

# Improving Diabetic Retinopathy Screening and Documentation in Youth with Diabetes

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## Background

- Diabetic retinopathy (DR) is the most common cause of preventable blindness and visual impairment in young adults [1,2].
- American Diabetes Association (ADA) and International Society for Pediatric and Adolescent Diabetes (ISPAD) have screening guidelines for DR [4,5].
- Screening rates remain low, especially for minority racial and ethnic groups and those of lower socioeconomic status. [1,3].
- Fundus photography has been recommended to improve access to DR screening [5].
- In 2019, DR screening rate for eligible patients < 18 yo with T1D and T2D was 3.5% at the UCSF Pediatric Diabetes Clinic in San Francisco.
- In 2020-2021, our clinic bought a fundus photography camera (Optos), partnered with pediatric ophthalmology, worked with IT, and trained staff to establish a telemedicine retinopathy screening program within our clinic.

## Project Goal

To increase the percentage of completed retinopathy screenings in the past 2 years for those eligible based on ADA criteria who are ≤18 years old with T1D and T2D from 3.5% (baseline data from FY 2019 for < 18 years old) to 20% or higher by June 2023.

## Methods

- Fishbone diagram & 5 Why's to assess barriers / root causes for low percentage of patients with T1D and T2D receiving appropriate diabetic retinopathy screening

Barrier	Root Cause(s)	Countermeasures (Experiments/Tactics)
Difficulty getting exam	Need specialized equipment and additional expertise.	Obtain retinal camera and train staff (Medical Assistants).
		Partner with UCSF Pediatric Ophthalmology to read retinal images.
Lack of knowledge about DR and DR Screening	Not enough time to talk about DR during clinic visit.	Create educational materials (2020): paper brochure & electronic smart-phrase for After Visit Summary (AVS).
		Update educational materials and improve awareness of resources.
	Patients/Provider may not know the importance of DR screening.	Educational session given to diabetes providers by a pediatric ophthalmologist.
		Create "How To" written and video instructions for providers.
Providers do not know how to place orders.	Include button in EHR to order retinal photography in Best Practice Alert (BPA).	Encourage providers to use centralized documentation (type of diabetes, date of diagnosis, date of last eye exam) in queryable fields.
		Email subset of providers with eligible patients, followed by weekly reminders.
Lack of centralized documentation	Providers 1) do not know when eye exams are due, and 2) do not have a dedicated place to document pertinent details.	Survey to providers to assess barriers and needs to improve DR screening for eligible patients.
		Improve Best Practice Alert (BPA) – alerting providers appropriately, include order in alert.

Color legend:  Green – completed  Yellow – in progress

## Results

Figure 1: Annotated line graph of the percentage of eligible patients with T1D and T2D with completed DR screens within the past 2 years.

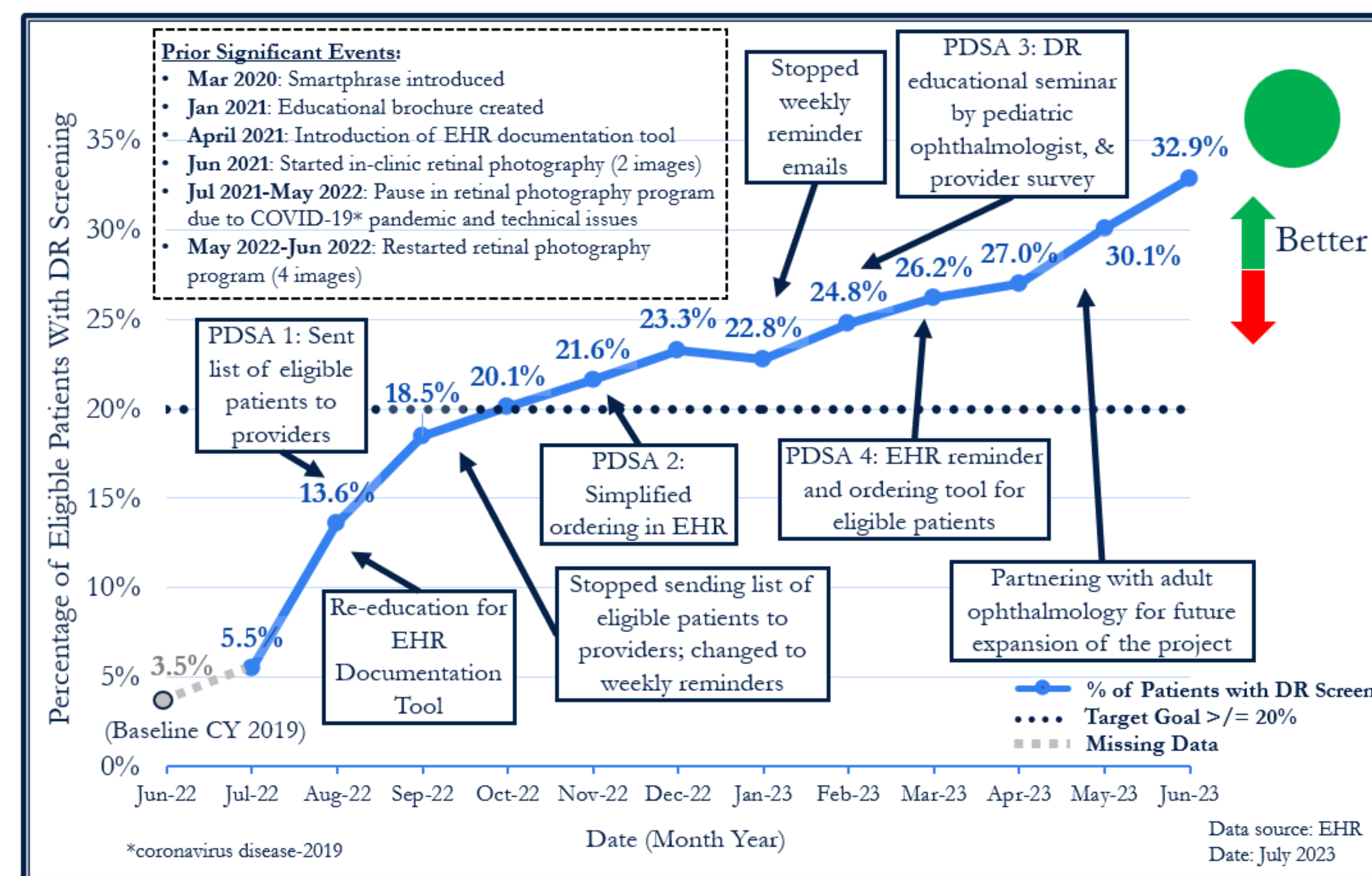
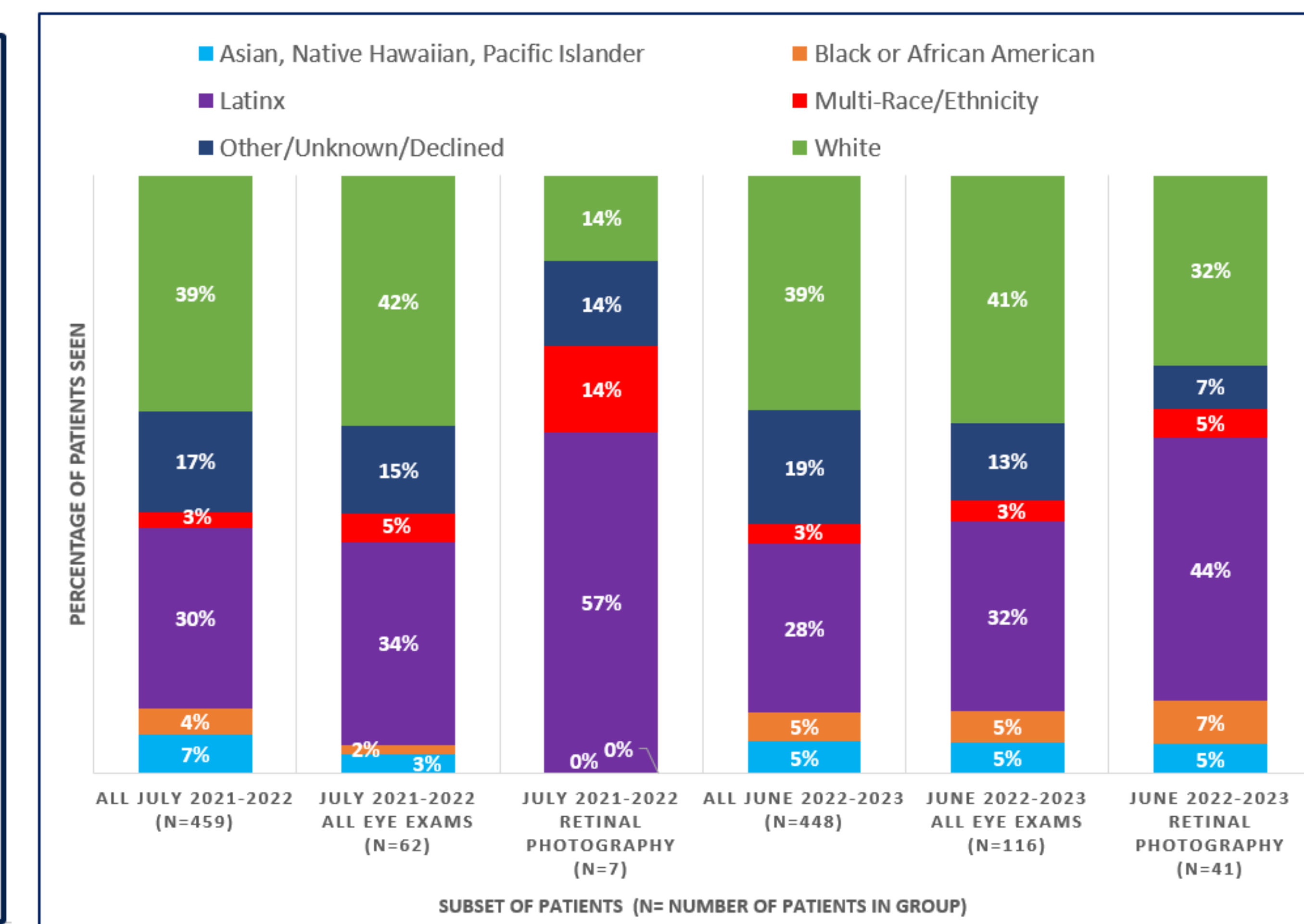


Figure 2: Bar graph showing self-reported race/ethnicity of all patients seen at our pediatric diabetes clinic compared to those with eye exams.



**Diabetic retinopathy (DR) screening rate increased to 32.9% through implementing an in-clinic telemedicine retinopathy screening program, DR education, and improving EHR tools and documentation.**

## Limitations

- Staffing limitations affected number of patients who could be scheduled for eye exams
- Need to check insurance authorization prevented ability to schedule same-day eye exams while patients are in clinic
- Significant proportion of visits still conducted via telehealth compared to in-person since the start of the COVID-19 pandemic

## Next Steps

- DR screening in our clinic for patients >18 years old
- Expand telemedicine retinal screening program to other clinic locations (i.e., UCSF Oakland campus and other satellite clinics)

## References

- Zimmerman et al., 2021 (PMID: 33627991)
- Ibanez-Bruron et al., 2017 (PMID: 29146656)
- Porter et al., 2020 (PMID: 32410329)
- Donaghue et al., 2018 (PMID: 30079595)
- ADA Standards of Care 2022 (PMID: 34964865)

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