Population Characteristics

The full patient population contains 2713 patients. For the effective dosage and contrast models, only patients who received a Chest-Only CT scan were considered. This leaves 2412 total scans (88.9%) for consideration. All double rule out and triple rule out scans were then removed from the dataset, resulting in 2369 patient scans. Of these, 26 were missing data regarding patient BMI and 1 patient was missing a record of the amount of contrast administered. Due to such missing data, these patients were excluded from the study. Therefore, the final patient population used for analysis contained 2342 unique patient CT scans.

Notes

I’ve included patient characteristics for this subset of the overall population, as well as a breakdown of effective dose and contrast for the sub-groups of interest. For radiation and contrast, significance is given in two ways. The ANOVA significance indicates whether the levels of a given sub-group are different from each other (e.g. are all the scanner types the same or not). Then, pairwise significances are given within each sub-group (is the 64SSwIR scanner different from the 128SSwIR scanner).

* **Patient Sub-Groups**
  + **Gender**
    - **Male:** 1099/2342, 46.93%
    - **Female:** 1243/2342, 53.07%
  + **Age Group**
    - **Overall:** M = 58.1, SD = 17.31, Range = (0, 104)
    - **<18:** 21/2342, 0.90%
    - **18-35:** 270/2342, 11.53%
    - **>35:** 2051/2342, 87.57%
  + **BMI Group**
    - **Overall:**  M = 31.3, SD = 9.9, Range = (12.0, 91.5)
    - **<25:** 651/2342, 27.80%
    - **25-40:** 1309/2342, 55.89%
    - **>40:** 382/2342, 16.31%
  + **Location**
    - **ICU:** 268/2342, 11.44%
    - **IN:** 533/2342, 22.76%
    - **OUT:** 189/2342, 8.07%
    - **ED:** 1352/2342, 57.73%
  + **Scanner**
    - **64SSwoIR:** 59/2342, 2.52%
    - **64SSwIR:** 109/2342, 4.65%
    - **128SSwIR:** 1001/2342, 42.74%
    - **DS:** 1173/2342, 50.09%
* **Effective Dose**
  + **Overall**
    - M = 5.52, SD = 4.38, Range = (0.10, 43.01)
  + **Gender**
    - **Male:** M = 5.91, SD = 4.57, Range = (0.10, 41.34)
    - **Female:** M = 5.18, SD = 4.18, Range = (0.18, 43.01)
    - **Sig Diff:** 
      * ANOVA found significance (F = 24.39, p < .001)
      * Male greater than Female (p < .001)
  + **Age Group**
    - **<18:** M = 3.18, SD = 3.82, Range = (0.10, 18.47)
    - **18-35**: M = 5.24, SD = 4.51, Range = (0.90, 29.36)
    - **>35:** M = 5.58, SD = 4.37, Range = (0.22, 43.01)
    - **Sig Diff:** 
      * ANOVA found significance (F = 5.17, p = .006)
      * <18 is lower than 18-35 (p = .019) and >35 (p = .006)
      * No difference between 18-35 and >35 (p = .581)
  + **BMI Group**
    - **<25:** M = 3.21, SD = 1.92, Range = (0.10, 19.70)
    - **25-40:** M = 5.29, SD = 3.09, Range = (0.53, 27.68)
    - **>40:** M = 10.25, SD = 6.89, Range = (0.22, 43.01)
    - **Sig Diff:**
      * ANOVA found significance (F = 491.84, p < .001)
      * <25 is lower than 25-40 (p < .001) and >40 (p < .001)
      * 25-40 is lower than >40 (p < .001)
  + **Location**
    - **ICU:** M = 6.19, SD = 4.97, Range = (0.10, 41.34)
    - **IN:** M = 5.36, SD = 4.32, Range = (0.18, 43.01)
    - **OUT:** M = 5.81, SD = 3.55, Range = (0.95, 19.40)
    - **ED:** M = 5.41, SD = 4.38, Range = (0.53, 35.45)
    - **Sig Diff:**
      * ANOVA found significance (F = 5.17, p = .001)
      * ICU higher than ED (p = .005) and IN (p = .033)
      * No other differences (p > .05)
  + **Scanner**
    - **64SSwoIR:** M = 9.24, SD = 4.56, Range = (2.65, 23.90)
    - **64SSwIR:** M = 6.07, SD = 4.58, Range = (1.19, 25.33)
    - **128SSwIR:** M = 5.95, SD = 4.57, Range = (0.99, 41.34)
    - **DS:** M = 4.92, SD = 4.04, Range = (0.10, 43.01)
    - **Sig Diff:**
      * ANOVA found significance (F = 42.75, p < .001)
      * DS lower than all SS (p < .001 for all)
      * 64SSwoIR higher than 64wIR and 128wIR (p < .001 for both)
      * No difference between 64wIR and 128wIR
* **Contrast**
  + **Overall**
    - M = 88.5, SD = 17.3, Range = (5, 150)
  + **Gender**
    - **Male:** M = 88.8, SD = 16.6, Range = (48, 150)
    - **Female:** M = 88.2, SD = 17.8., Range = (5, 150)
    - **Sig Diff:**
      * Non-significant ANOVA (F = 0.82, p = .366)
      * No difference (p = .366)
  + **Age Group**
    - **<18:** M = 88.0, SD = 12.4, Range = (54, 100)
    - **18-35:** M = 88.8, SD = 20.1, Range = (5, 150)
    - **>35:** M = 88.4, SD = 16.9, Range = (10, 150)
    - **Sig Diff:**
      * Non-significant ANOVA (F = 0.11, p = .892)
      * No difference between any groups (p > .5)
  + **BMI Group**
    - **<25:** M = 88.94, SD = 17.8, Range = (13, 150)
    - **25-40:** M = 88.18, SD = 17.2, Range = (5, 150)
    - **>40:** M = 88.55, SD = 16.8, Range = (48, 150)
    - **Sig Diff:**
      * Non-significant ANOVA (F = 0.43, p = .648)
      * No difference between any groups (p > .5)
  + **Location**
    - **ICU:** M = 90.6, SD = 17.2, Range = (13, 150)
    - **IN:** M = 88.7, SD = 17.8, Range = (5, 150)
    - **OUT:** M = 90.4, SD = 16.4, Range = (40, 150)
    - **ED:** M = 87.7, SD = 17.2, Range = (10, 150)
    - **Sig Diff:**
      * ANOVA found location to be significant (F = 3.26, p = .021)
      * ICU marginally higher than ED (p = .060)
      * No other significant differences (p > .10)
  + **Scanner**
    - **64SSwoIR:** M = 91.1, SD = 18.0, Range = (10, 150)
    - **64SSwIR:** M = 84.4, SD = 18.0, Range = (40, 150)
    - **128SSwIR**: M = 89.4, SD = 17.5, Range = (10, 150)
    - **DS:** M = 87.9, SD = 17.0, Range = (5, 150)
    - **Sig Diff:**
      * ANOVA found CT Type to be significant (F = 5.92, p < .001)
      * 64wIR lower than 128wIR (p = .001) and DS (p = .03)
      * 64wIR marginally lower than 64woIR (p = .066)
      * DS marginally lower than 128wIR (p = .099)
      * No other significance (p > .5)