**Prioritized statistical goals are below (*1-4 being the prioritization, not the letters which are for clarity*), and also denoted within dataset data dictionary:**

1. **Efficacy of plaque brachytherapy vs gamma-knife stereotactic radiosurgery (GKSRS) radiation therapies:**
   1. Rates of “recurrence1” **after** plaque brachytherapy vs GKSRS
   2. Rates of “mets\_progression” metastatic progression **after** plaque brachytherapy vs GKSRS
   3. Overall Survival after plaque brachytherapy vs GKSRS
   4. Progression Free Survival after plaque brachytherapy vs GKSRS
   5. Change in tumor height “initial\_tumor\_height” minus “last\_height” pre/post treatment with plaque brachytherapy vs GKSRS
      1. if developed local progression and was retreated i.e., “Y” for “recurrence1”, then calculate as “initial\_tumor\_height” minus “recurrence1\_pretreatment\_height”
   6. Subgroup analysis of efficacy (plaque brachytherapy vs GKSRS) based on baseline characteristics (in overall treatment groups and subgroups meeting inclusion/exclusion criteria below):
      1. age
      2. sex
      3. location
      4. initial\_T\_stage
      5. initial\_tumor\_height
      6. initial\_tumor\_diameter
      7. biopsy1\_gep
      8. optic\_nerve (only to be compared in overall treatment groups)
2. **Safety/Toxicity of plaque brachytherapy vs gamma-knife stereotactic radiosurgery (GKSRS) radiation therapies:**
   1. Change vision “initial\_vision” minus “last\_vision” pre/post treatment with plaque brachytherapy vs GKSRS
      1. if developed local progression and was retreated i.e., “Y” for “recurrence1”, then calculate as “initial\_vision” minus “recurrence1\_pretreatment\_vision”
   2. Rates of radiation sequelae (listed below) after plaque brachytherapy vs GKSRS:
      1. retinopathy
      2. nvg
      3. srg
         1. only if: “srd\_cause” = radiation induced cause
3. **Efficacy of repeat radiation (GKSRS vs other second line treatments)**
   1. Progression Free Survival-2 if:
      1. developed local progression i.e., “Y” for “recurrence1”,
      2. and was retreated with GKSRS vs enucleation vs TTT as denoted in “recurrence1\_treatment”
      3. calculate as:
         1. If developed 2nd local progression i.e., “Y” for “recurrence2”: “recurrence2\_date” minus “recurrence1\_treatment\_date”
         2. If no 2nd local progression” “last\_followup” minus “recurrence1\_treatment\_date”
4. **Predictive accuracy of Gene Expression Profile (GEP)**
   1. Actual rates vs expected reported rates of 5-year metastasis-free survival (MFS) (expected = “biopsy1\_gep\_mfs) and (estimated rates provided in dataset)
   2. Actual rates vs expected reported rates of 5-yr melanoma specific survival (MSS) (expected = “biopsy1\_gep\_mss) based on GEP (estimated rates provided in dataset)

**Inclusion & Exclusion Criteria for Subgroup Analysis:**

1. Inclusion criteria (candidate for GKSRS AND plaque brachytherapy):
   1. Maximum pre-treatment tumor basal diameter </= 20 mm
   2. Maximum pre-treatment tumor B-scan height </= 10 mm
   3. No tumor abutment of optic nerve
2. Exclusion criteria (candidate for only one treatment modality (GKSRS only):
   1. Maximum pre-treatment tumor basal diameter > 20 mm (N = 10; although pt ID 184 was treated with plaque brachytherapy even though max pretreatment diameter was 22 mm, N=1)
   2. Maximum pre-treatment tumor B-scan height > 10 mm
   3. Tumor abutment of optic nerve (includes patients treated with either GKSRS or notched plaque brachytherapy)