MULTICENTER OSTEOARTHRITIS STUDY
KNEE & FULL LIMB X-RAY INVENTORY & IMAGES
MARCH 2023

Datasets

Dataset: MOSTV0123579XRAYinv.sas
Observations: 4551 (1 record per study participant)
Variable Guide: VariableGuide_V0123579XRAYinv.pdf
Distributions: Distributions_V0123579XRAYinv.pdf

Formats: FORMATS.SAS7BDAT (contains all the formats used for the dataset)

Data is in SAS format (.sas7bdat), comma-separated (.csv) and tab-separated ASCII (.txt) text files, and there is also a .csv file (contentsXR.csv) that lists the folders that images are stored in and the types of images in that folder.

Variables

The dataset includes 3 or 4 variables for each study visit indicating the availability of images for the image type (knee x-rays: bilateral PA view, left and right knee lateral views, The variable prefix 'Vx' (e.g., V0, V1, V2, etc) indicates the study visit.

Variable	Description
VxL_LAT	Left knee Lateral View
VxR_LAT	Right knee Lateral View
Vx_PA	Bilateral PA Fixed Flexion
Vx_FL	Full Limb Radiograph

The values for each of these variables take the following meanings:
- 0 = None (the participant has no images available for the indicated type)
- 1 = The participant has 1 image available for the indicated type
- 2 = The participant has 2 images available for the indicated type
- 3 = The participant has 3 images available for the indicated type
- 4 = The participant has 4 images available for the indicated type

There is only 1 of each type of knee x-ray per visit, if acquired, but for some people a single bilateral full limb radiographs could not cover all anatomy and sometimes, separate, extra unilateral full limb radiographs are provided. Also, full limb x-rays are created from 3 separate radiographs stitched together. At the 144-month these separate unstitched x-rays are provided with each full limb radiograph as an ankle section, a knee section and a pelvis section. In particular, the pelvis section is useful for assessing hip osteoarthritis.

Visit numbers and the expected image types are as follows:
- V0 (Baseline visit)   - knee and full limb x-rays
- V1 (15-month followup visit)   - knee x-rays only (in a small subset of participants)
- V2 (30-month followup visit)   - knee x-rays only

- V3 (60-month followup visit)   - knee and full limb x-rays
- V5 (84-month followup visit)   - knee x-rays only
- V7 (144-month followup visit) - knee (all) and full limb x-rays (new cohort only)
- V9 (168-month followup visit) – knee x-rays only

Participants in the "Original Cohort" (IDs M0001 thru M3026) can have knee x-rays at any visits and full limb x-rays at V0 and V3. Participants in the "New Cohort" (IDs M3031 thru M7232 can only have images at V7 and V9.

Images

Images in the "MOST Knee Radiographs" folder contains the knee x-ray and the "MOST Full Limb Radiographs" folder will contain the full limb x-rays. Within those main folders, there is a subfolder for each participant, named after their MOSTID and 4-letter ACROSTIC.

Images for different visits are then stored in subfolders named after the visit, DICOM Study ID, and type of image/series. The DICOM Series name also indicates the type of radiograph acquired (PA05, PA10, PA15 are bilateral PA view semi-flexed weight bearing knee radiographs with 5, 10 and 15 degrees cranio-caudal beam angle, LLAT and RLAT are left and right knee lateral view knee x-rays).

More information about the details of x-ray protocol is given in the MOST Knee and Full Limb Radiography Operations Manual available at
https://agingresearchbiobank.nia.nih.gov/studies/most/documents/?f=Manual_of_Procedures

For example, this folder:
```
M0499_YRHY\V0\10981\LLAT
```
contains the left knee lateral view radiograph for participant M0499,YRHY from the baseline (V0) visit.

The (fictitious) dates of the images in the DICOM header tags also indicate the visit. The year indicates which visit the images are from:

- V0 (Baseline visit)   year = 2005
- V1 (15-month followup visit)   year = 2006
- V2 (30-month followup visit)   year = 2007
- V3 (60-month followup visit)   year = 2008
- V5 (84-month followup visit)   year = 2009
- V7 (144-month followup visit) year = 2010
- V9 (168-month followup visit) year = 2011

Images are usually dated January 1st, but when a participant has been brought back for a repeat scan, those are given later dates further into the year indicating how many months elapsed between the initial scan and the repeat scan.

The DICOM images are stored using lossless JPEG compression (TransferSyntaxUID 1.2.840.10008.1.2.4.70 JPEGLossless, Non-hierarchical-1stOrderPrediction) and DICOM tags such as the Study Description and Series Description indicate the knee, visit and image type. The PatientID tag contains the MOSTID and the PatientName tag contains the 4-letter Acrostic.

An example of the folder structure for one participant's (M0499,YRHY) knee x-rays is as follows:

```
M0499_YRHY
+---V0
|    \---10981
|         +---LLAT
|         +---PA15
|         \---RLAT
+---V2
|    \---10982
|         +---LLAT
|         +---PA15
|         \---RLAT
+---V3
|    \---20981
|         +---LLAT
|         +---PA15
|         \---RLAT
+--V5
|     \---30981
|         +---LLAT
|         +---PA15
|         \---RLAT
+--V7
|     \---8310
|         +---LLAT
|         +---PA15
|         \---RLAT
+--V9
      \---10114
          +---LLAT
          +---PA15
          \---RLAT
```

A text file (contentsKneeXR.csv, or contentsFullLimbXR.csv) is also provided on box.com listing each folder available and information about the type of images stored in the folder.