

# MatchSubjects

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Matching HEA subjects to gender and then age

```
function [HEA2,STR2,TBI] = MatchSubjects()
```

First, open up master Excel sheet

```
load("PredictionDatabase.mat","T");
T.Sex = categorical(T.Sex);
TBI = T(T.Category == "TBI",:);
HEA = T(T.Category == "Normal",:);
HEA_ind = 1:height(HEA);
match_ind = [];
age_diff = [];
for i = 1:height(TBI)
    Q = HEA(HEA_ind,:);
    switch TBI.Sex(i)
        case "female"
            Q = Q(Q.Sex=="female",:);
        case "male"
            Q = Q(Q.Sex=="male",:);
    end
    Q.Match = abs(Q.Age-TBI.Age(i));
    if min(Q.Match) > 5
        continue
    end
    age_diff(end+1) = min(Q.Match);
    in = find(Q.Match == age_diff(end));
    in = in(randi(length(in))); %randomize if mulitple matches
    match_ind(end+1) = Q.FileID(in);
    HEA_ind(HEA_ind == find(HEA.FileID==match_ind(end))) = [];
end
HEA2 = HEA(ismember(HEA.FileID,match_ind),:);
```

```
STR = T(T.Category == "Stroke",:);
STR_ind = 1:height(STR);
match_ind = [];
age_diff = [];
for i = 1:height(TBI)
    Q = STR(STR_ind,:);
    switch TBI.Sex(i)
        case "female"
            Q = Q(Q.Sex=="female",:);
        case "male"
            Q = Q(Q.Sex=="male",:);
    end
```

```

Q.Match = abs(Q.Age-TBI.Age(i));
if min(Q.Match) > 5
    continue
end
age_diff(end+1) = min(Q.Match);
in = find(Q.Match == age_diff(end));
in = in(randi(length(in))); %randomize if mulitple matches
match_ind(end+1) = Q.FileID(in);
STR_ind(STR_ind == find(STR.FileID==match_ind(end))) = [];
end
STR2 = STR(ismember(STR.FileID,match_ind),:);

```

## Output

```

disp("# HEA subjects/sessions: " + numel(unique(HEA2.Subject)) + "/" + height(HEA2))
disp("# STR subjects/sessions: " + numel(unique(STR2.Subject)) + "/" + height(STR2))
disp("# TBI subjects/sessions: " + numel(unique(TBI.Subject)) + "/" + height(TBI))
figure;
ages = 18:2:65;
histogram(HEA2.Age,ages);
hold on
histogram(STR2.Age,ages);
histogram(TBI.Age,ages);
legend("HEA","STR","TBI")

```

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