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# Increasing myopia in Scotland at age 3.5-5.5 years: a retrospective epidemiological study

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**HOYA**  
FOR THE VISIONARIES

# Disclosure of speaker's interest

**Relationships that could be relevant for the meeting**

- Research funding
- Conference attendance and registration

**Company names**

- HOYA Vision Care
- HOYA Vision Care

# Background

## Myopia Prevalence:

The average age of myopia onset in Chinese children has decreased from 10.6 years to 7.6 years in 16 years ( $p < 0.001$ )<sup>1</sup>

In Asian pre-school<sup>2</sup> & kindergarten<sup>3</sup> children, myopia is more common than hypermetropia

Post COVID: Increasing myopia prevalence at younger ages for Asian, Spanish & Argentinian children<sup>4,5</sup>

# Background

## Vision Screening:

Primary aim of vision screening in UK is to detect amblyopia

UK is unusual as vision screening only conducted once in Scotland & once or not at all in England <sup>6</sup>

Increasing prevalence of myopia: increased interest in vision screening for refractive error<sup>7,8</sup> particularly myopia<sup>9</sup>

Analysis of >300,000 vision screening records of children aged 4-5y: signs of reduced vision over 7 years in England<sup>10</sup>

# Background – Vision Screening Scotland

Comprehensive children's vision screening programme at age 3.5-5.5 years in Scotland

See4School programme: All children registered with a General Medical Practitioner are offered screening

85% coverage

Screening delivered by Orthoptists (presenting vision, cover tests, orthoptic tests)

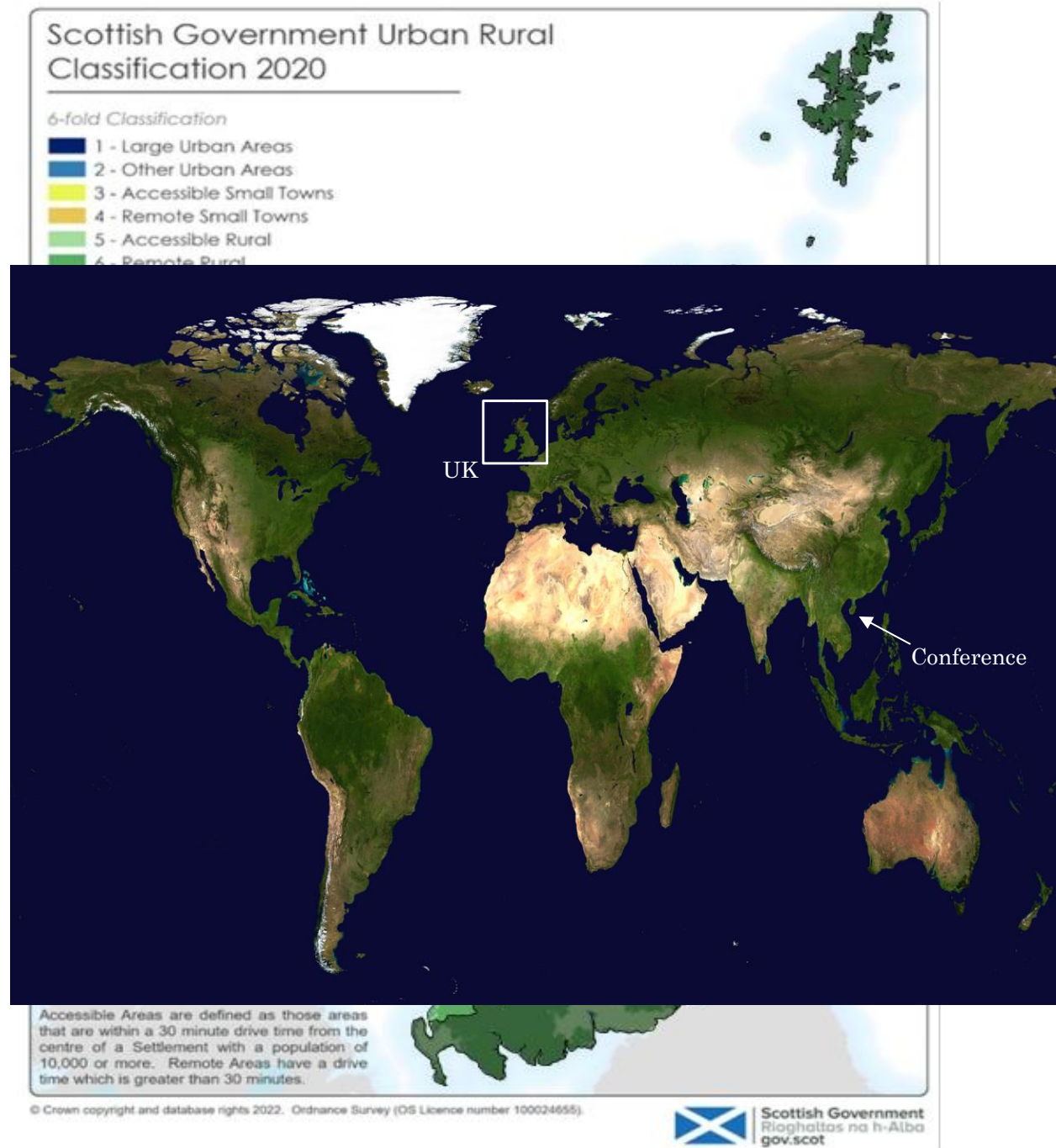
Screening failure: referred for eye examination (cycloplegic refraction)

# PURPOSE

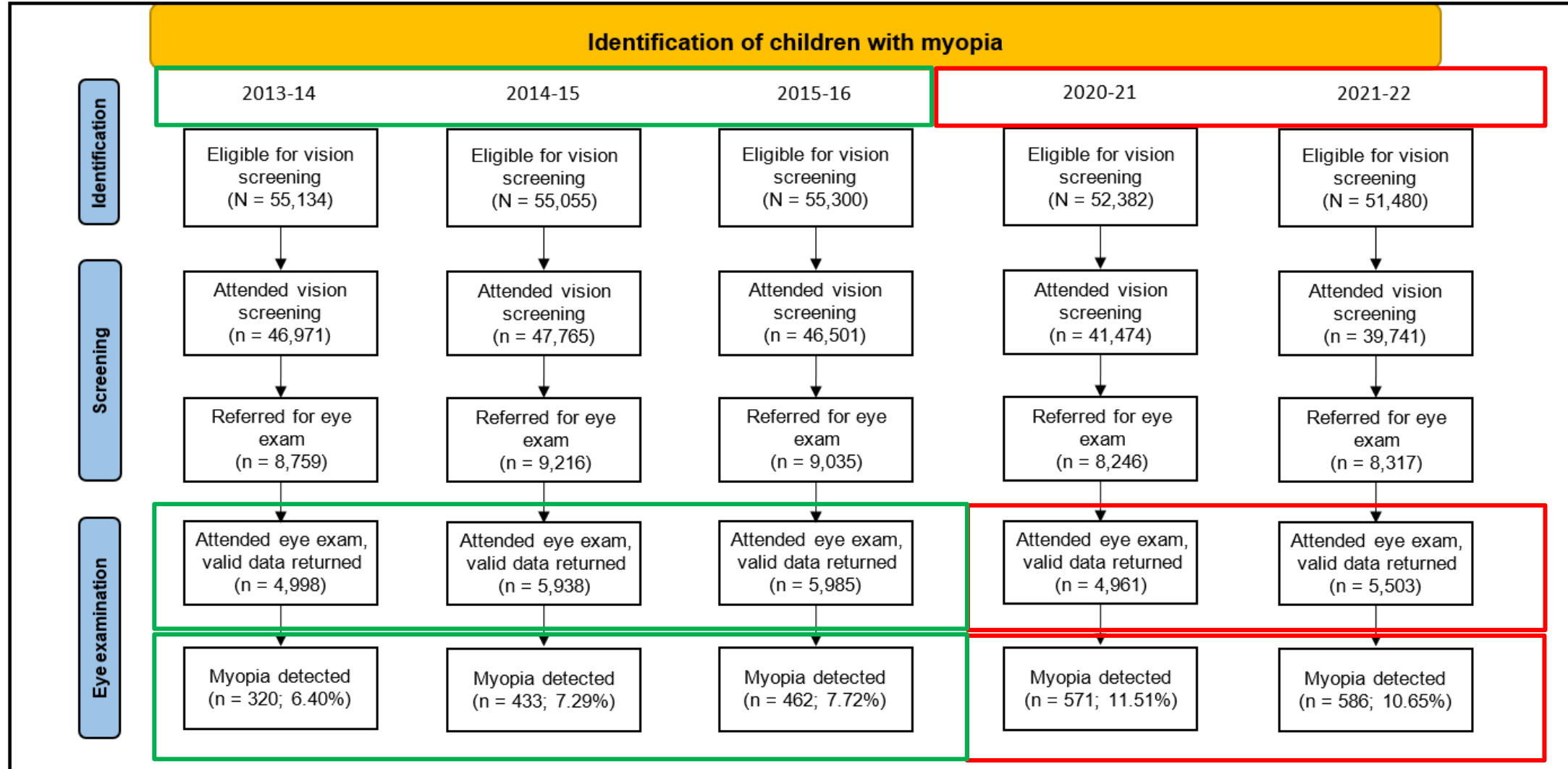
**Primary aim:** Report on refractive error data 3 years pre-pandemic and 2 years post-pandemic

Myopia: SER -0.50D or worse

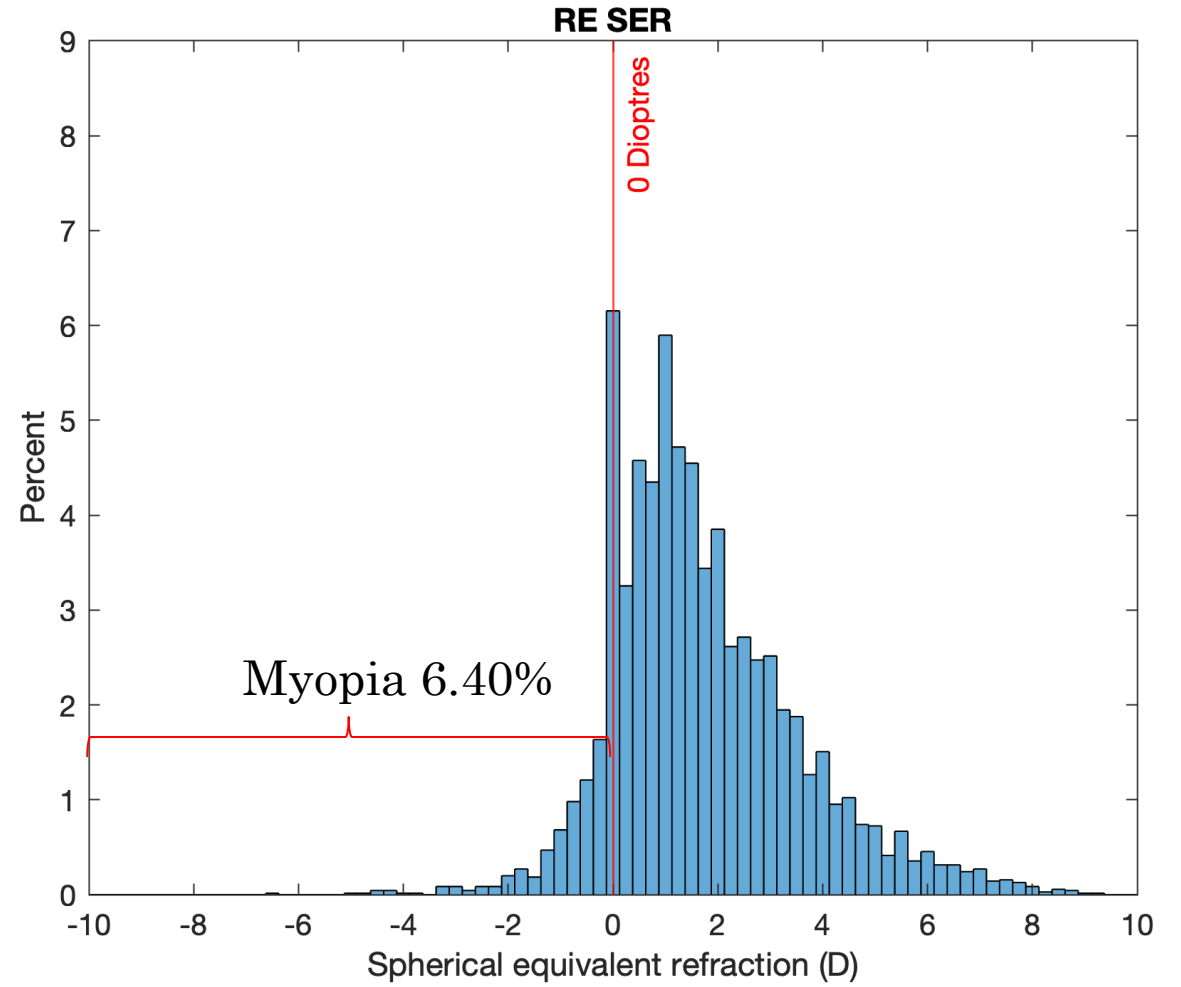
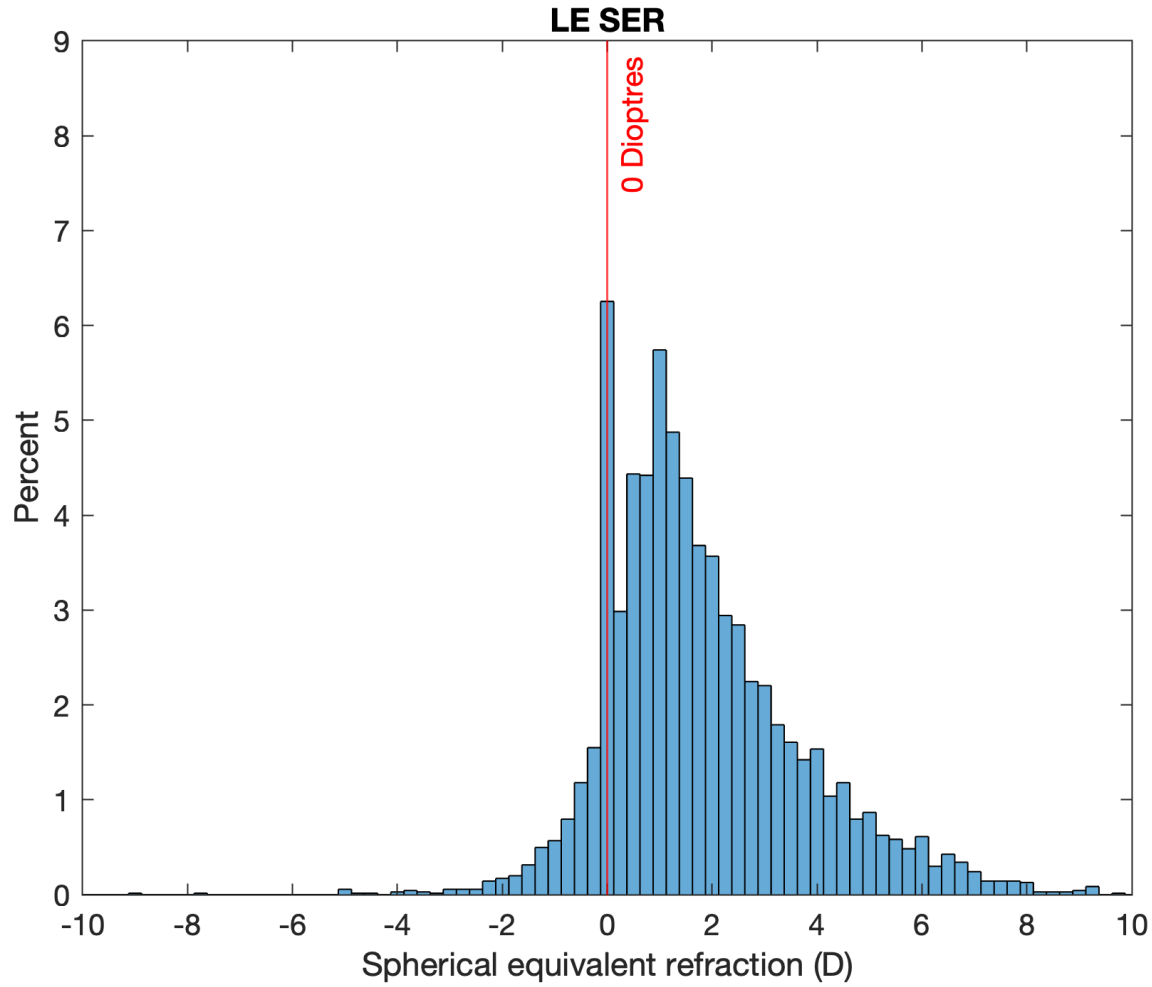
**Secondary aim:** Investigate correlations between myopia and socio-economic deprivation, type and setting of dwelling



# RESULTS: IDENTIFICATION OF CHILDREN WITH MYOPIA

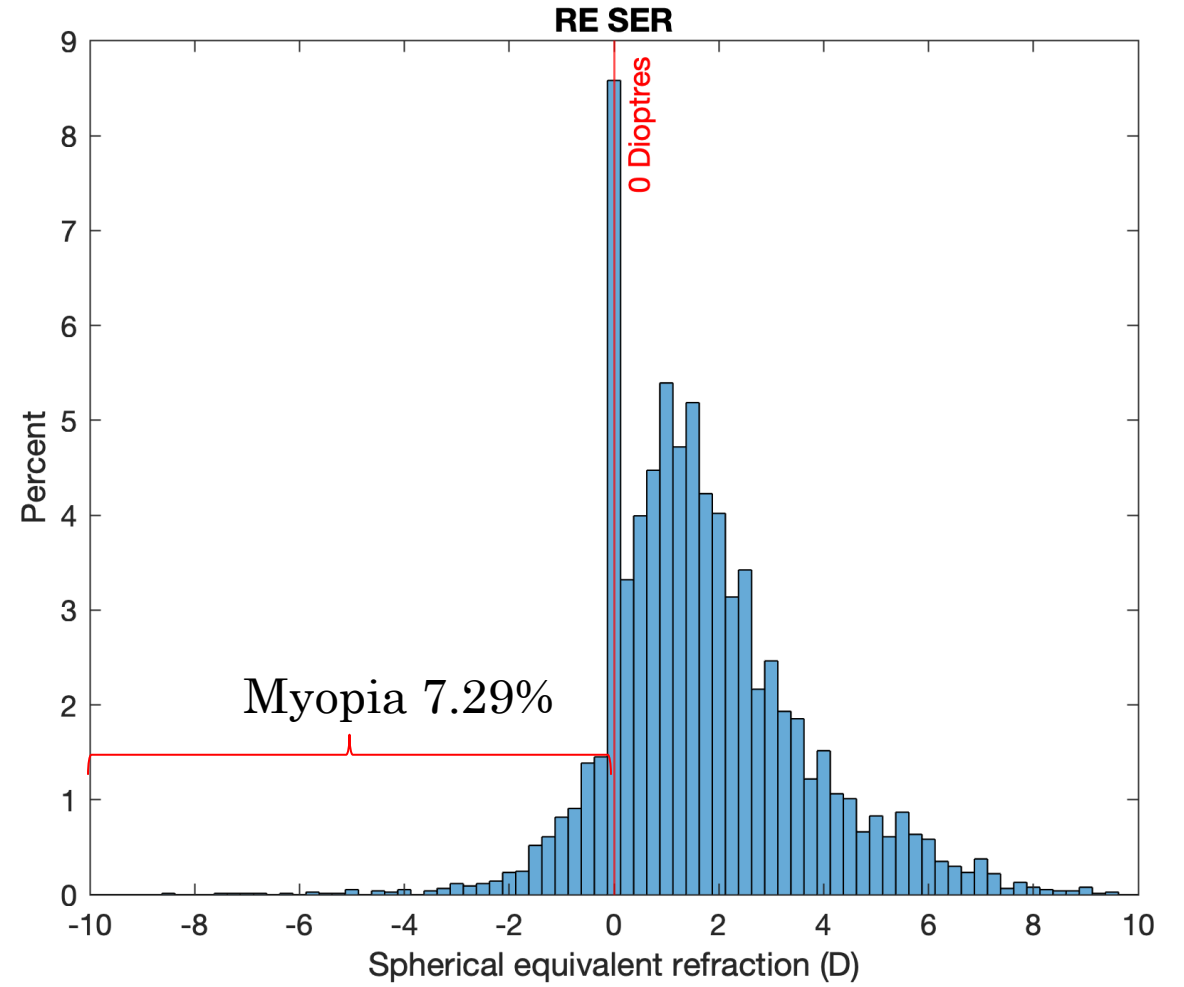
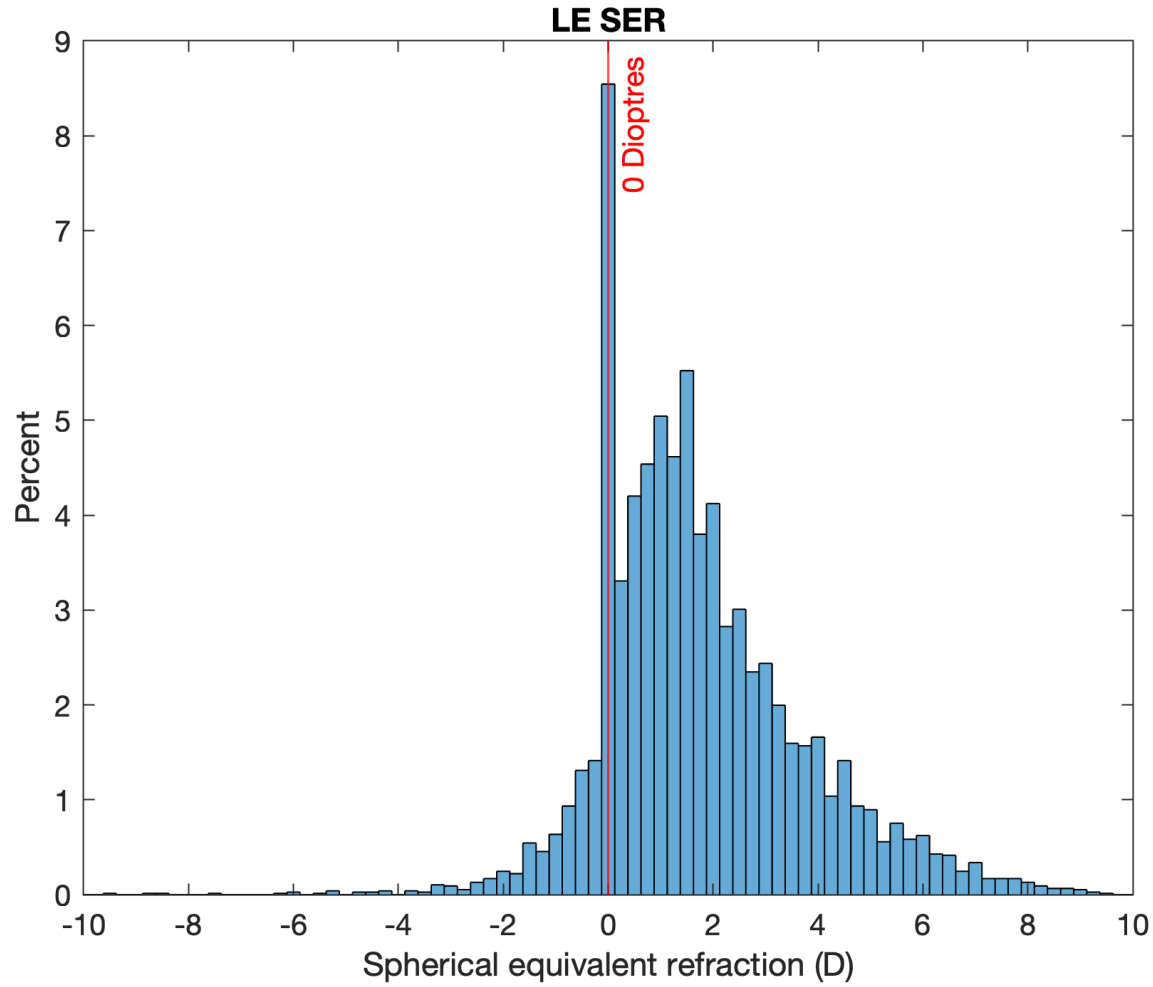


# Pre-COVID 2013-2014 Histogram

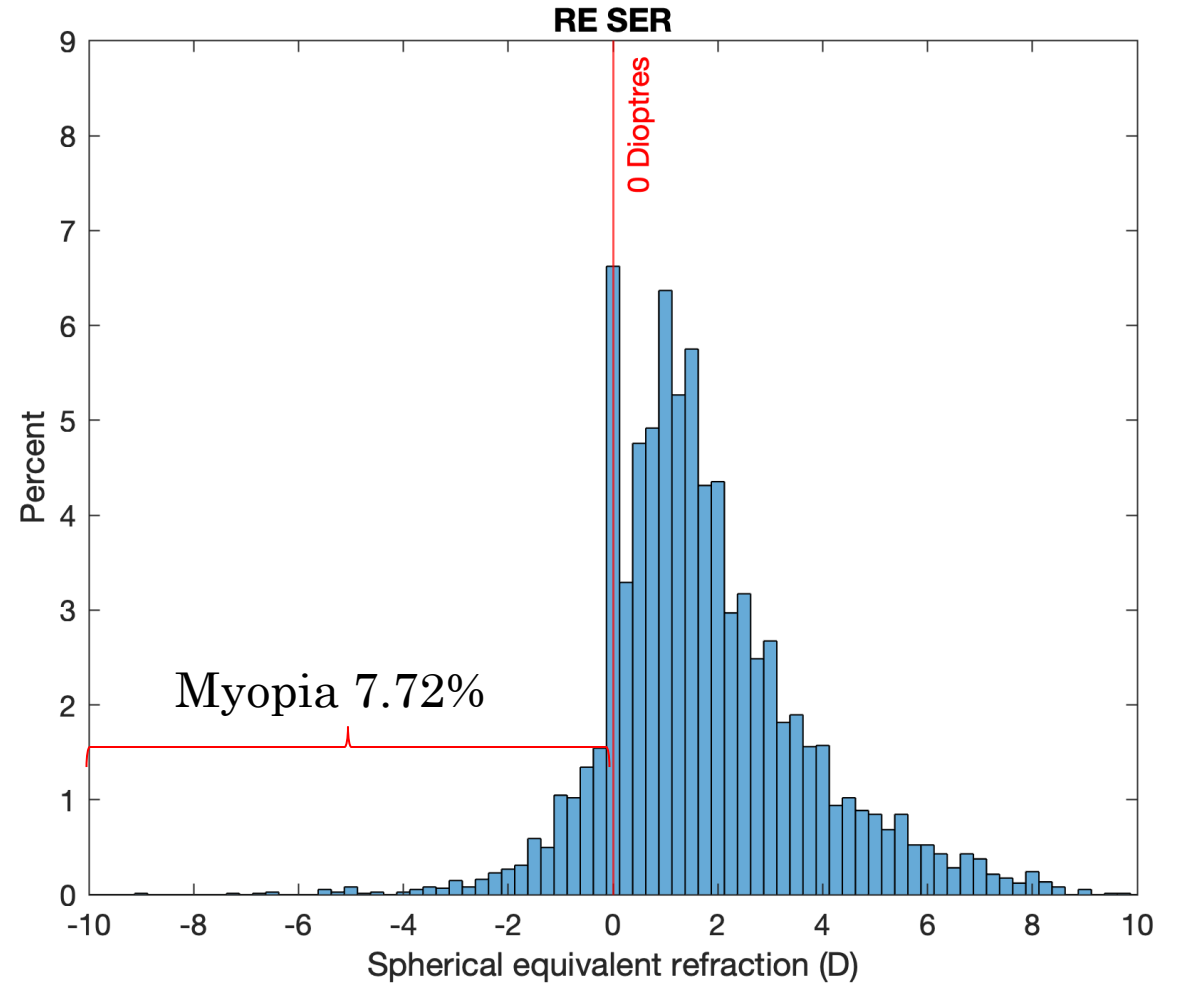
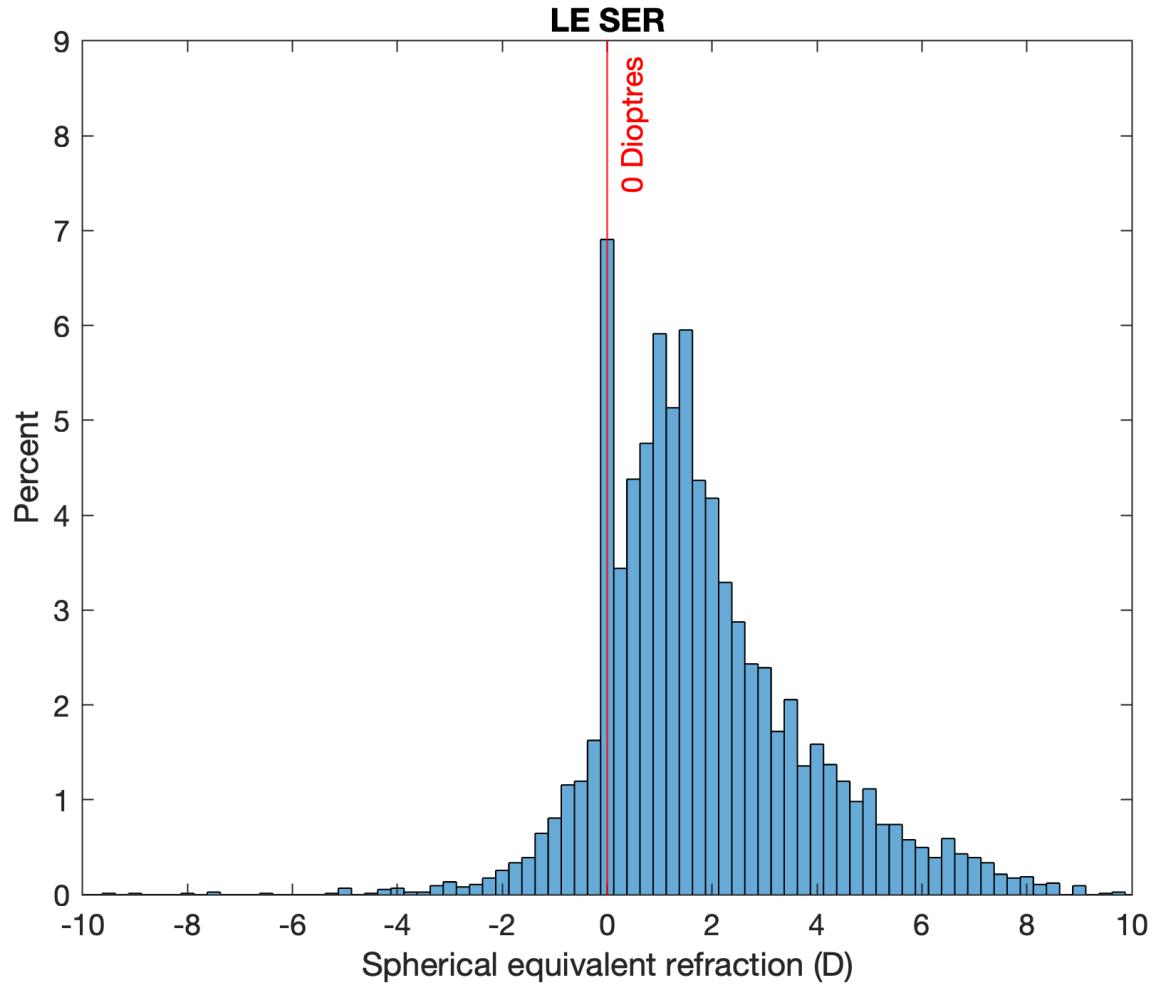




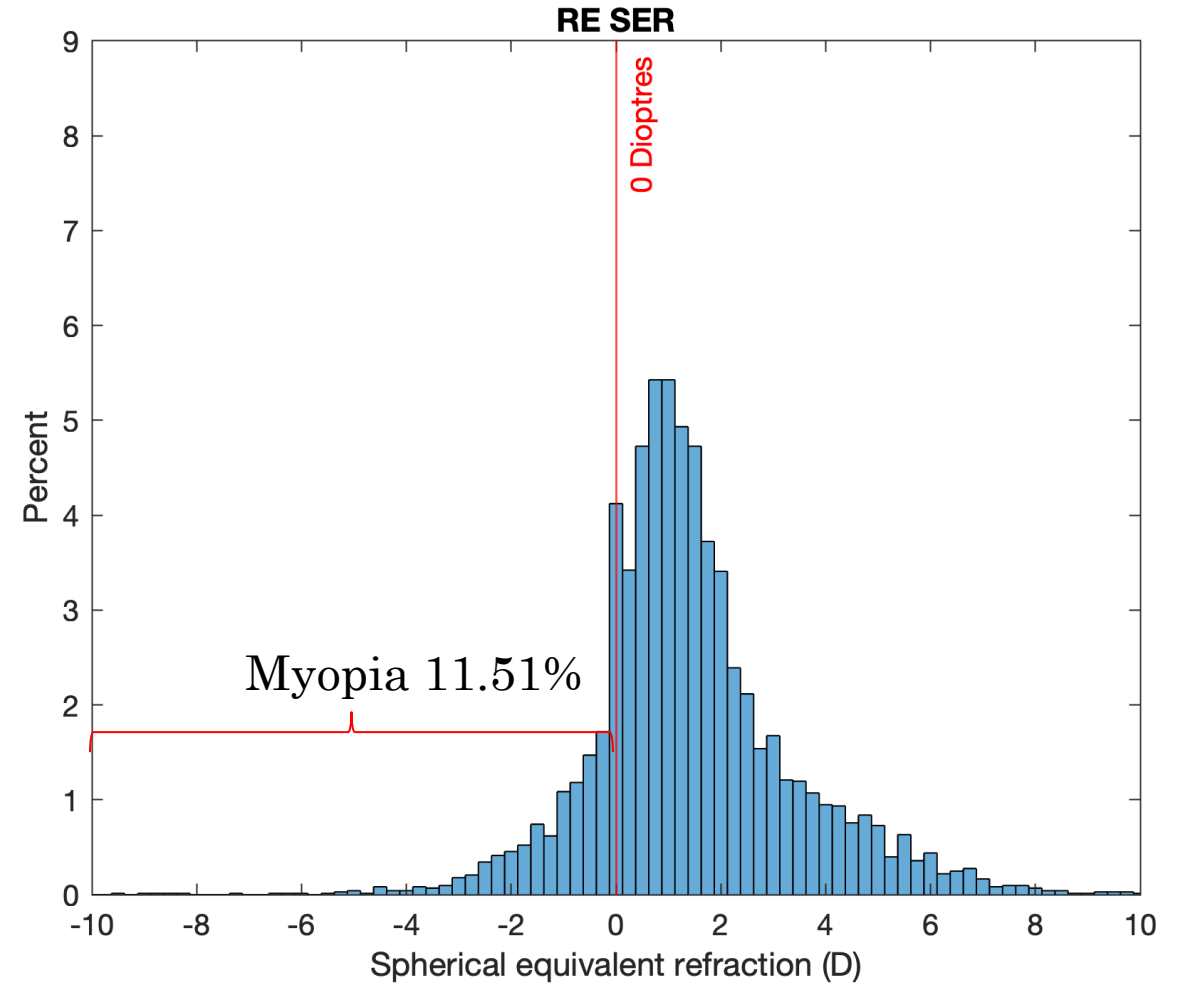
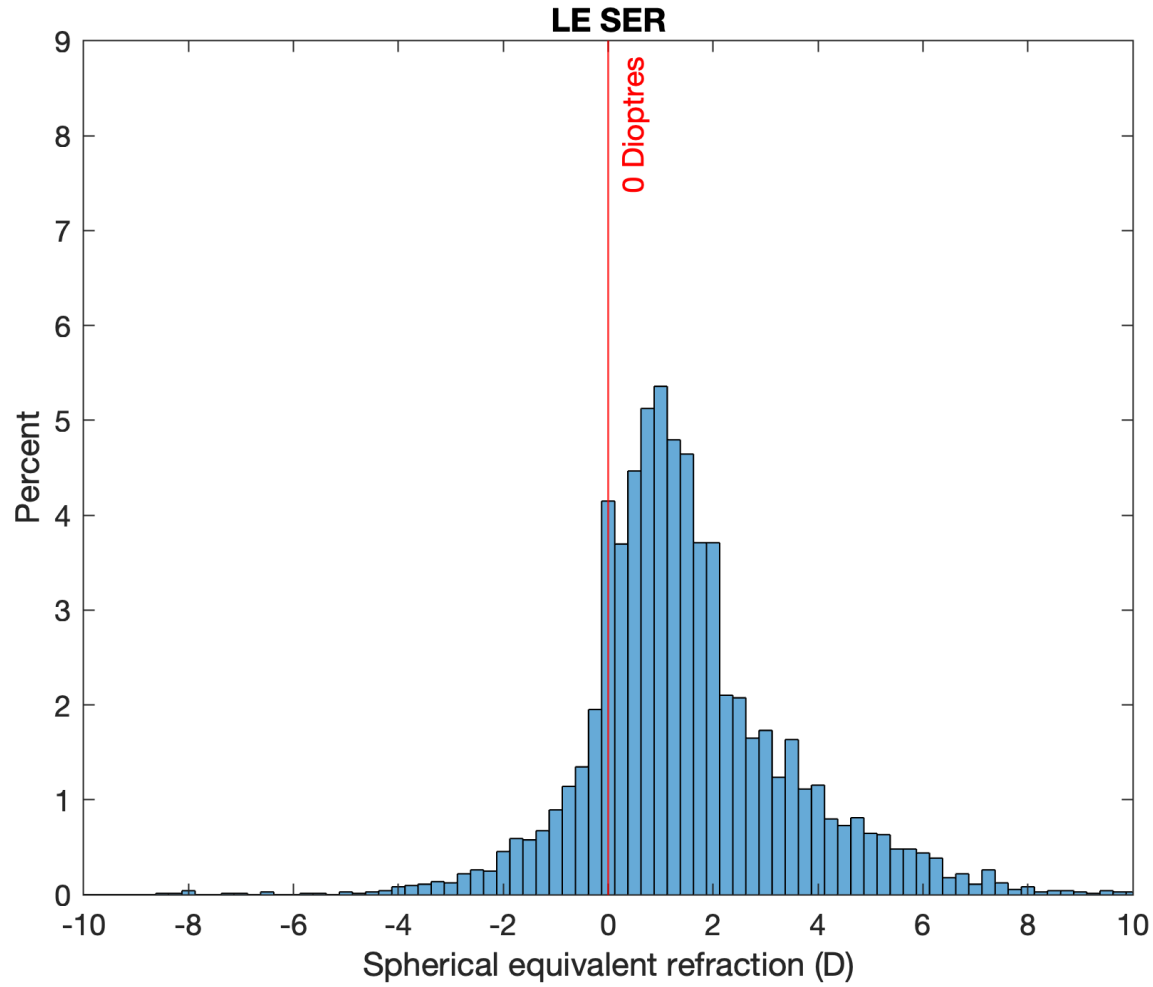
# Pre-COVID 2014-2015 Histogram



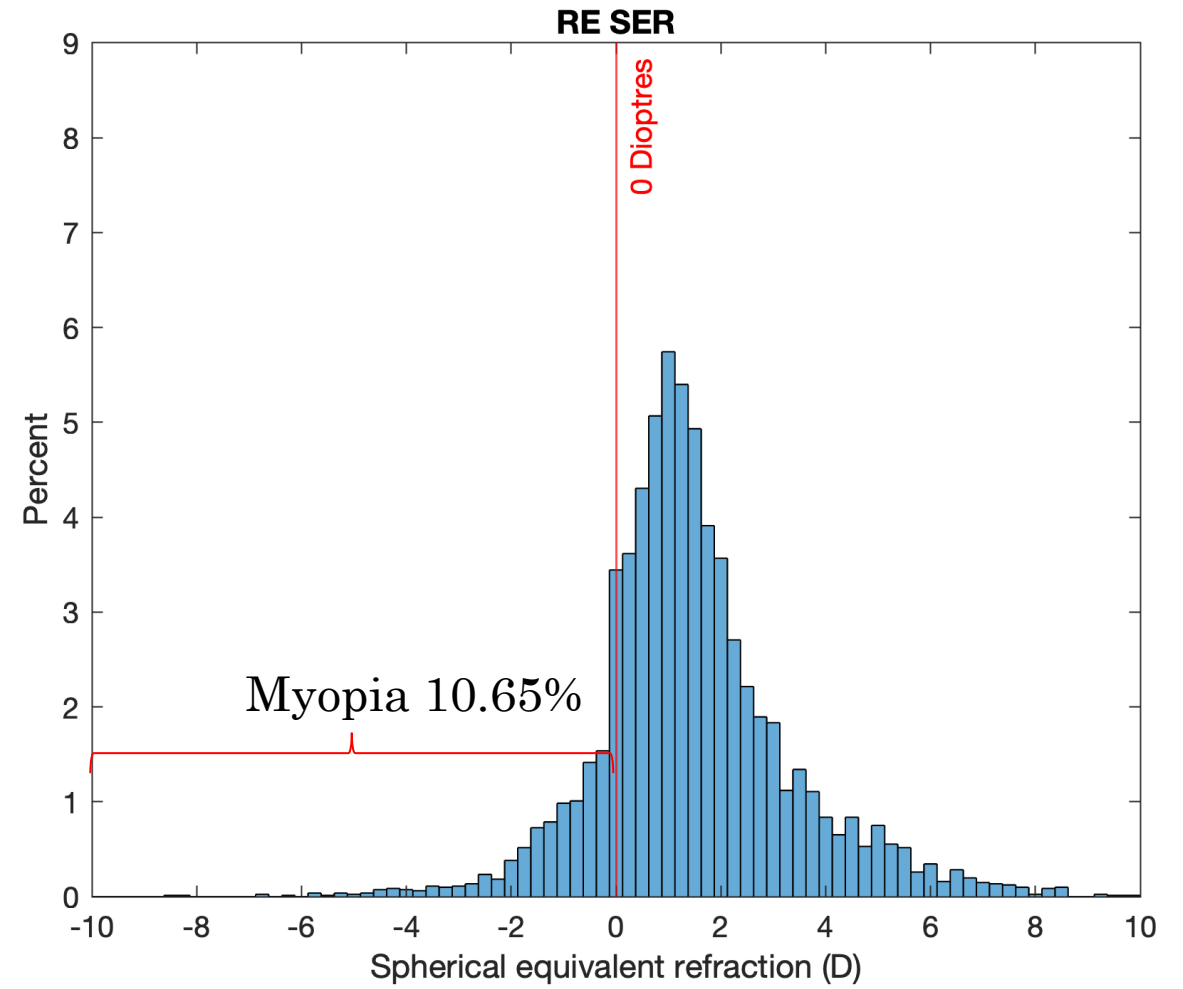
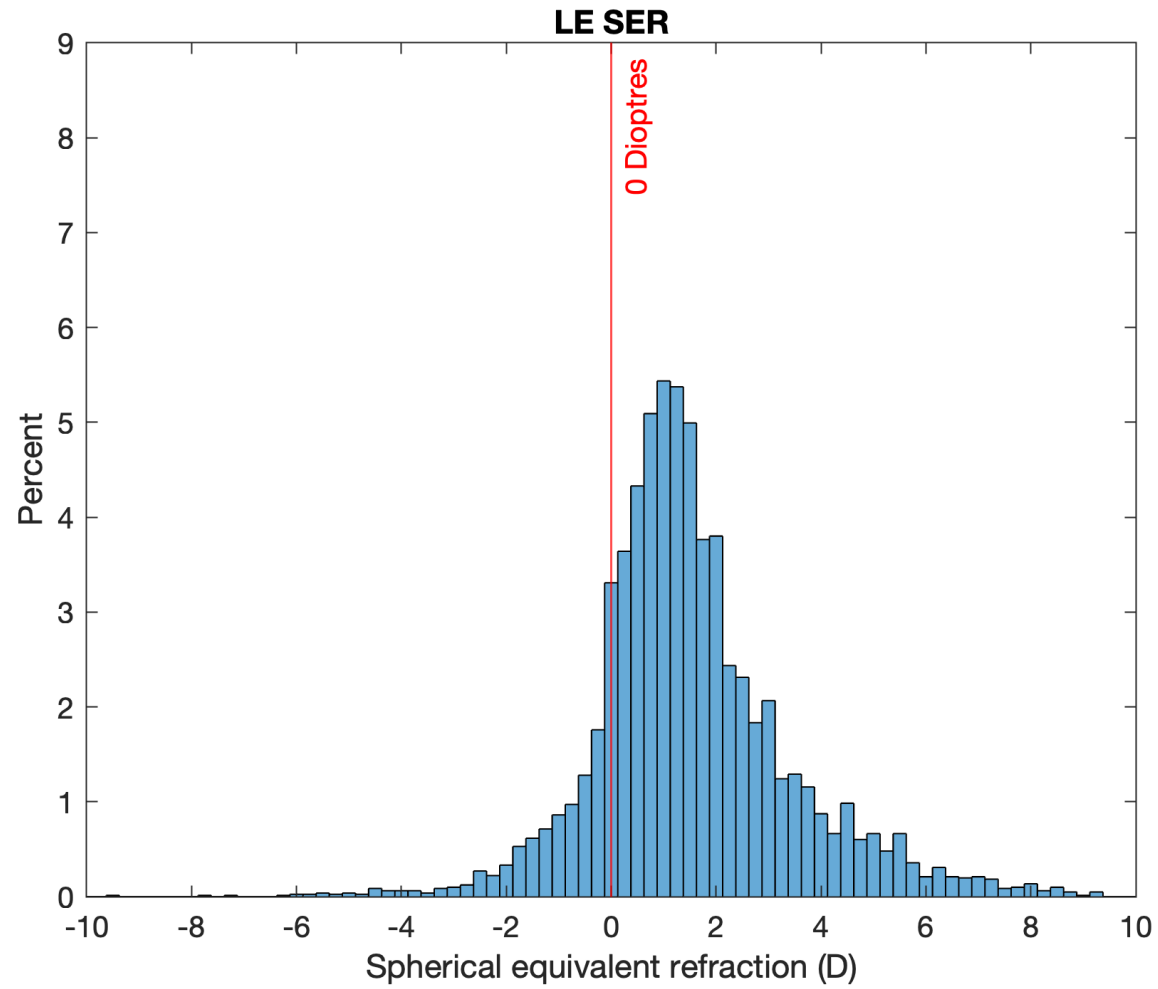
# Pre-COVID 2015-2016 Histogram



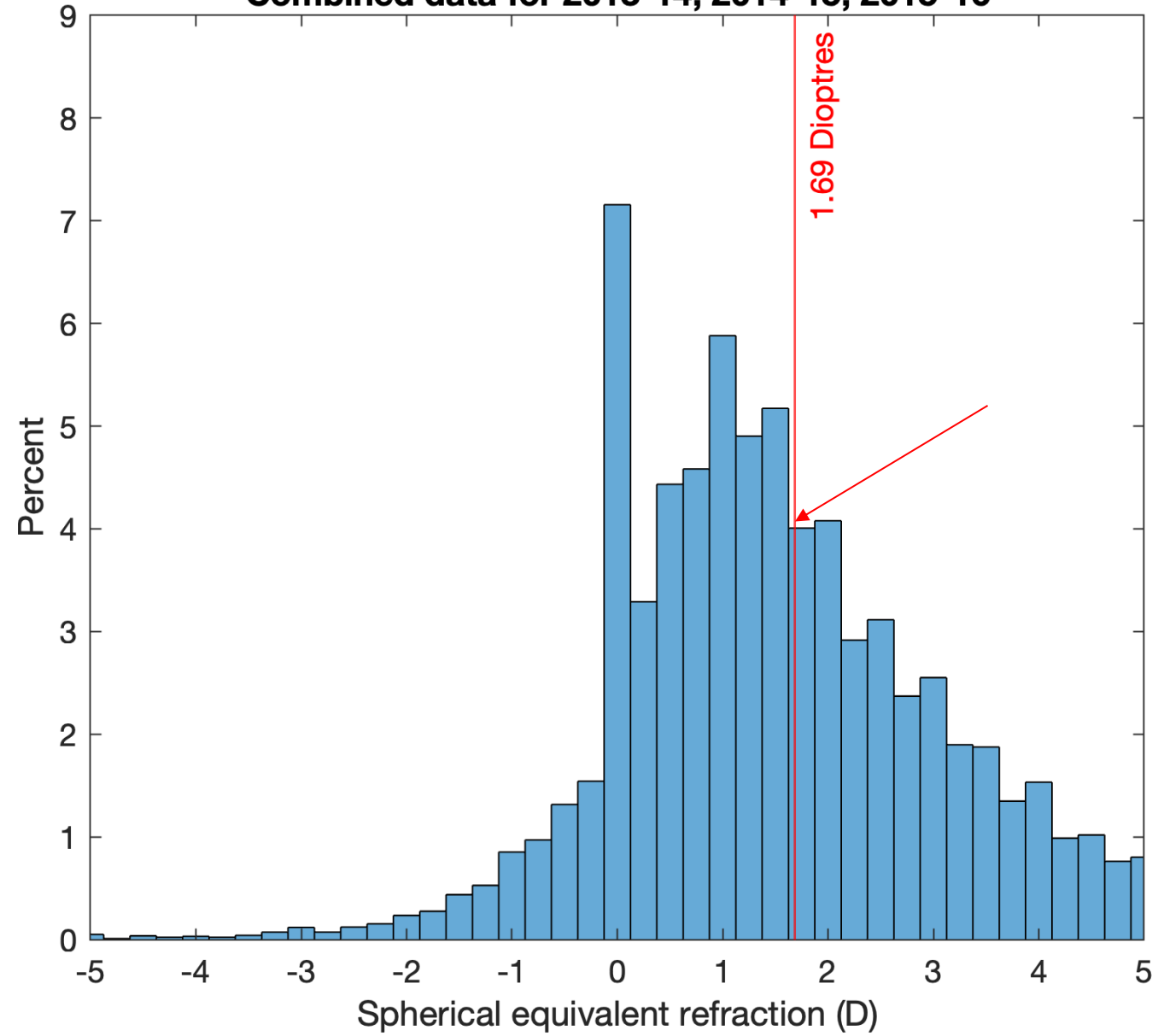
# Post-COVID 2020-2021 Histogram



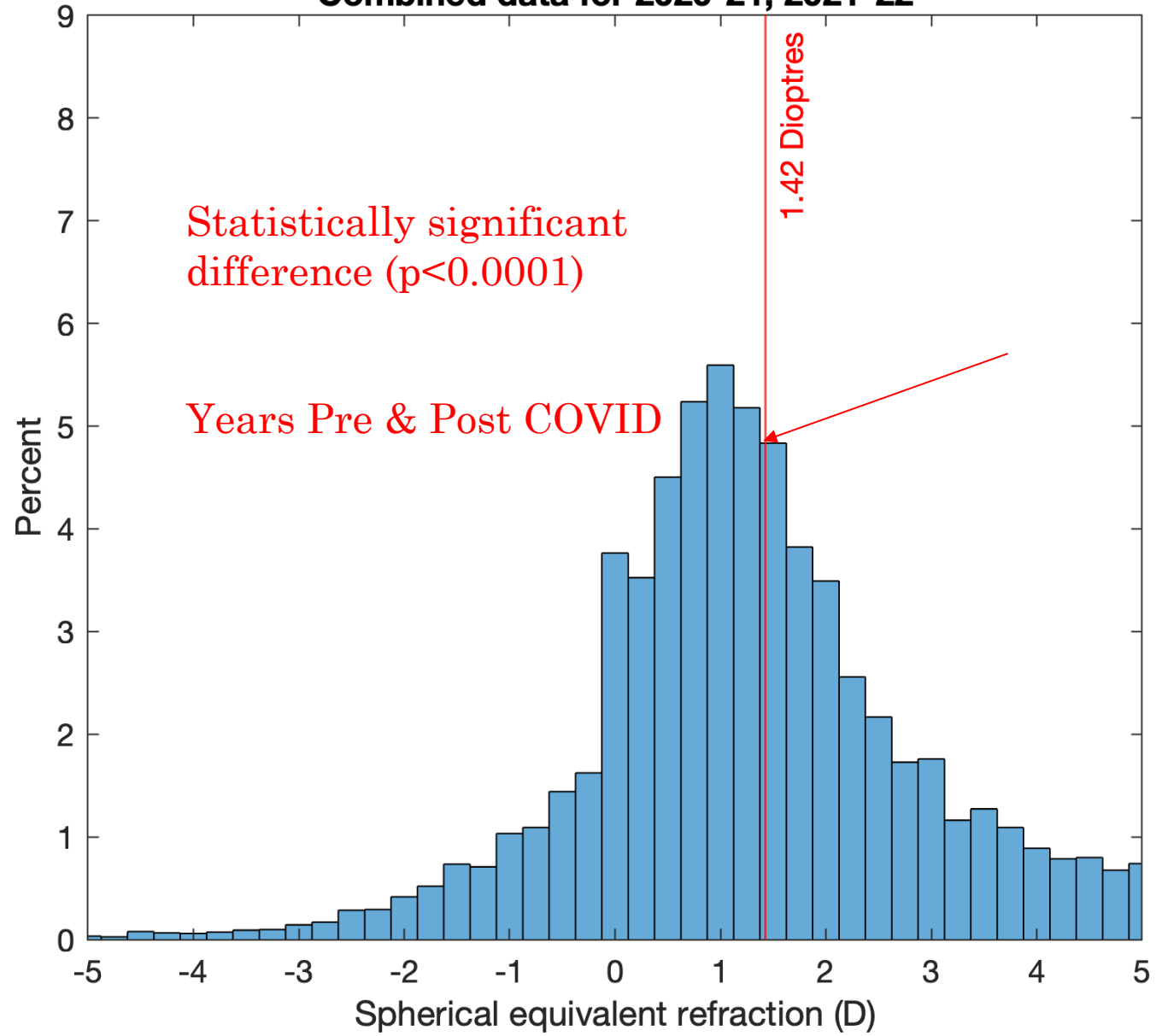
# Post-COVID 2021-2022 Histogram



Combined data for 2013-14, 2014-15, 2015-16



Combined data for 2020-21, 2021-22



# CORRELATION BETWEEN MYOPIA, SOCIO-ECONOMIC DEPRIVATION AND DWELLING TYPE & SETTING

## Type of Dwelling:

Strong positive correlation  $r^2=0.83$ ,  $p=0.002$

Proportion of children who failed vision screening and were myopic- living in each health board, and:

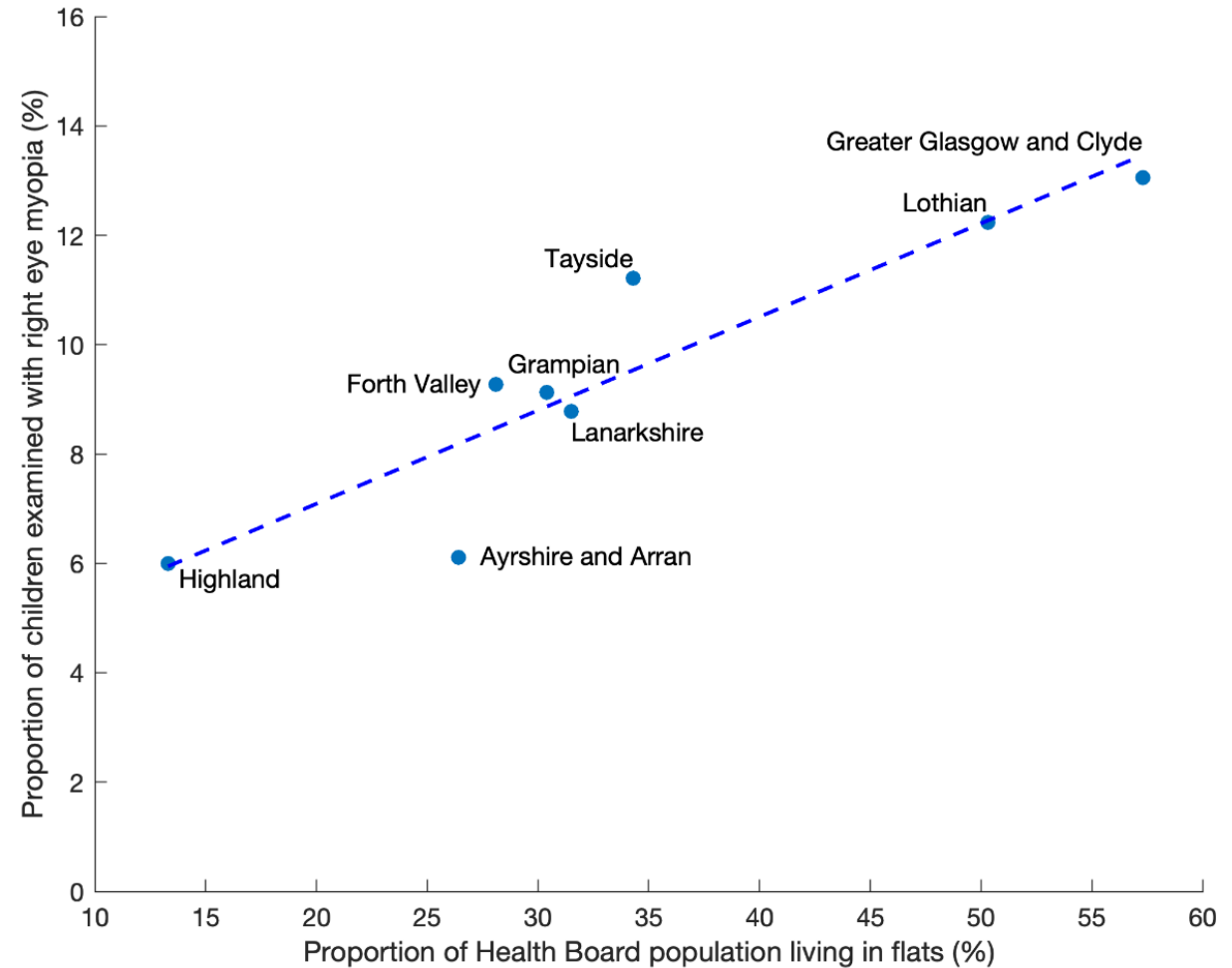
Proportion of dwellings that were flat/apartments

## Urban/Rural:

Strong positive correlation  $r^2=0.79$ ,  $p=0.003$

Proportion of children who failed vision screening and were myopic- living in each health board, and:

Proportion of population living in an urban environment



# KEY POINTS

In Caucasian children aged 3.5 to 5.5 years, myopia has become more common since the COVID pandemic in Scotland, UK

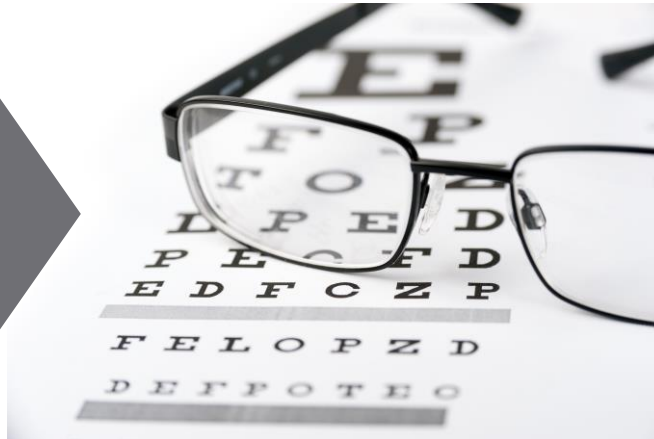
Should vision screening be repeated regularly throughout the school years?

Myopia is associated with living in highly urbanised settings and living in flats/apartments, but not with deprivation



# SUMMARY

In this predominantly  
**Caucasian** population,  
proportions of **children** with  
**myopia** have **increased**  
post-COVID



**Strong** association exists  
between living in **either**  
**flats** or **urban** dwellings  
and **myopia**, but no  
strong correlation with a  
deprivation index

# ACKNOWLEDGEMENTS

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- HOYA Vision Care: Funding Support

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