Analysis plan

Some notes on the analysis and the studies

- None of the studies are randomized, except the EAGLE one – (2016) Azuara-Bianco et al., Lancet
- There's no control arm in any of the studies
- Main outcome is IOP drop
  - The older studies are phaco + glaucoma surgery
  - The new ones are phaco + MIGS - minimally invasive glaucoma surgery

Slicings to look at

- MIGS
- Type of glaucoma:
  - OAG -> open angle glaucoma ** ~2-3mm **
  - NTG -> normal tension glaucoma ?
  - ACG -> angle closure glaucoma ** known to be effective **
  - PXG: pseudo-exfoliation ?

Dimensions to look at - meta-regression

- Initial severity (IOP before)
- Size of study (number of eyes)
- Year

Different outcomes

- Primary is IOP drop
  - time points 6 mo, 12 mo, (last time point)
  - most important is 12 months
- Number of meds
  - Huge confound, because it's controlled by the doctor
  - Meds themselves decrease the IOP
  - A handful of studies use washout pre and post (measuring the IOP without meds) to undo the confounding
    - EAGLE, Samuelson studies have washout
    - Lack of washout will have a tendency to decrease the apparent effectiveness of the studies
  - One med ~= 20% decrease in IOP
  - One med := decrease in quality of life
  - RxPostOpMean is at the same time as LastPeriod
- (visual acuity but it's kind of obvious)

Additional analyses to perform

- Funnel plot for small / medium large studies
- Deal appropriately with multiple arms of same study, e.g. Damji et al., Merz...
- Deal with three forms of lossiness:

- Absolutes reported, relatives needed
- Can patch up using estimate of rho – sqrt(s_1 ** 2 + s_2 ** 2 - 2 * rho * s_1 * s_2)
- Try rho = 0, rho = 0.5
- Loss of follow-up
- Can deal with by assuming that follow up is either MCAR or worse than MCAR
- Try mean_delta = 0, mean_delta = -3, mean_delta = -5
- Not all metrics reported for every study
- Use mvmeta

Write methods