-map.ttl#ADSL_AGEU> | "ADSL.AGEU" |
## | <adsl-map.ttl#ADSL_DURDIS> | "ADSL.DURDIS" | xsd:double
## | <adsl-map.ttl#ADSL_TRTDUR> | "ADSL.TRDUR" | xsd:double
## | <adsl-map.ttl#ADSL_VISIT1DT> | "ADSL.VISIT1DT" | xsd:double
## | <adsl-map.ttl#ADSL_SUBJID> | "ADSL.SUBJID" |
## | <adsl-map.ttl#ADSL_AVGDD> | "ADSL.AVGDD" | xsd:double
## | <adsl-map.ttl#ADSL_WEIGHTBL> | "ADSL.WEIGHTBL" | xsd:double
## | <adsl-map.ttl#ADSL_EDUCLVL> | "ADSL.EDUCLVL" | xsd:double
## | <adsl-map.ttl#ADSL_SITEID> | "ADSL.SITEID" |
## | <adsl-map.ttl#ADSL_COMP16FL> | "ADSL.COMP16FL" |
## | <adsl-map.ttl#ADSL_RACE> | "ADSL.RACE" |
## | <adsl-map.ttl#ADSL_TRTEDT> | "ADSL.TRTEDT" | xsd:double
## | <adsl-map.ttl#ADSL_DISCONFL> | "ADSL.DISCONFL" |
## | <adsl-map.ttl#ADSL_ARM> | "ADSL.ARM" |
## | <adsl-map.ttl#ADSL_DURDSGR1> | "ADSL.DURDSGR1" |
## | <adsl-map.ttl#ADSL_AGEGR1N> | "ADSL.AGEGR1N" | xsd:double
## | <adsl-map.ttl#ADSL_TRT01P> | "ADSL.TR01P" |
## | <adsl-map.ttl#ADSL_TRT01AN> | "ADSL.TR01AN" | xsd:double
## | <adsl-map.ttl#ADSL_BMIBLGR1> | "ADSL.BMIBLGR1" |
## -----

```

Then dump the contents of a record in the database.


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

[illegible]

```
## | <http://www.example.org/datasets/ADSL/01-718-1254> | <http://www.example.org/datasets/vocab/ADSL_A1>
## | <http://www.example.org/datasets/ADSL/01-718-1254> | <http://www.example.org/datasets/vocab/ADSL_S1>
## | <http://www.example.org/datasets/ADSL/01-718-1254> | <http://www.example.org/datasets/vocab/ADSL_E1>
## -----
```

Get underlying data for one cube observation

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

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

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[illegible]

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[illegible]

```
## | <http://www.example.org/datasets/ADSL/01-710-1271> | <http://www.example.org/datasets/vocab/ADSL_RL
## | <http://www.example.org/datasets/ADSL/01-710-1271> | <http://www.example.org/datasets/vocab/ADSL_RL
## | <http://www.example.org/datasets/ADSL/01-710-1271> | <http://www.example.org/datasets/vocab/ADSL_HI
## | <http://www.example.org/datasets/ADSL/01-710-1271> | <http://www.example.org/datasets/vocab/ADSL_C
## | <http://www.example.org/datasets/ADSL/01-710-1271> | <http://www.example.org/datasets/vocab/ADSL_E
## | <http://www.example.org/datasets/ADSL/01-710-1271> | <http://www.example.org/datasets/vocab/ADSL_S
## | <http://www.example.org/datasets/ADSL/01-710-1271> | <http://www.example.org/datasets/vocab/ADSL_A
## | <http://www.example.org/datasets/ADSL/01-710-1271> | <http://www.example.org/datasets/vocab/ADSL_A
## | <http://www.example.org/datasets/ADSL/01-710-1271> | <http://www.example.org/datasets/vocab/ADSL_A
## | <http://www.example.org/datasets/ADSL/01-710-1271> | <http://www.example.org/datasets/vocab/ADSL_C
## | <http://www.example.org/datasets/ADSL/01-710-1271> | <http://www.example.org/datasets/vocab/ADSL_RL
## | <http://www.example.org/datasets/ADSL/01-710-1271> | <http://www.example.org/datasets/vocab/ADSL_S
## | <http://www.example.org/datasets/ADSL/01-710-1271> | <http://www.example.org/datasets/vocab/ADSL_S
## | <http://www.example.org/datasets/ADSL/01-710-1271> | <http://www.example.org/datasets/vocab/ADSL_M
## | <http://www.example.org/datasets/ADSL/01-710-1271> | <http://www.example.org/datasets/vocab/ADSL_D
## | <http://www.example.org/datasets/ADSL/01-710-1271> | <http://www.example.org/datasets/vocab/ADSL_RL
## | <http://www.example.org/datasets/ADSL/01-710-1271> | <http://www.example.org/datasets/vocab/ADSL_I
## | <http://www.example.org/datasets/ADSL/01-710-1271> | <http://www.example.org/datasets/vocab/ADSL_A
## | <http://www.example.org/datasets/ADSL/01-710-1271> | <http://www.example.org/datasets/vocab/ADSL_RL
## | -----
```

How to run this .Rmd file

.. add text ..