Sanity checks

Sanity check data graphically

```
df <- read.data()

## These retrospective studies are losing eyes per period - not impossible, but unusual:

## Mathalone et al. (2005)

## Leelachaikul et al. (2005)

## Shoji et al. (2007)

## Liu et al. (2011)

## Arthur et al. (2014)

## Tetz et al. (2015)

## These retrospective studies are gaining eyes per period:

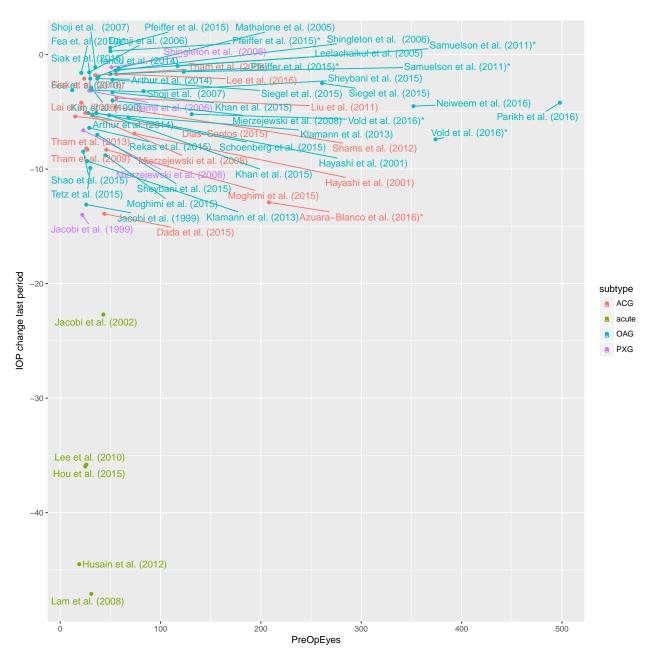
## Damji et al. (2006)

## Samuelson et al. (2011)*

N.B.:

• Shoji is fine.
• Mathalone is fine.
• Liu is fine.
• Liu is fine.</pre>
```

Summary plot.



Check that changes add up.

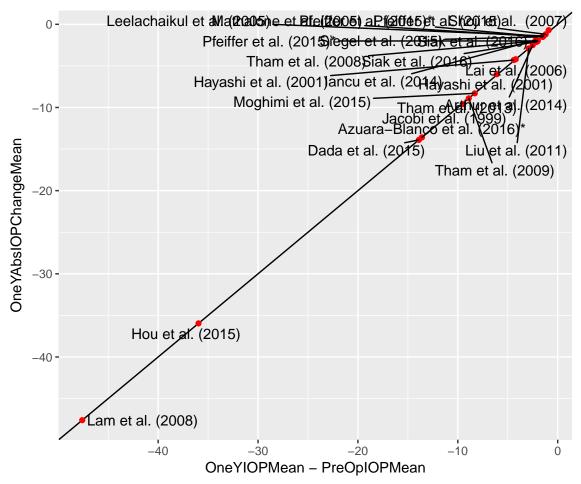
```
ggplot(df, aes(x = SixMoIOPMean - PreOpIOPMean, y = SixMoAbsIOPChangeMean, label = study.name)) +
  geom_abline() +
  geom_point(color="red") +
  geom_text_repel()
```

- ## Warning: Removed 43 rows containing missing values (geom_point).
- ## Warning: Removed 43 rows containing missing values (geom_text_repel).

```
0 -
                                  Zhang et al. (20$8)gel et al. (2016) et al. $2008)t al. (2016)
                           Euswas et al. (200160) i et al. (2001607) et al
                       Yudhasompop et al. (2001) shi et al. (2001)
                                                                                               (2011)
                                Tham et al. (2009) Shao et al. (20
                                                                   (2015) Yalvan et al. (1997)
Moghimi et al. (2015)
Pachimkul et al. (2008)
Jacobi et al. (1999)
    -10 -
SixMoAbsIOPChangeMean
                                                                              Hayashi et al. (2001)
                                             Azuara-Blanco et al. (2016)* Tham et al. (2013)
     –20 -
     -30 -
                  Hou et al. (2015)
    -40 -
               am et al. (2008)
                                            -30
                         -<del>4</del>0
                                                               -20
                                                                                  -10
                                                                                                      Ó
                                    SixMolOPMean - PreOplOPMean
ggplot(df, aes(x = OneYIOPMean - PreOpIOPMean, y = OneYAbsIOPChangeMean, label = study.name)) +
   geom_abline() +
   geom_point(color="red") +
```

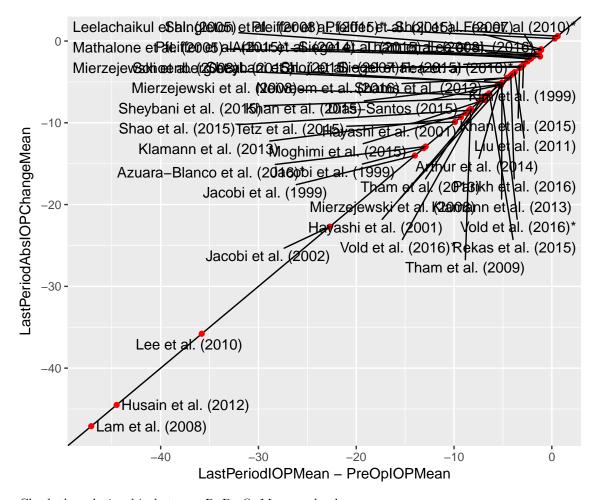
```
geom_text_repel()
```

- ## Warning: Removed 43 rows containing missing values (geom_point).
- ## Warning: Removed 43 rows containing missing values (geom_text_repel).



```
ggplot(df, aes(x = LastPeriodIOPMean - PreOpIOPMean, y = LastPeriodAbsIOPChangeMean, label = study.name
  geom_abline() +
  geom_point(color="red") +
  geom_text_repel()
```

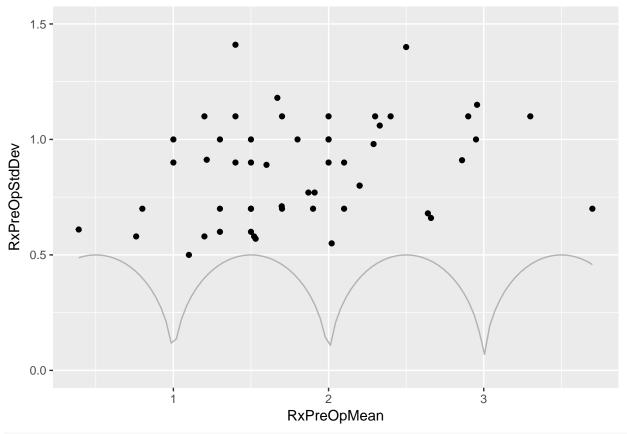
- ## Warning: Removed 18 rows containing missing values (geom_point).
- ## Warning: Removed 18 rows containing missing values (geom_text_repel).



Check the relationship between RxPreOpMean and s.d.

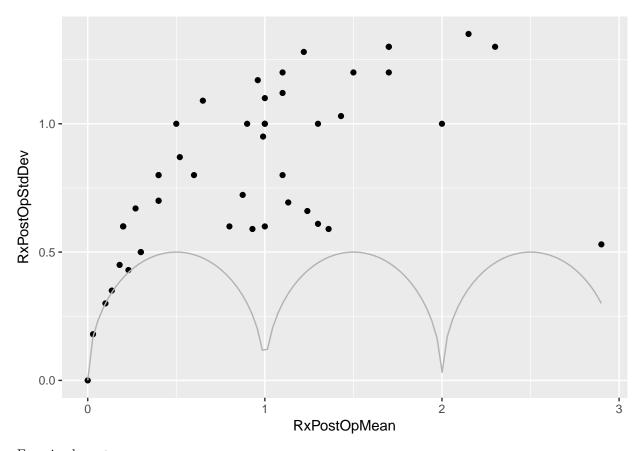
```
ggplot(df, aes(x = RxPreOpMean, y = RxPreOpStdDev)) +
  geom_point() +
  coord_cartesian(y=c(0, 1.5)) +
  stat_function(fun = function(x) sqrt((x - floor(x)) * (1 - (x - floor(x)))), color="gray70")
```

Warning: Removed 14 rows containing missing values (geom_point).



```
ggplot(df, aes(x = RxPostOpMean, y = RxPostOpStdDev)) + geom_point() +
    stat_function(fun = function(x) sqrt((x - floor(x)) * (1 - (x - floor(x)))), color="gray70")
```

Warning: Removed 19 rows containing missing values (geom_point).



Examine loss at one year.

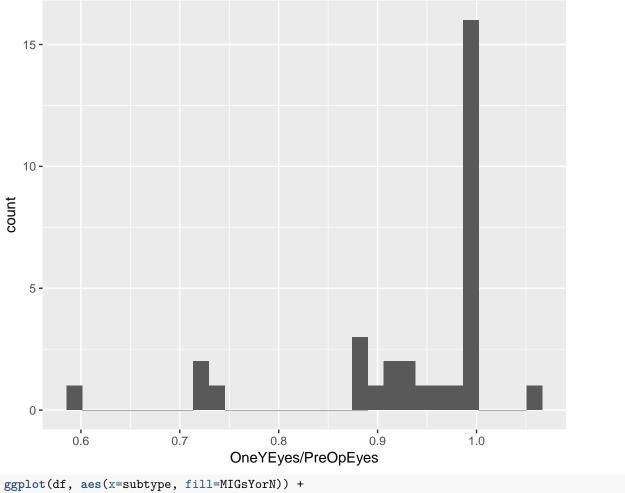
```
ggplot(df, aes(x=PreOpEyes, y=OneYEyes, label=study.name)) +
geom_point(color="red") +
geom_abline() +
geom_text_repel() + coord_fixed()
```

- ## Warning: Removed 35 rows containing missing values (geom_point).
- ## Warning: Removed 35 rows containing missing values (geom_text_repel).

```
Vole et al. (2016)*
   300 -
                                            Siegel et al. (2015)
OneYEyes
   200 -
              Samuelson et al. (2011)
           Samuelson et al. (2011)*Azuara-Blanco et al. (2016)*
         Hayashi et al. (2001)
                                           Vold et al. (2016)*
         Pfeiffer et al. (201)
                                     eelachaikul et al. (2005)
                                          011) Moghimi et al. (2015)
   100 -
         Siegel et al.
                                               (2008)
                                               Pfeiffer et al. (2001)
         Dada et
                                            $2001/49t al. (2007a)cobi et al. (2002)
                         <del>IS(2008)al.T(2010)t-al.r(2013) aTH(2014)</del>Malat(2008)e et al. (2005)
             Lai et al Haucer) al Siaucier) al Diannilio) t al Jaac 066 et al. (1999) iji et al. (2006)
                        100
                                        200
                                                        300
                                                                        400
                                                                                        500
                                            PreOpEyes
ggplot(df, aes(x=OneYEyes / PreOpEyes, label=study.name)) +
  geom_histogram() +
  coord_cartesian()
```

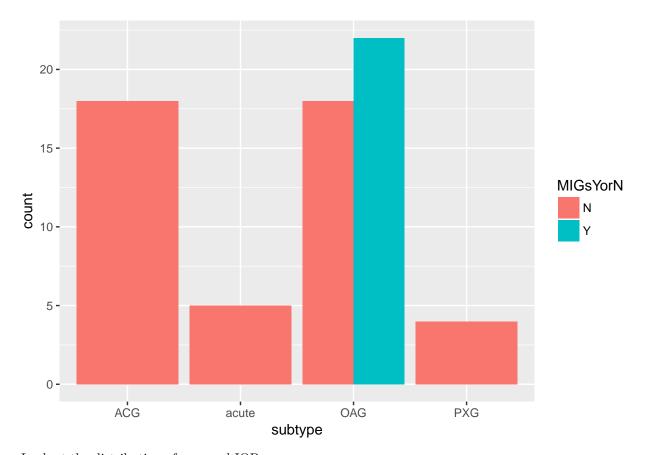
```
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```

^{##} Warning: Removed 35 rows containing non-finite values (stat_bin).



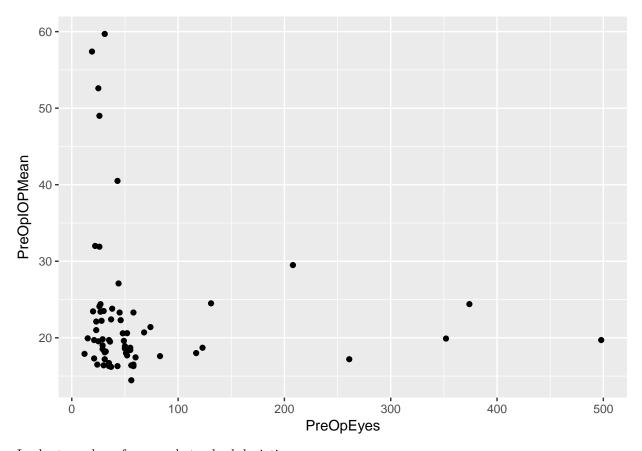
ggplot(df, aes(x=subtype, fill=MIGsYorN)) +
 geom_histogram(stat="count", position = 'dodge')

Warning: Ignoring unknown parameters: binwidth, bins, pad



Look at the distribution of eyes and IOP means.

ggplot(df, aes(x=PreOpEyes, y=PreOpIOPMean)) + geom_point()



Look at number of eyes and standard deviation.

```
ggplot(df, aes(x=PreOpEyes, y=PreOpIOPStdDev, label=study.name)) +
geom_point(color="red") + geom_text_repel(nudge_x = 5)
```

```
• Husain et al. (2012)
   15 -
                 •Lee et al. (2010)
                          • Pachimkul et al. (2008)
PreOpIOPStdDev
           Lam et al. (2008) Hou et al. (2015)
                                Sheybani et al. (2015)
       Dias-Santos (2015) Jacobi et al. (1999)
                                                                      •Azuara-Blanco et al. (2016)*
                 Shao et al. (2015)
Shams et al. (2012)
Shams et al. (2012)
       Jacobi et al. (1999) Moghimi et al. (2015)
                                                     _Khan et al. (2015)
       Rekas et al. (2015)
                                             Tham et al. (2009)
       Lai et al. (2006) Klamann et al. (2013) Klamann et al. (2013) Moghimi et al. (2015)
       Shao et al. (2015) Mierzejewski et al. (2008)
                                                             _Schoenberg et al. (2015)
                                                                                                                 Neiweem et al. (2016)
                                               Khan et al. (2015) ___ Hayashi et al. (2001)
                          Arthur et al. (2014)
                                         Wierzejewski et al. (2008)
Lee et al. (2016)
                                                                                                                                       Parikh et al. (2016)
                           Arthur et al. (2014) Siegel et al. (2015) Mathalone et al. (2005)
       Tham et al. (2013) Zhang et al. (2013)
                                                        Shingleton et al. (2008)
                                                                                              Siegel et al. (2015)
                                                    Pfeiffer et al. (2015)*
                                                                            -Hayashi et al. (2001)
                                                                        Liu et al. (2011)
       Damji et al. (2006)
                                                               (2015) Samuelson et al. (2011)*
                                                           Vold et al. (2016)*
                                                                                                                      •Vold et al. (2016)*
                                                      Yudhasompop et al. (2012)
       Fea et. al (2010)
                                                           Leelachaikul et al. (2005)
                               Shingleton et al. (2006)
       Shoji et al. (2007) Euswas et al. (2005)
                                                         Samuelson et al. (2011)*
                           laneu et al. (2014)
       Shoji et al. (2007)
                                Dada et al. (2015)
         Ó
                                                                               PreOpEyes
```

```
ggplot(df, aes(x=PreOpEyes, y=SixMoAbsIOPChangeStdDev, label=study.name)) +
geom_point(color="red") + geom_text_repel(nudge_x = 5)
```

- ## Warning: Removed 41 rows containing missing values (geom_point).
- ## Warning: Removed 41 rows containing missing values (geom_text_repel).

```
12.5 -
                Pachimkul et al. (2008)
             Lam et al. (2008)
           Hou et al. (2015)
                                 Azuara-Blanco et al. (2016)*
          Jacobi et al. (1999)
   10.0 -
SixMoAbsIOPChangeStdDev
             Shao et al. (2015)
            Moghimi et al. (2015)

    Tham et al. (2009)

     7.5 -
         Arthur et al. (2014)
                       Siegel et al. (2015)
                              Damji et al. (2006)
                iu et al. (2011)
    5.0 -
                           Siak et al. (2001)
                  Tham et al. (2012) hang et al. (2013)
               lancu et al Yakvaldet al. (2005)
             Tham et al. (2008) shi et al. (2001)
           Damji et al. (2006) asompop et al. (2012)
              Shoji et al. (2007)
                   Dada et al. (2015)
                    100
         Ö
                                200
                                             300
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                                                                     500
                                   PreOpEyes
ggplot(df, aes(x=PreOpEyes, y=SixMoIOPStdDev, label=study.name)) +
  geom_point(color="red") + geom_text_repel(nudge_x = 5)
```

```
## Warning: Removed 44 rows containing missing values (geom_point).
```

^{##} Warning: Removed 44 rows containing missing values (geom_text_repel).

```
Pachimkul et al. (2008)
  6 -
        •Shao et al. (2015)
     Hayashi et al. (2001)
SixMolOPStdDev
            Moghimi et al. (2015)
Azuara-Blanco et al. (2016)*
     Tham et a
               et al. (2016) Siegel et al. (2015)
               Arthur et al. (2014)
              am et al. (2008) Zhang et al. (2013)
                      Hou et al. (2018) Ivac et al. (1997)
     Liu et al. (2008) Hayashi et al. (2001)
                     Shoji et al. (2000) a) sompop et al. (2012)
               -Tancu et al. (2014)
     Siak et al. (2016)
            •Jacobi et al. (1999)
                            Euswas et al. (2005)
           Dada et al. (2015)
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                  100
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                                                                     500
                                 PreOpEyes
ggplot(df, aes(x=PreOpEyes, y=OneYAbsIOPChangeStdDev, label=study.name)) +
  geom_point(color="red") + geom_text_repel(nudge_x = 5)
```

^{##} Warning: Removed 37 rows containing missing values (geom_text_repel).

```
Lam et al. (2008)
         Hou et al. (2015)
                                   Azuara-Blanco et al. (2016)*
                   Jacobi et al. (1999)
                                 Moghimi et al. (2015)
      Lai et al. (2006)
               Tham et al. (2011ha)m et al. (2009)
                     . A2011u5) et al. (2005)
                  (2015) et al. (2015) et al. (2011)
One YAbsIOPChangeStdDev
                             <del>(a)#63)r et al. (2</del>1611457a)*shi et al. (2001)
                             et al. (2101a5a)*shi et al. (2001)
                                 Samuelson et al. (2011)*
             et al. (2006)
                      Leelachaikul et al. (2005)
      Tham t al (2008) Samuelson et al. (2011)*
            Damii et al. (2006)
      Shoji et al.
                   (2007)
             Dada et al. (2015)
                        Vold et al. (2016)*
                                                       Vold et al. (2016)*
                                                          400
      Ö
                   100
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                                  PreOpEyes
ggplot(df, aes(x=PreOpEyes, y=OneYIOPStdDev, label=study.name)) +
  geom_point(color="red") + geom_text_repel(nudge_x = 5)
## Warning: Removed 44 rows containing missing values (geom_point).
## Warning: Removed 44 rows containing missing values (geom_text_repel).
```

```
Hayashi et al. (2001)
  4 - Lai et al. (2006)
     Pfeiffer et al. (2015)
                 Pfeiffer et al. (2015)*
        Siak et al. (2016) Hayashi et al. (2001)
               Siegel et al. (2015)
      Arthur et alt (and 4) al. (2009) Azuara-Blanco et al. (2016)*
OneYIOPStdDev
    Hou et al. (2015) ham et al. (2008)
             Liu et al. (2011) Pfeiffer et al. (2015)*
                           Shoji et al. (2007)
         Lam et al. (2008)
Mathalone et al. (2005)
             iak et al. (2016) lachaikul et al. (2005)
       lancu et al. (2014)
  2 -

    Jacobi et al. (1999)

           Dada et al. (2015)
                  100
                              200
                                           300
                                                       400
                                                                    500
                                 PreOpEyes
ggplot(df, aes(x=PreOpEyes, y=LastPeriodAbsIOPChangeStdDev, label=study.name)) +
  geom_point(color="red") + geom_text_repel(nudge_x = 5)
## Warning: Removed 13 rows containing missing values (geom_point).
## Warning: Removed 13 rows containing missing values (geom_text_repel).
```

```
16-

    Husain et al. (2012)

LastPeriodAbsIOPChangeStdDev
    12 -
            Lee et al. (2010)
        Lam et al. (2008) Sheybani et al. (2015)
            Dias-Santos (2015)
                             Jacobi et al. (1999)
                                     ann et ala /2/2/1/28) Blanco et al. (2016)*
                                          genberg et al. (2015)
                                           Tathalone Netiwe (20065) al. (2016)
          Fea et. Schio(20et 02) *: Sh2000 = t) as a (200 et 3) or Sextratue (2011) *
        0
                                 200
                                                            400
                    100
                                              300
                                                                         500
                                    PreOpEyes
ggplot(df, aes(x=PreOpEyes, y=SixMoIOPStdDev, label=study.name)) +
  geom_point(color="red") + geom_text_repel(nudge_x = 5)
## Warning: Removed 44 rows containing missing values (geom_point).
## Warning: Removed 44 rows containing missing values (geom_text_repel).
```

