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#### **Title**

Expansion of tele-ophthalmology for diabetic diabetic retinopathy screening during the COVID-19 pandemic

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# Expansion of tele-ophthalmology for diabetic retinopathy screening during the COVID-19 pandemic

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## BACKGROUND

- Diabetic retinopathy is the leading cause of blindness in working-age adults, ages 20-74.
- The tele-ophthalmology program was launched at UCD Health in 2018 and was expanded during the COVID-19 pandemic to improve early screening for diabetic retinopathy.

## OBJECTIVES

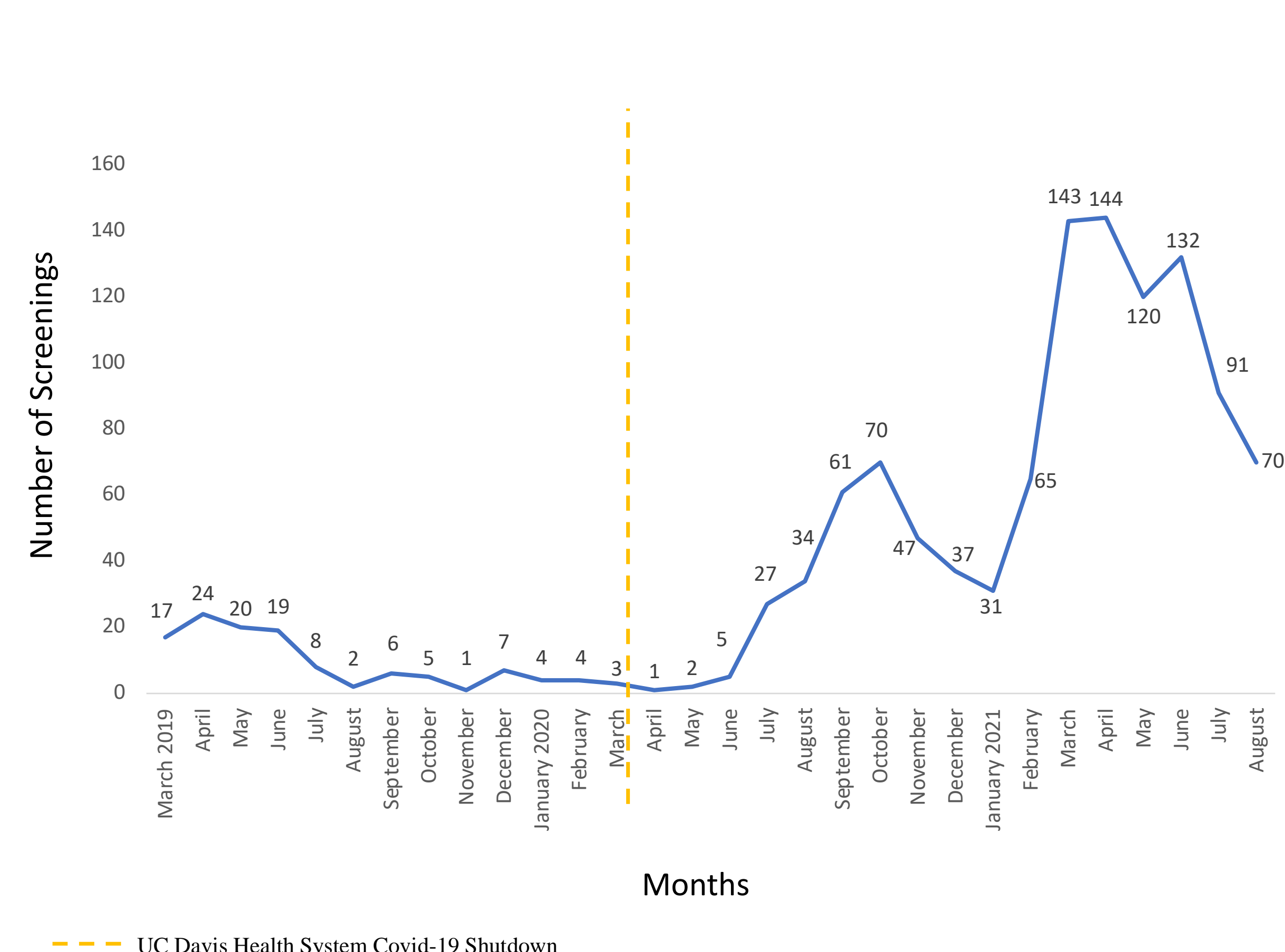
- Assess diabetic retinopathy screening utilization during the COVID-19 pandemic.
- Evaluate follow-up encounters and outcomes.

## METHODS

- Retrospective review of 570 medical records for demographics, follow-ups, and clinical outcomes at UC Davis Health from patients screened for diabetic retinopathy through the tele-ophthalmology program from March 2019 to March 2021.
- Retinal images were captured using Topcon NW400, Nikon RetinaStation or Optos Primary fundus cameras at 13 primary care locations.
- Images were graded by optometrists or ophthalmologists using a store-and-forward method.

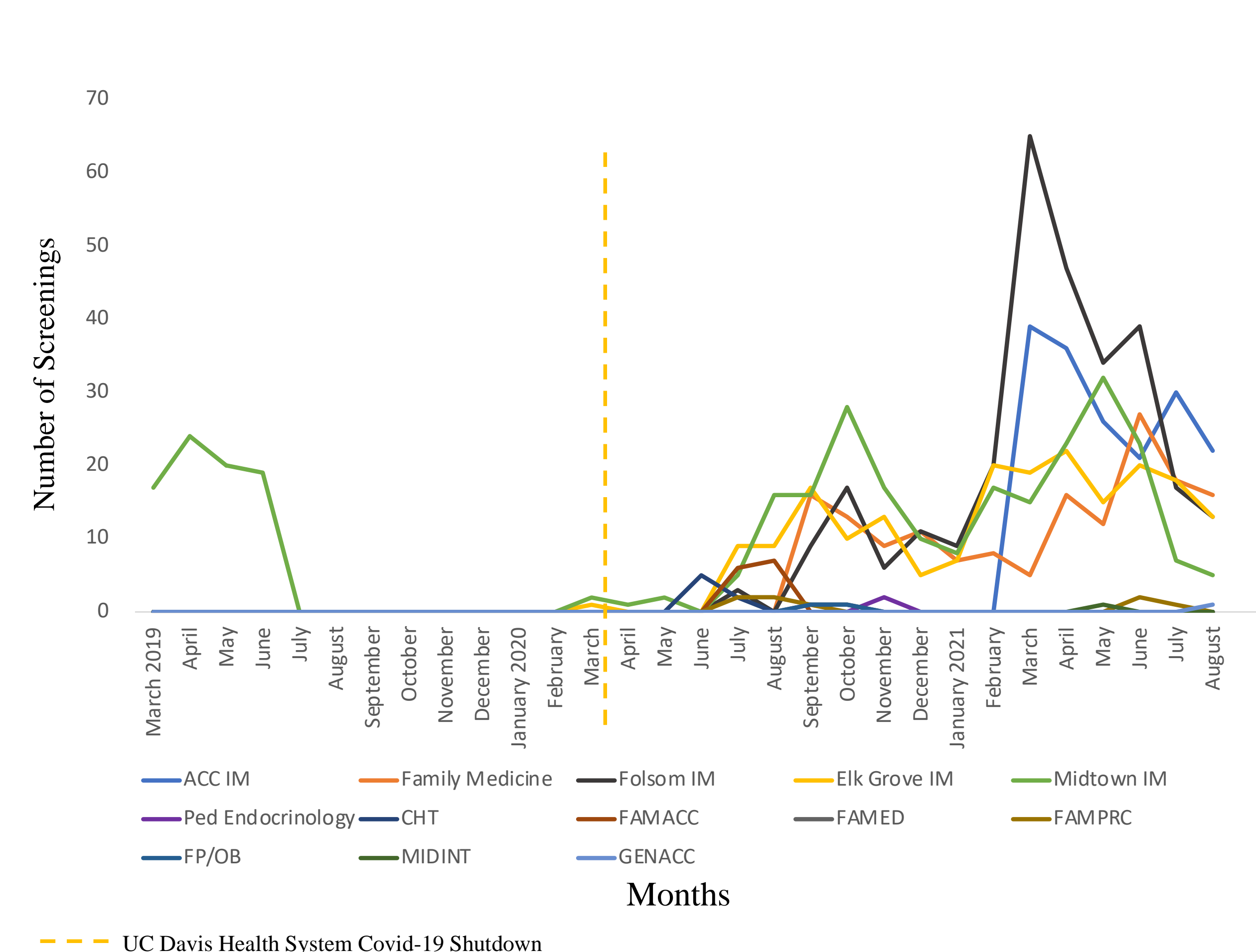
## RESULTS

**Figure 1. Tele-ophthalmology utilization**

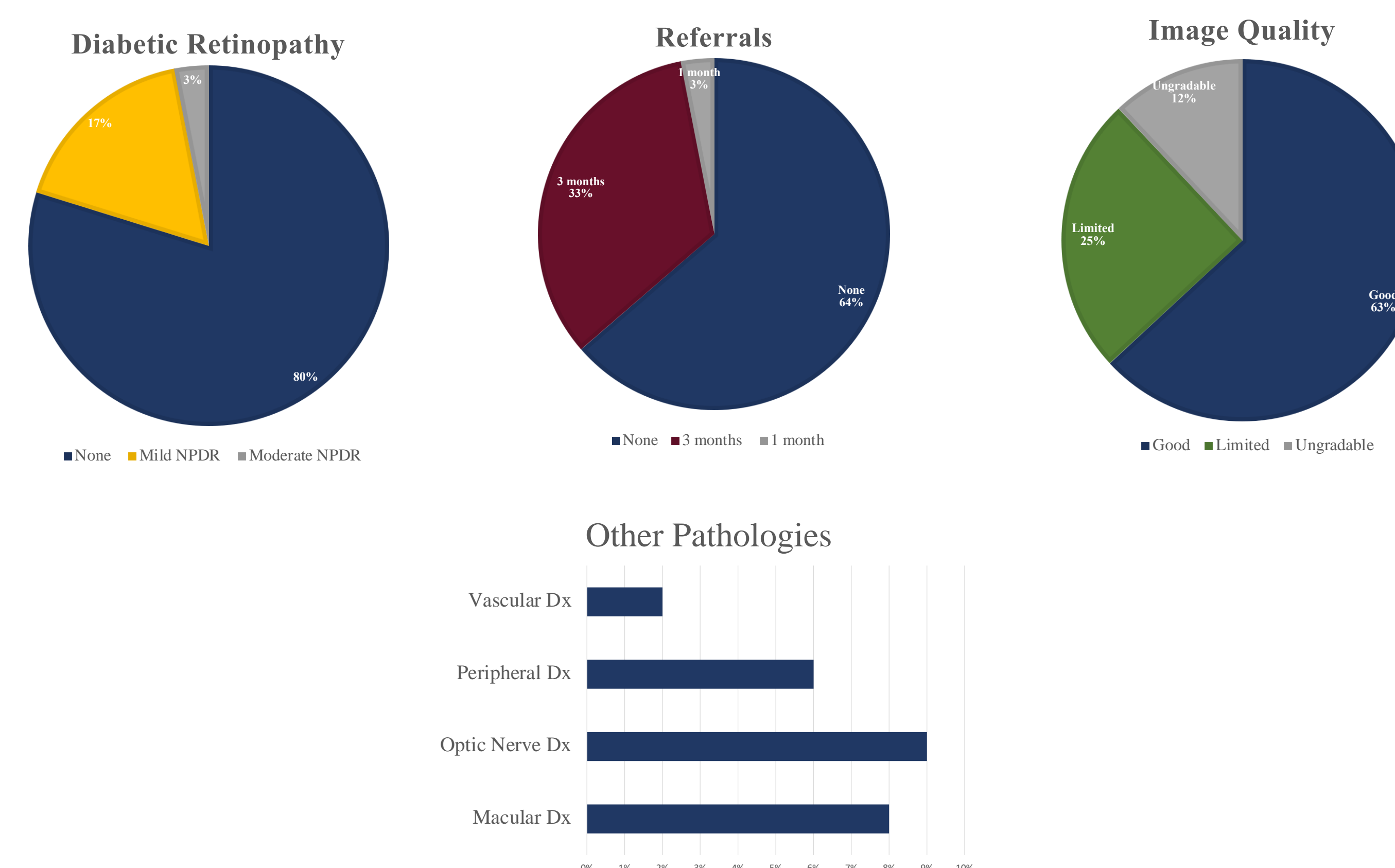


- A significant increase in the number of patients screened per month following the COVID-19 shutdown in March 2020 was observed ( $5.0 \pm 3.1$  patients screened per month before and  $39.1 \pm 34.8$  patients per month after the shutdown,  $P=0.0004$ ).

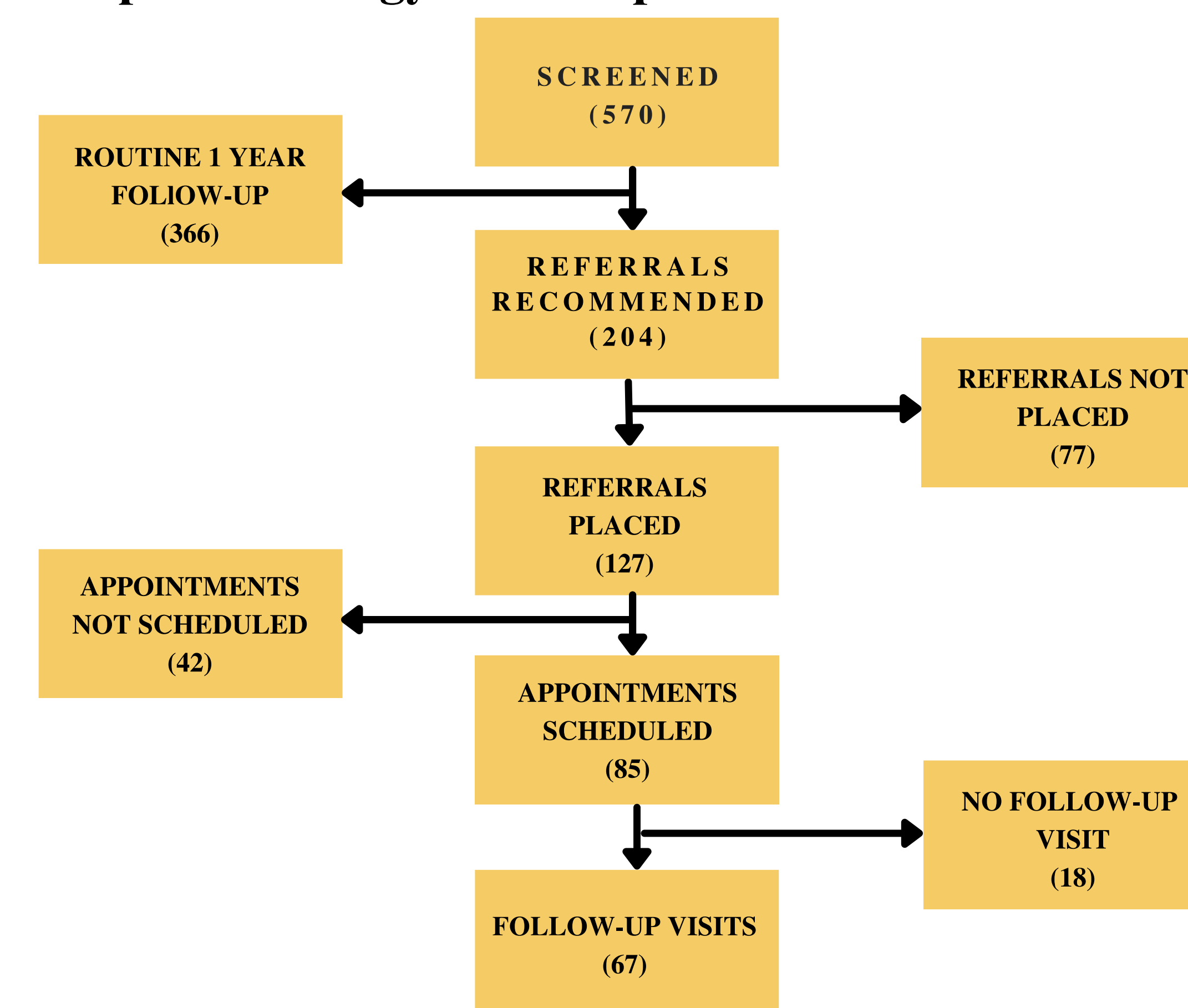
**Figure 2. Tele-ophthalmology utilization by location**



**Figure 3. Screening Statistics**



**Figure 4. Tele-ophthalmology follow-up**



- From March 2019 to March 2021, 570 patients were screened.
- Of the total patients, 64.2% were recommended a routine 1-year follow-up and 35.8% were recommended a referral. Of those recommended to follow-up, 67.2% were lost to follow-up, and 32.8% successfully followed up with an ophthalmologist.
- The mean age of individuals was  $63.2 \pm 13.7$

## CONCLUSIONS

- The expansion of this tele-ophthalmology program during COVID-19 pandemic demonstrated improved screening rates, increased referrals and follow-up care for patients screened for diabetic retinopathy.
- Continued implementation of remote screening programs across the health system has the potential to reduce diabetic retinopathy associated morbidity and vision loss in patients.

## FUTURE DIRECTIONS

- Further investigation is needed to determine where patients are lost to follow-up in order to ensure that patients are successfully referred to eye specialists and receive the necessary diabetic eye care.
- Examining feasibility and acceptability of diabetic retinopathy screening in primary care locations may inform efforts to sustain and further expand the tele-ophthalmology program.