

# The Effect of Retinal Camera in Primary Care Settings on the Screening Rates of Diabetic Retinopathy

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## Background

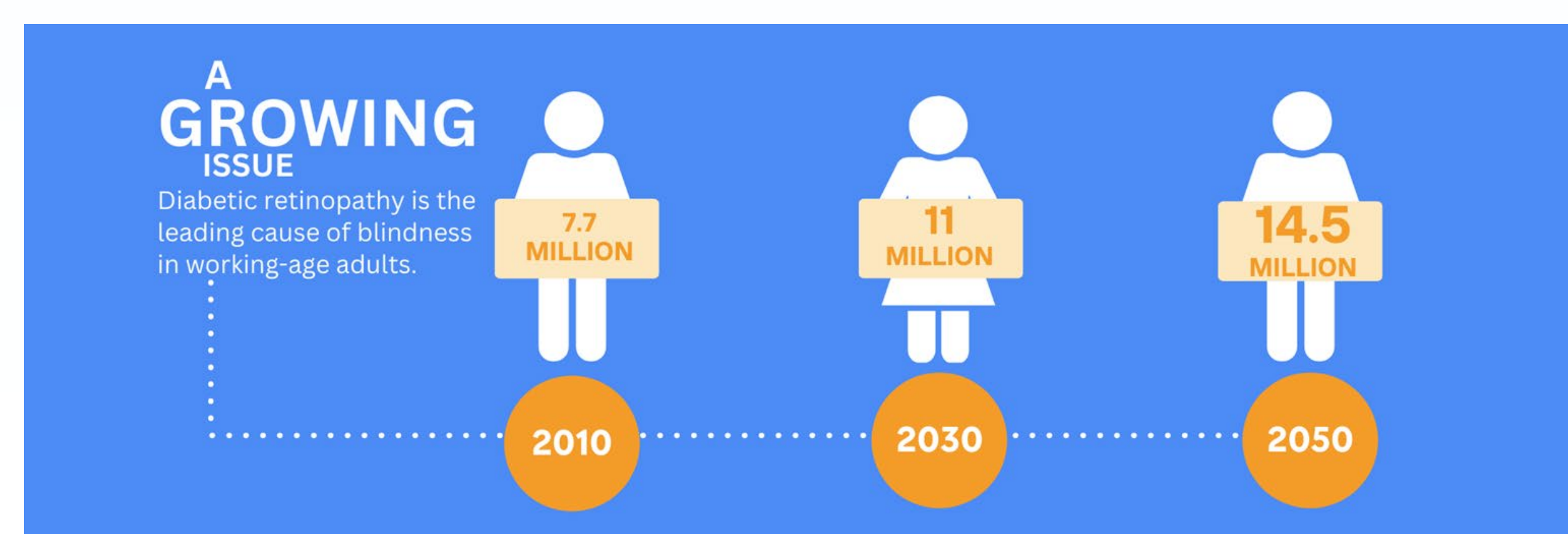
- Diabetic retinopathy (DR) is one of the leading causes of preventable blindness among American adults.<sup>1</sup>
- Racial and ethnic minorities are more likely to suffer from diabetic retinopathy and typically undergo less screening.
- Americans with DR are expected to nearly double between 2010 to 2050. This number is projected to triple to approximately 3 million in the Hispanic American population.<sup>4</sup>
- Early detection and treatment of diabetic retinopathy is key to reducing the risk of severe vision loss.
- Non-mydriatic cameras, like the RetinaVue, can take high-resolution digital eye images to quickly diagnose patients in a primary care setting.
- Early stages of diabetic retinopathy can be managed with annual retinal check-ups and working with the primary care physician for proper diabetes management.

## Objective

- Evaluate the impact that access to RetinaVue has on the compliance rate of annual diabetic vision screenings.
- Improve community engagement in diabetic preventative health screenings.

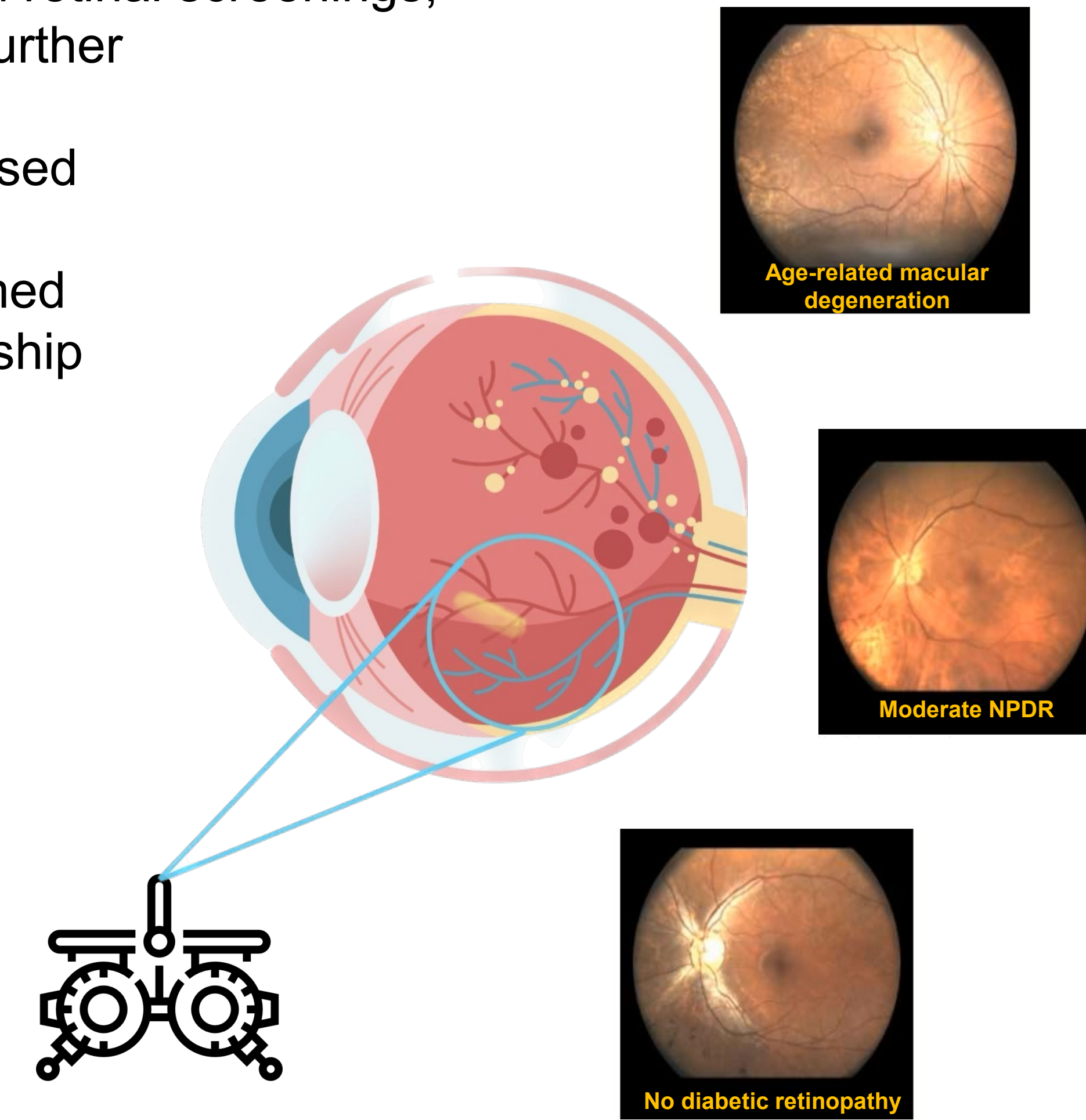
## Methods

- Patients at Sleepy Hollow Open Door (SHOD) clinic with diabetes between March 2023 and July 2023 were identified and invited to participate in diabetic vision screenings (n=391).
- Patients were sent CareMessages and were subsequently provided appointments for non-mydriatic photo assessment. During their follow-up appointments, patients were recommended to get diabetic retinal screenings.
- Optometrists evaluated the vision screenings and provided reports to the primary care physicians.
- Patients with abnormal or inconclusive results were referred to an ophthalmologist for further evaluation.



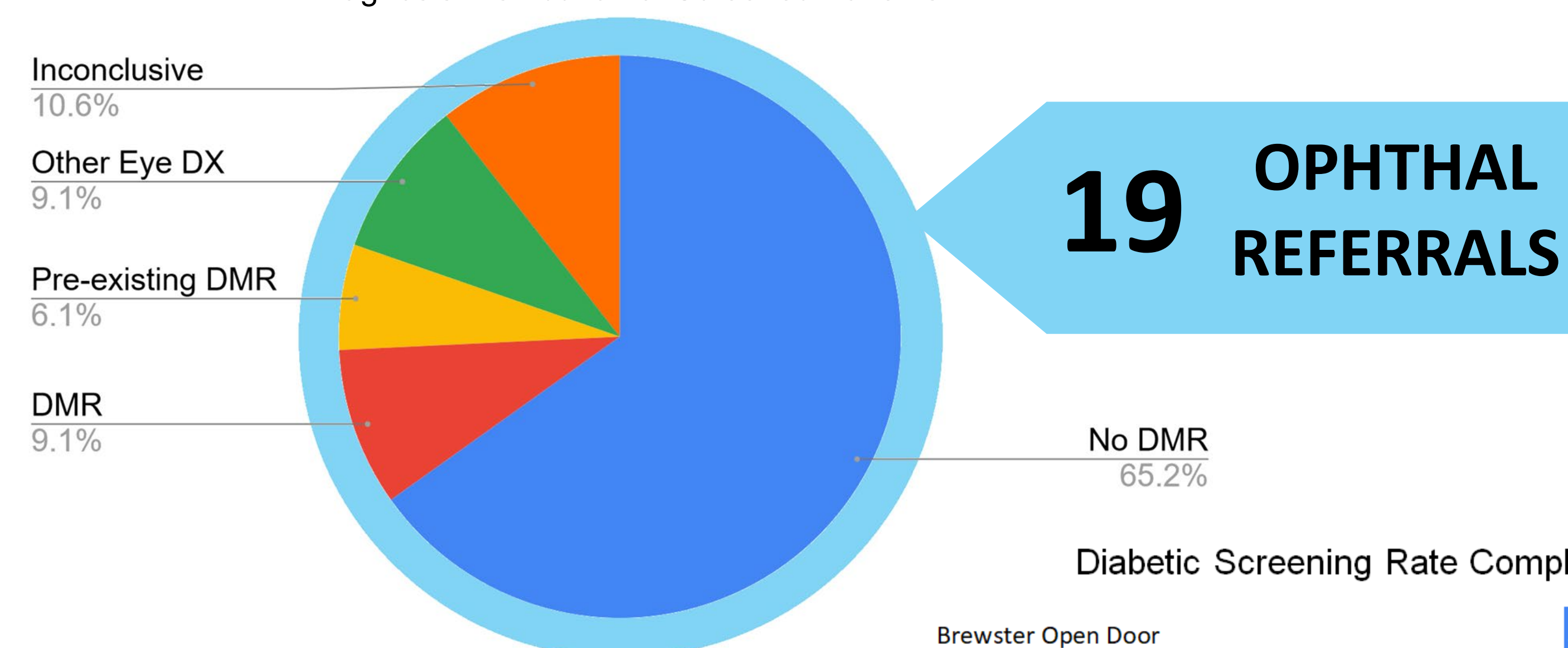
## Results

- The sample consisted of 391 patients (193 female, 197 male). The majority identified as Hispanic (66.4%) and African American (10.9%).
- CareMessage initiatives received 5.6% response rate.
- Of the patients who completed retinal screenings, 19 patients were referred for further ophthalmology evaluation.
- Retinal screening rates increased from 36% to 43%.
- A Chi-square test was performed and indicated that the relationship between screening rates and self-reported ethnicity was statistically significant,  $\chi^2(6)=24.92$  and  $p<0.01$ .

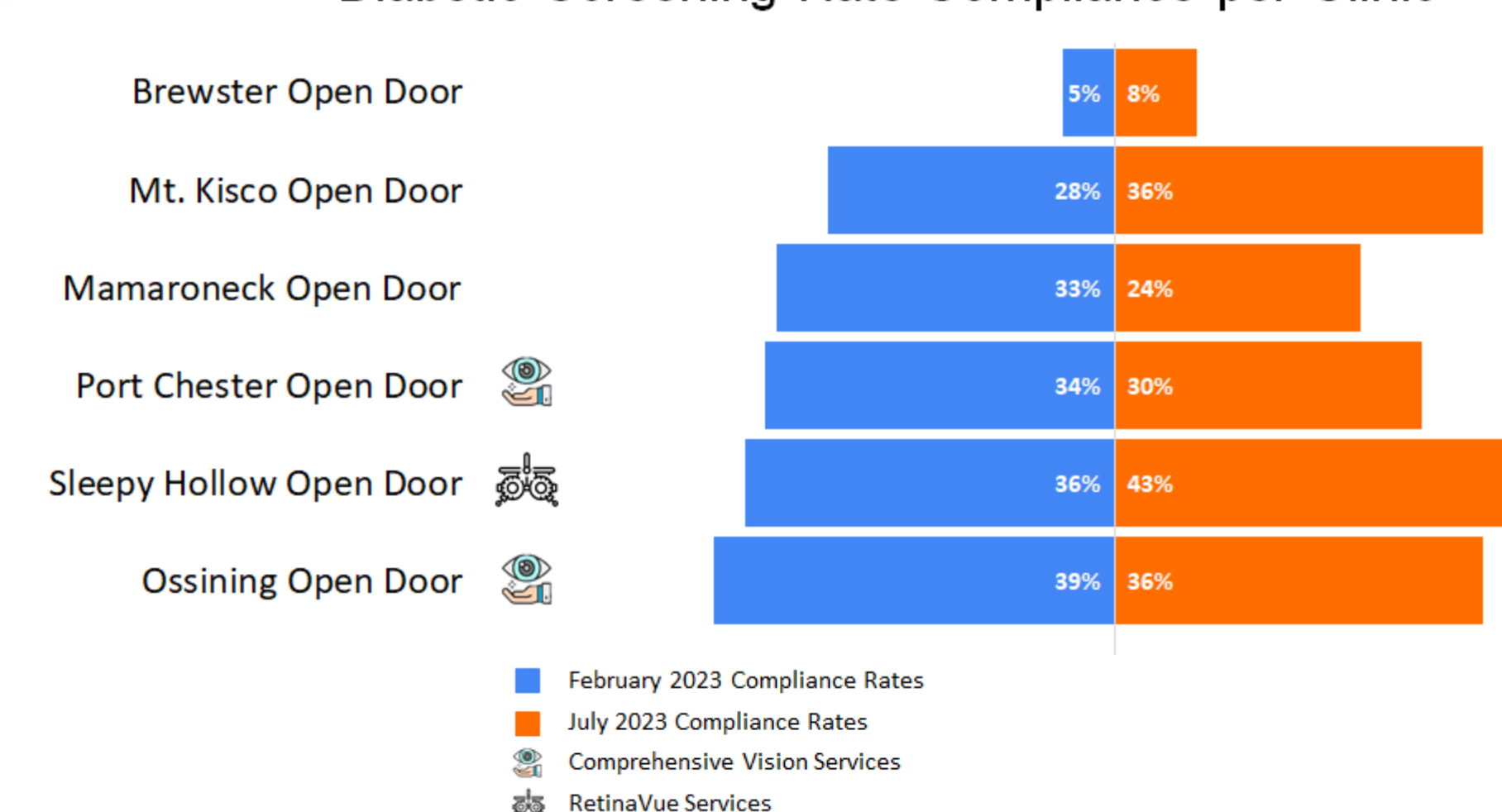


Left: Performing a retinal screening using a portable non-mydriatic RetinaVue camera. Top: High-resolution images of retinas with associated diagnoses.

Diagnosis Distribution of Screened Patients



Diabetic Screening Rate Compliance per Clinic



SHOD Patient Demographics (n=391)

	Full Sample n (%)	Exam Completed Full Sample n (%)
<b>Gender</b>		
Female	193 (49.4)	37 (9.5)
Male	197 (50.4)	29 (7.4)
Other	1 (0.2)	0 (0)
<b>Self-Reported Ethnicity</b>		
Hispanic	261 (66.4)	39 (9.9)
Caucasian	5 (1.3)	4 (1)
Black/AA	43 (10.9)	14 (3.6)
Asian/Pacific Islander	13 (3.3)	1 (0.3)
American Indian/Alaskan Native	2 (0.5)	0 (0)
More than one race	13 (3.3)	2 (0.5)
Unreported	54 (13.7)	6 (1.5)
<b>Primary Language</b>		
English	135 (34.5)	20 (5.1)
Spanish	248 (63.4)	43 (11)
Other	8 (2)	3 (0.8)
<b>Insurance Coverage</b>		
Insured	290 (74.2)	46 (11.8)
Uninsured	101 (25.8)	20 (5.1)
<b>Completed Screenings</b>	<b>66 (16.9)</b>	

## Conclusions

- At the end of this screening pilot, SHOD compliance rate was increased by 7%. Introducing in-house retinal screenings within a primary care setting is a simple way to enhance adherence rates compared to previous clinic practices, such as patient-driven care and referral services.
- Non-mydriatic cameras can help improve compliance rates along with the standards of eye care for patients with diabetes. Not only did the camera detect possible diabetic retinopathy, but screenings also detected other eye-related diseases, such as macular degeneration and glaucoma.
- A limitation to the study was that the CareMessage outreach yielded a small response compared to patients who completed screenings during point-of-care appointments.

## Next Steps

- Implement RetinaVue cameras at clinic sites without optometry services to ensure access for underserved communities.
- Improve patient health literacy: discussing the preventative and diagnostic nature of annual diabetic vision screening.
- Integrate vision screenings into point-of-care appointments.
- Advocate for clearer pathways for referrals to optometrists and ophthalmologists in clinics without eye care services.

## References

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