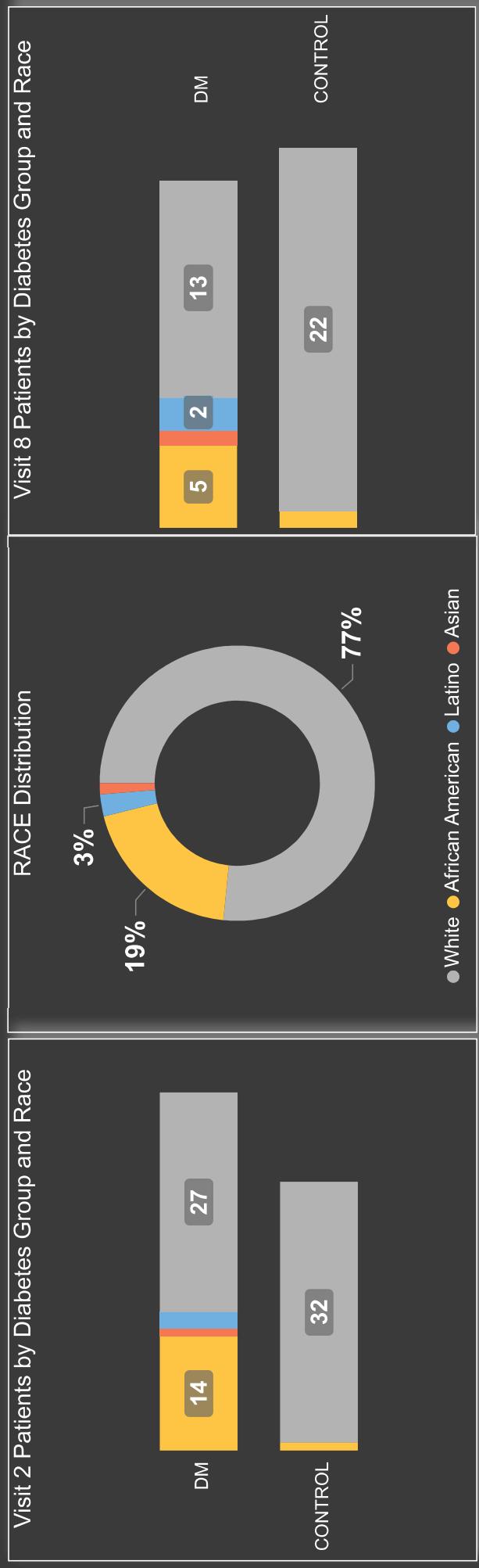
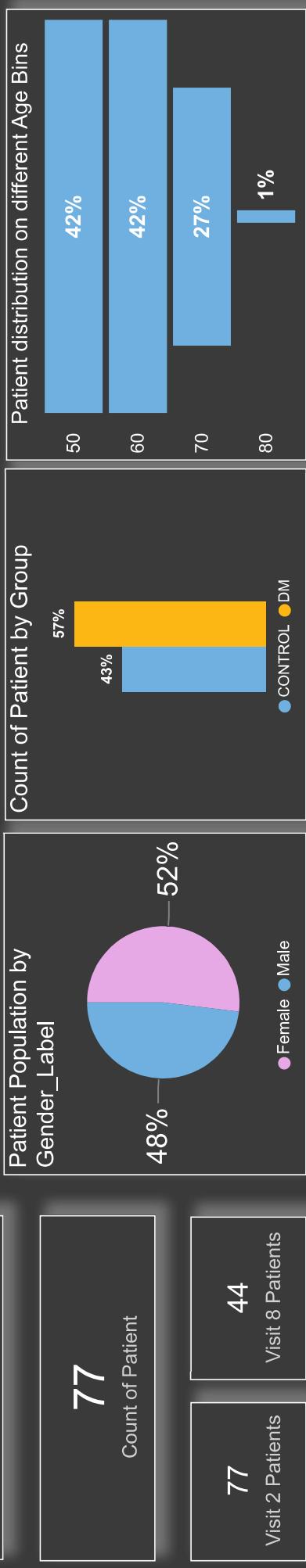
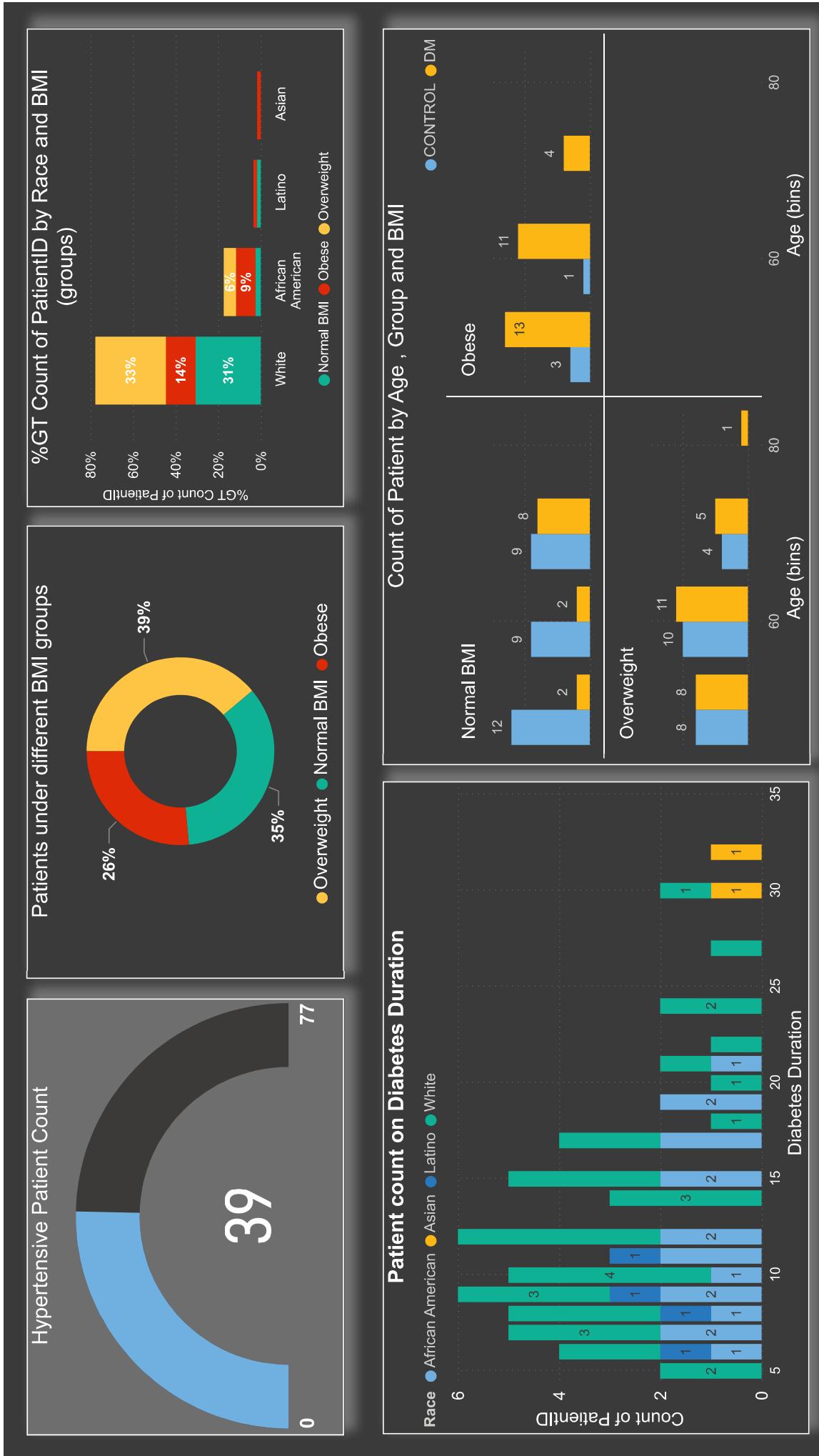
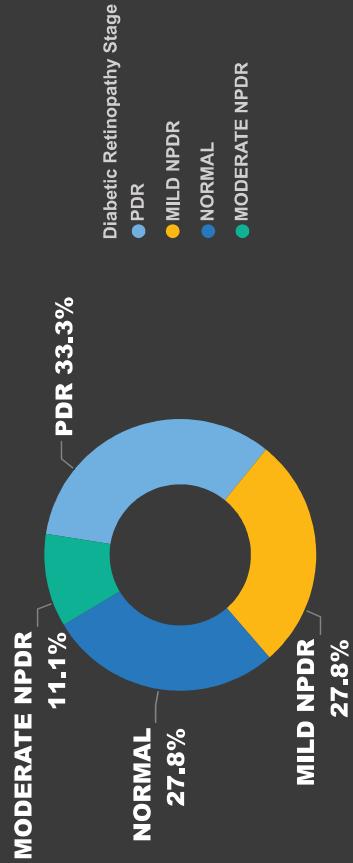


## Demographics



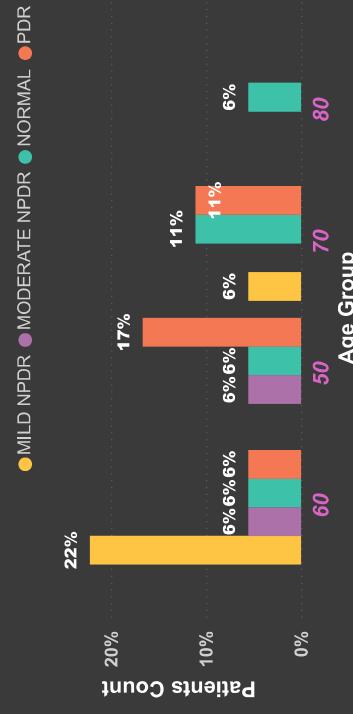


### Patients Count Vs Diabetic Retinopathy Stages



### DIABETIC RETINOPATHY

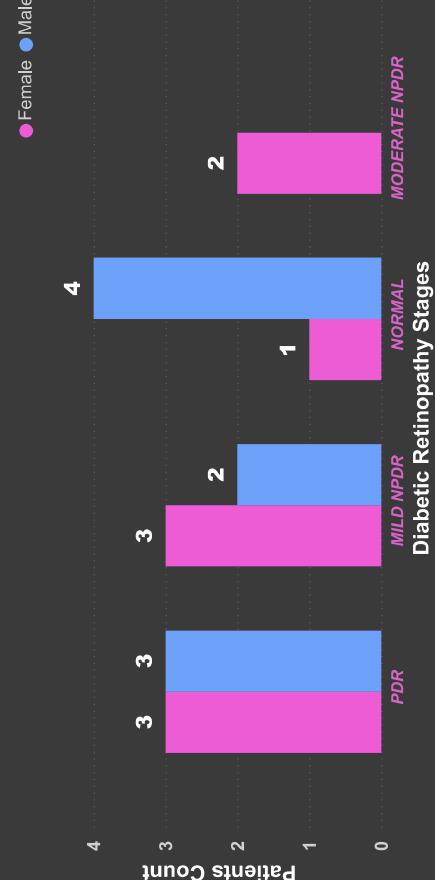
#### Diabetic Retinopathy Vs Age



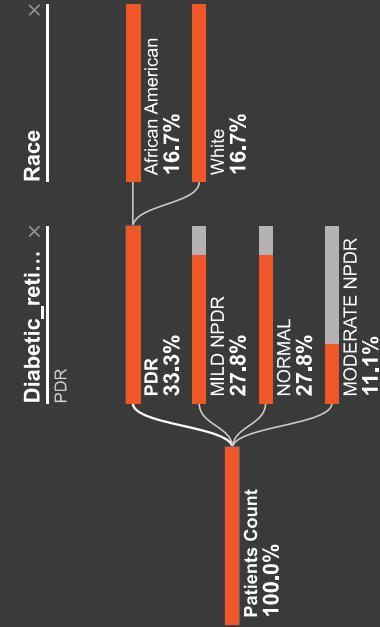
#### Stages of Diabetic Retinopathy

Stage 1: Mild nonproliferative diabetic retinopathy: It is characterised by tiny area of swelling of the blood vessel in retina. Stage 2: Moderate nonproliferative diabetic retinopathy: Increased swelling of blood vessels starts to interfere with blood flow to the retina. Stage 3: Severe nonproliferative diabetic retinopathy: A larger section of blood vessels in the retina become blocked, causing a significant decrease in blood flow to this area. Body react to new blood vessel growing in retina. Stage 4: Proliferative diabetic retinopathy : The new blood vessel is fully formed and is fragile that increase the high risk of fluid leakage. This cause blurriness, reduced vision & even blindness.

### Diabetic Retinopathy Vs Gender



#### Diabetic Retinopathy Vs Race



### CONTROL

### DM



### Visit 2

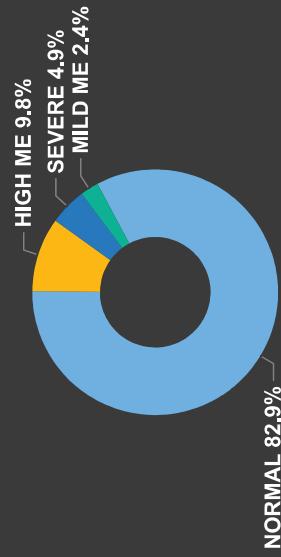
### Visit 8

### Cognitive Decline



# MACULAR EDEMA

## Patients Count Vs Macular Edema



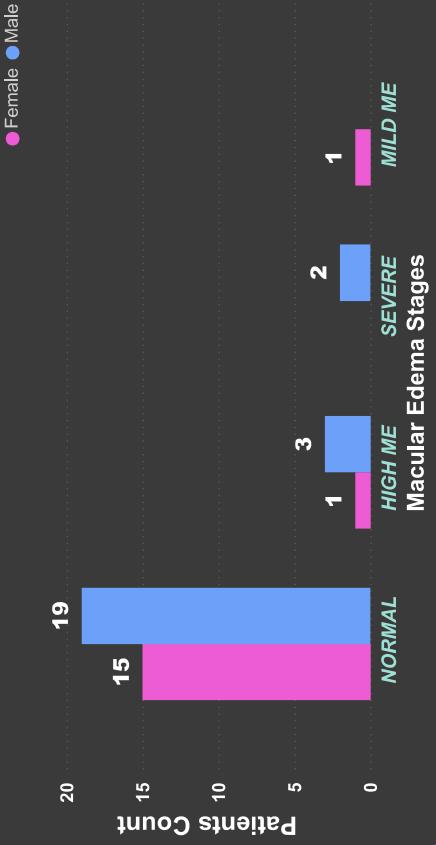
## Macular Edema

Maculardema happens when blood vessels leak into a part of the retina called the macula. This can be caused by many condition, and one of the main condition being diabetic retinopathy.

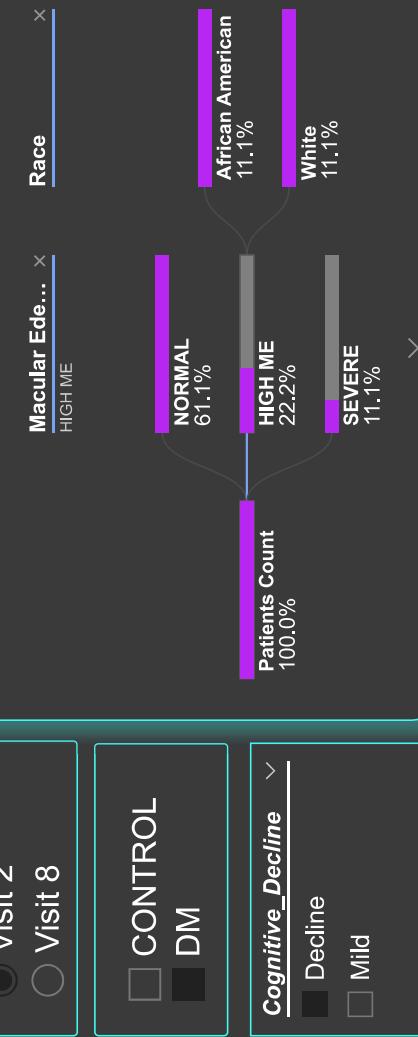
## Macular Edema Vs Age



## Macular Edema Vs Gender



## Macular Edema Vs Race



# DIABETIC RETINOPATHY & MACULAR EDEMA

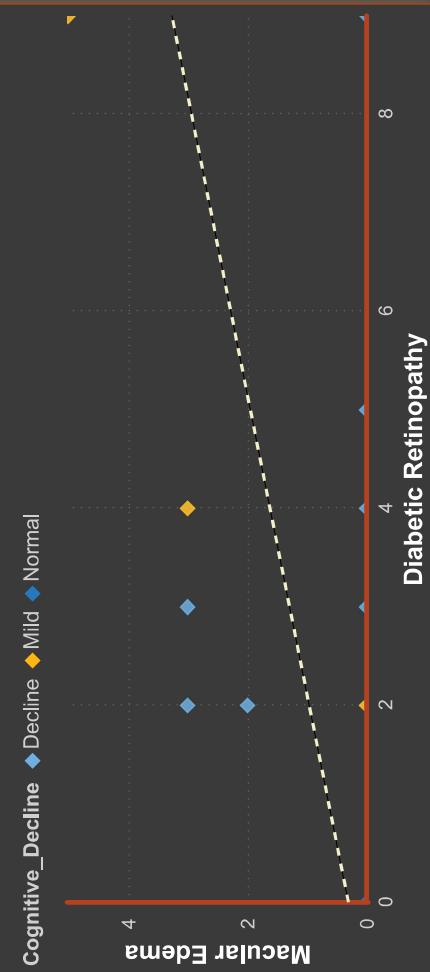
**Progression of Diabetic Retinopathy b/w Visits**

| PatientID | Visit   | Diabetes | Diabetic_Retinopathy | Cognitive_Dcline |
|-----------|---------|----------|----------------------|------------------|
|           |         |          |                      | Duration         |
| S0296     | Visit 2 | 15       | MILD NPDR            | Decline          |
| S0296     | Visit 8 | 17       | PDR                  | Decline          |
| S0513     | Visit 2 | 12       | NORMAL               | Decline          |
| S0513     | Visit 8 | 14       | MILD NPDR            | Decline          |
| S0527     | Visit 2 | 19       | NORMAL               | Decline          |
| S0527     | Visit 8 | 21       | PDR                  | Decline          |
| S0531     | Visit 2 | 8        | NORMAL               | Decline          |
| S0531     | Visit 8 | 10       | PDR                  | Decline          |
| S0550     | Visit 2 | 17       | NORMAL               | Decline          |
| S0550     | Visit 8 | 19       | PDR                  | Decline          |
| S0557     | Visit 2 | 7        | NORMAL               | Decline          |
| S0557     | Visit 8 | 9        | PDR                  | Decline          |
| S0574     | Visit 2 | 7        | MILD NPDR            | Decline          |

**Progression of Macular Edema b/w Visits**

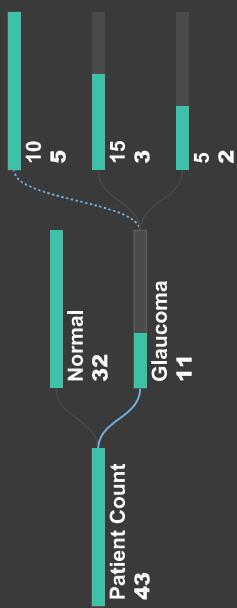
| PatientID | Visit   | Diabetes | Macular_Edema | Cognitive_Dcline |
|-----------|---------|----------|---------------|------------------|
|           |         |          |               | Duration         |
| S0296     | Visit 2 | 15       | HIGH ME       | Decline          |
| S0296     | Visit 8 | 17       | SEVERE        | Decline          |
| S0527     | Visit 2 | 19       | NORMAL        | Decline          |
| S0527     | Visit 8 | 21       | SEVERE        | Decline          |
| S0531     | Visit 2 | 8        | NORMAL        | Decline          |
| S0531     | Visit 8 | 10       | SEVERE        | Decline          |
| S0550     | Visit 2 | 17       | NORMAL        | Decline          |
| S0550     | Visit 8 | 19       | SEVERE        | Decline          |
| S0557     | Visit 2 | 7        | NORMAL        | Decline          |
| S0557     | Visit 8 | 9        | SEVERE        | Decline          |
| S0574     | Visit 2 | 15       | NORMAL        | Decline          |

**Diabetic Retinopathy Vs Macular Edema**



# GLAUCOMA & CATARACTS

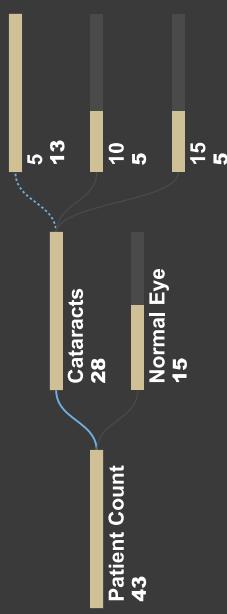
## Glaucoma Vs Diabetes Duration



### Glaucoma

Glaucoma is a group of eye diseases that can damage the optic nerve—the bundle of nerves that connects the eye to the brain. Diabetes doubles the chances of having glaucoma, which can lead to vision loss and blindness if not treated early.

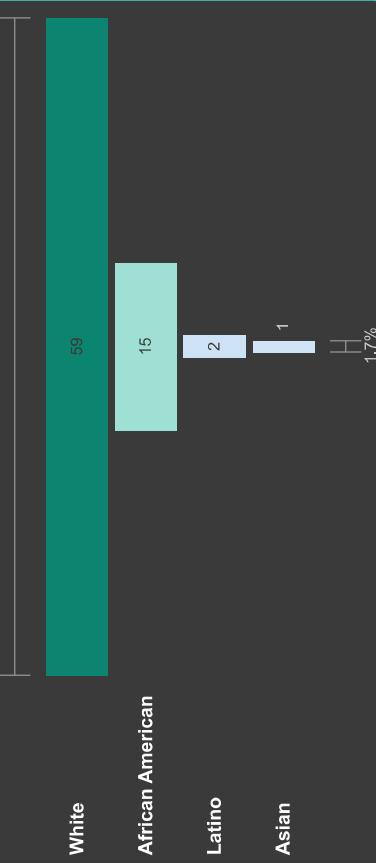
## Cataracts Vs Diabetes Duration



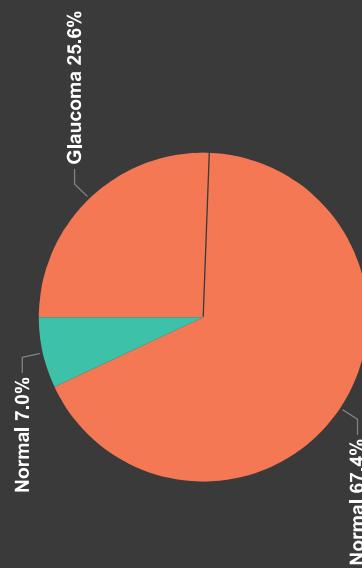
### Cataract

As you age, the lenses of your eyes become less flexible, less transparent and thicker. When you have diabetes, high blood sugar (blood glucose) levels over time can lead to structural changes in the lens of the eye that can accelerate the development of cataracts.

## Patient Count by Race

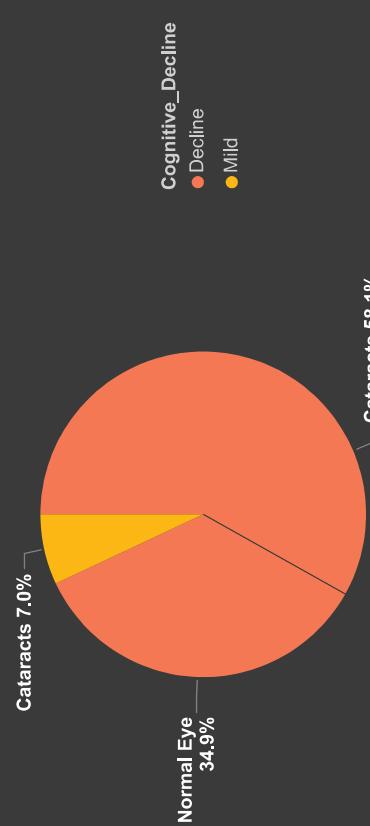


## Cognitive\_Stages by Glaucoma group



Cognitive Decline  
● Decline  
● Mild

## Cognitive\_Stages by Cataracts group

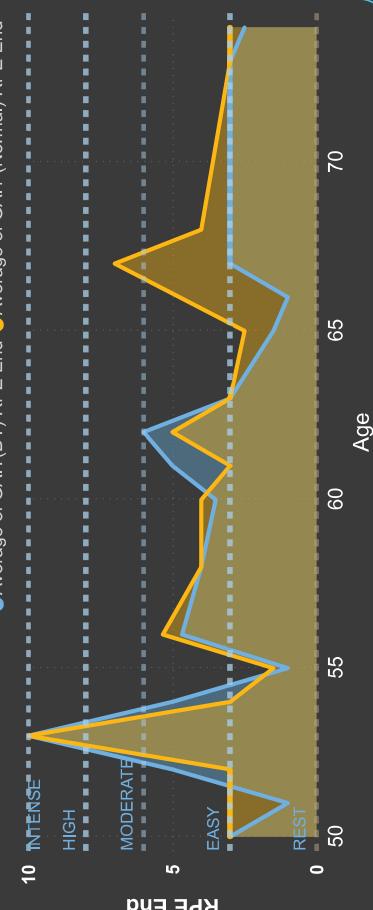


Cognitive Decline  
● Decline  
● Mild

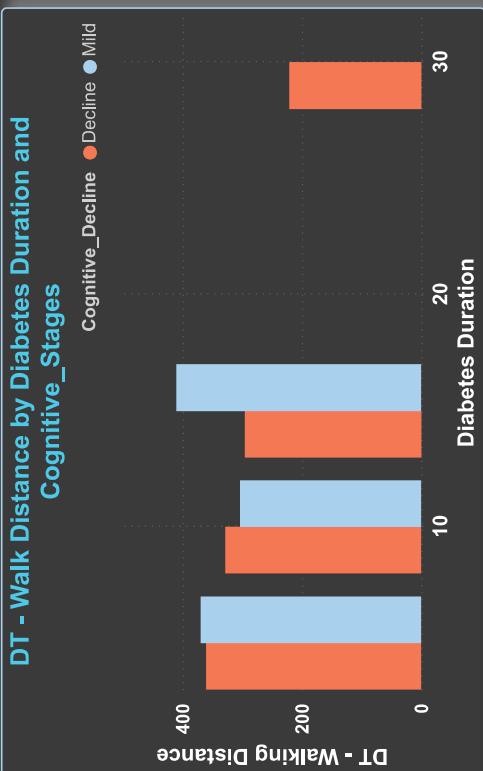
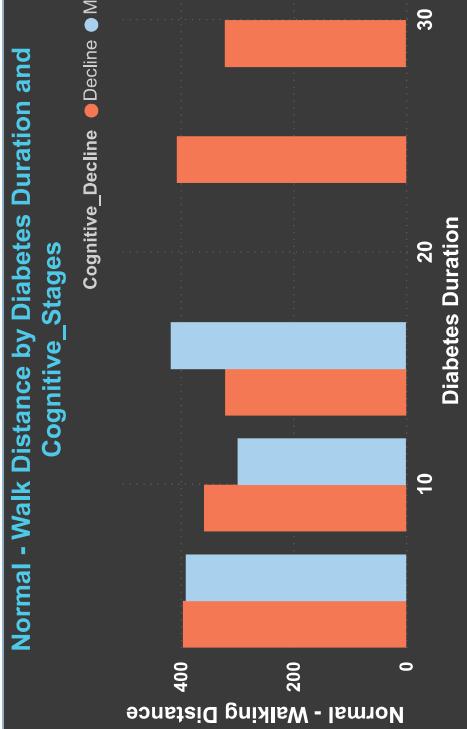
# WALKING TEST

## RPE End Vs Age

● Average of GAIT(DT) RPE End ● Average of GAIT (Normal) RPE End



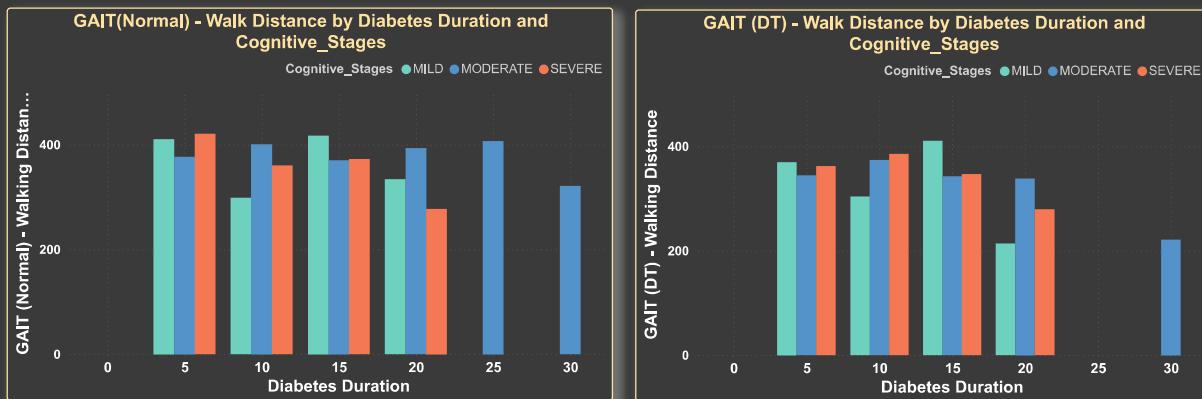
Individuals with diabetes walk slower and with shorter step lengths, a longer stance phase, a wider base of support, greater step time variability on irregular surfaces, and improper r pressure distribution at the foot compared with individuals without diabetes. The gait abnormalities of diabetic patients are 15 times more likely to report experiencing a fall related injury during walking.



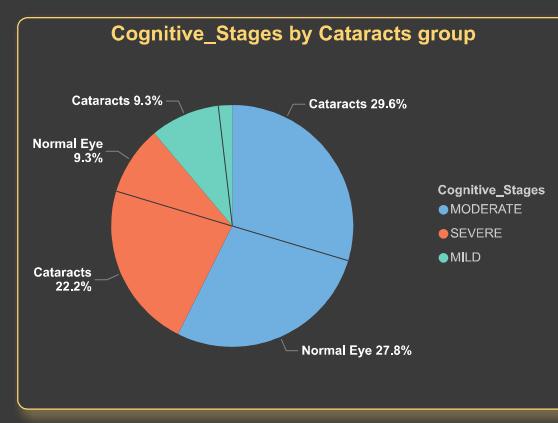
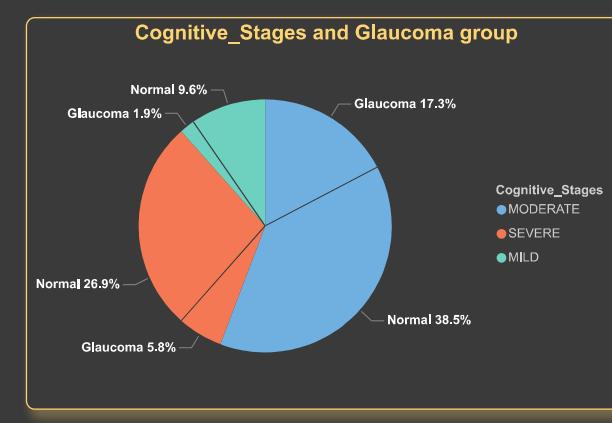
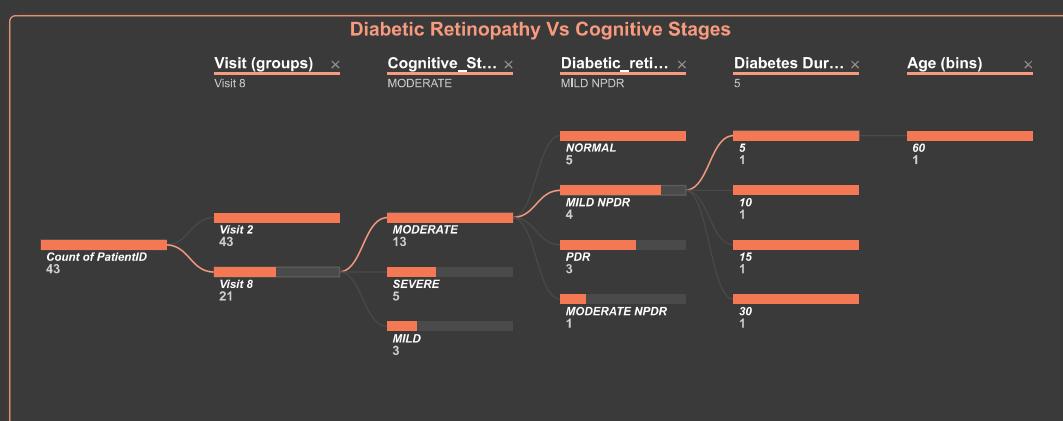
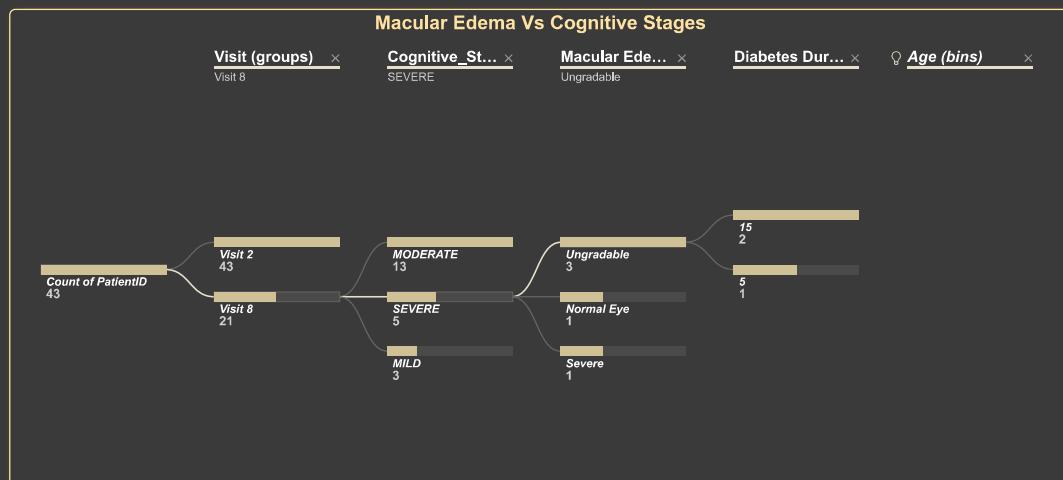
| PatientID | Visit   | Age | Diabetes Duration | DT - RPE Start | DT - RPE End | Normal - RPE Start | Normal - RPE End | Cognitive Decline |
|-----------|---------|-----|-------------------|----------------|--------------|--------------------|------------------|-------------------|
| S0105     | Visit 2 | 54  | 14                | EASY           | MODERATE     | EASY               | EASY             | Mild              |
| S0105     | Visit 3 | 56  | 15                | EASY           | MODERATE     | EASY               | MODERATE         | Decline           |
| S0301     | Visit 2 | 65  | 30                | EASY           | EASY         | EASY               | EASY             | Decline           |
| S0301     | Visit 3 | 67  | 32                | MODERATE       | EASY         | HARD               | HARD             | Decline           |
| S0318     | Visit 2 | 51  | 6                 | EASY           | EASY         | (Blank)            | EASY             | Mild              |
| S0318     | Visit 3 | 53  | 8                 | MODERATE       | INTENSE      | HARD               | INTENSE          | Decline           |
| S0513     | Visit 2 | 61  | 12                | (Blank)        | MODERATE     | (Blank)            | EASY             | Decline           |
| S0513     | Visit 3 | 63  | 14                | EASY           | EASY         | (Blank)            | EASY             | Decline           |
| S0550     | Visit 2 | 50  | 17                | (Blank)        | MODERATE     | (Blank)            | EASY             | Decline           |
| S0550     | Visit 3 | 52  | 19                | EASY           | MODERATE     | EASY               | EASY             | Decline           |
| S0574     | Visit 3 | 56  | 17                | MODERATE       | EASY         | EASY               | HARD             | Decline           |

## Cognitive Impairment - Walking Test

Group  
  CONTROL  
  DM



## Cognitive Impairment - Ophthalmology

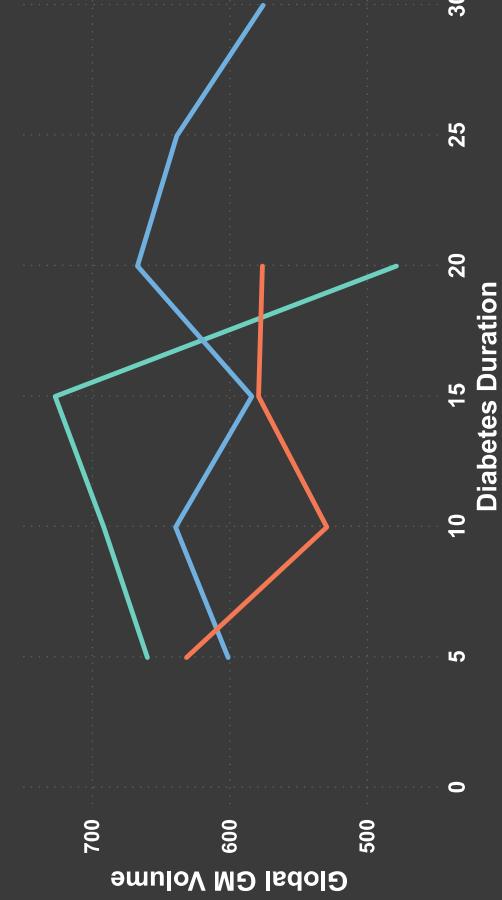


# Cognitive Impairment - MRI

Group ▾  
 CONTROL  
 DM

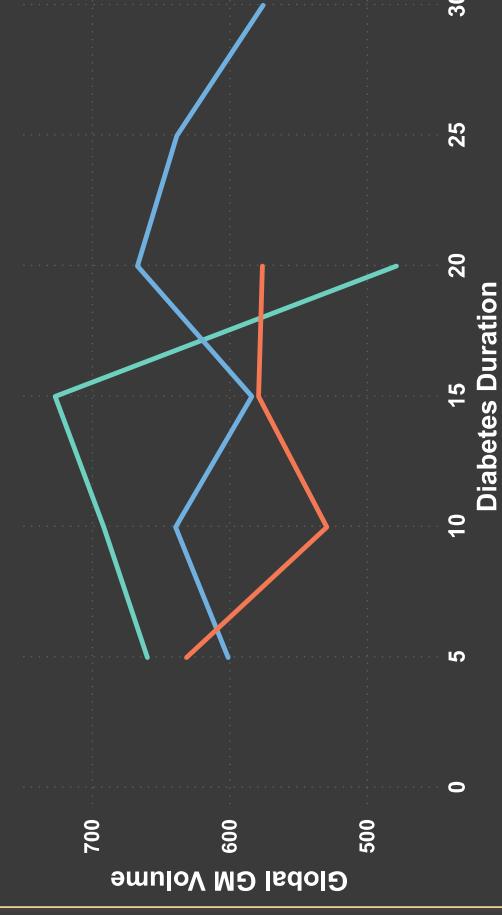
## Global WM Vol Vs Cognitive\_Stages

Cognitive\_Stages ● MILD ● MODERATE ● SEVERE



## Global GM Volume Vs Cognitive\_Stages

Cognitive\_Stages ● MILD ● MODERATE ● SEVERE



## Brain Matter Vs Cognitive Stages

| PatientID    | Visit | Diabetes Duration | Global GM Volume | Global WM Volume | Global CSF Volume | Cognitive_Stages |
|--------------|-------|-------------------|------------------|------------------|-------------------|------------------|
| S0105        | 8     | 15                | 726.59           | 555.05           | 983.45            | MILD             |
| S0105        | 2     | 10                | 684.73           | 593.75           | 461.20            | MODERATE         |
| S0264        | 2     | 10                | 611.18           | 349.68           | 560.95            | MODERATE         |
| S0292        | 2     | 5                 | 636.57           | 414.36           | 389.51            | MILD             |
| S0296        | 8     | 15                | 626.46           | 380.34           | 661.46            | SEVERE           |
| S0296        | 2     | 15                | 597.62           | 402.29           | 674.22            | SEVERE           |
| S0301        | 2     | 30                | 483.49           | 338.70           | 292.46            | MODERATE         |
| S0301        | 8     | 30                | 524.53           | 346.39           | 653.36            | MODERATE         |
| S0308        | 2     |                   | 560.90           | 382.46           | 430.18            | MODERATE         |
| S0314        | 8     | 5                 | 582.18           | 394.86           | 787.95            | MODERATE         |
| S0314        | 2     | 5                 | 574.67           | 397.48           | 862.76            | MODERATE         |
| S0318        | 8     | 5                 | 606.80           | 393.34           | 710.15            | SEVERE           |
| <b>Total</b> |       |                   |                  |                  |                   |                  |