

# Prevalence of amblyogenic risk factors among children aged 3.5-5.5 years in Scotland who failed vision screening in 2021/22

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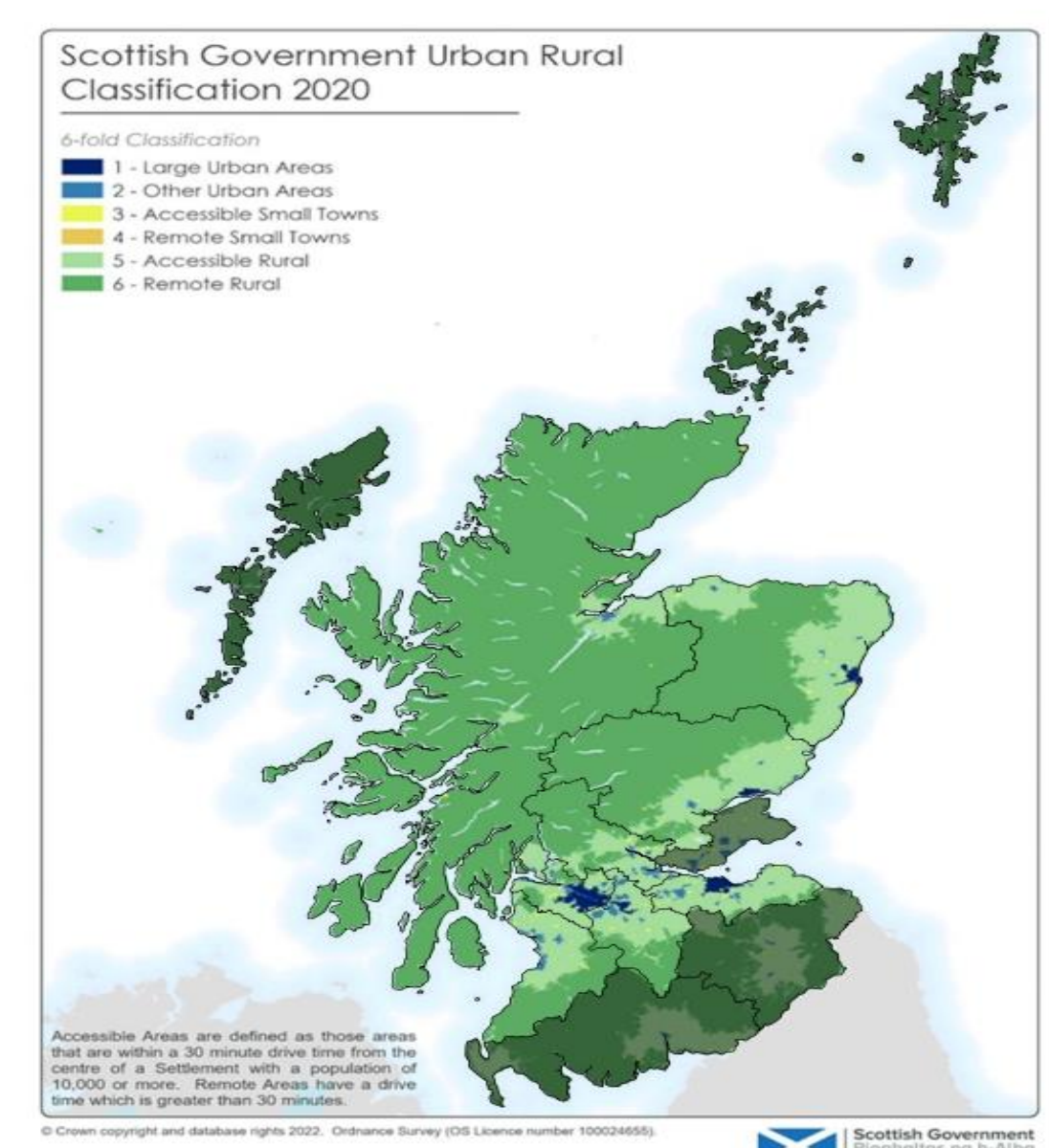


## Background

- Scotland's pre-school vision screening programme aims to detect and treat amblyopia early, reducing its prevalence, severity, and the risk of long-term visual impairment.
- The American Association for Paediatric Ophthalmology and Strabismus (AAPOS)<sup>1-3</sup> provides age-specific criteria to reduce over-referrals and increase cost-effectiveness in vision screening.
- This study aims to determine the prevalence of amblyogenic risk factors (ARF) in children aged between 3.5-5.5 years who were referred after failing vision screening, and whose subsequent eye exam results were returned for analysis.

## Method

- Vision screening tests, all conducted by orthoptists, included:
  - Presenting vision
  - Orthoptic evaluations
- Screening failures were referred for eye examinations by optometrists/ ophthalmologists which included:
  - Cycloplegic refraction



## Method

Based on AAPOS criteria, the following ARFs were applied and their prevalences calculated for 2021/22 data:

- Constant manifest strabismus
- Hyperopia (spherical equivalent refraction, SER) >+4.00D (in one/both eyes)
- Astigmatism >1.75DC (in one/both eyes)
- Anisometropia >1.25DC for astigmatism
- Anisometropia >1.25D (SER) for hyperopic or mixed (one eye hyperopic, the other myopic) anisometropia

## Results

	Prevalence	Confidence Interval
<b>Presence of one ARF</b>	5.06%	(4.84-5.29)
<b>Presence of two ARFs</b>	1.62%	(1.49-1.76)
<b>Presence of three ARFs</b>	0.27%	(0.22-0.33)
<b>Presence of four ARFs</b>	0.04%	(0.03-0.07)

## Results

In 2021/2022, Scottish Health Boards comprising over 85% of Scotland's population reported the following:

- 39,741 children (77.2% of all eligible children) completed their vision screening.
- 8,317 children (20.9%) did not pass the screening and were referred for further eye examinations.
- Data were returned and analysed for 5,503 children (66.2% of those referred)

	Proportion of Children
<b>Constant manifest strabismus</b>	13.7%
<b>Hyperopia &gt;+4.00D (in one or both eyes SER)</b>	35.1%
<b>Astigmatism &gt; 1.75D (in one or both eyes)</b>	48.2%
<b>Hyperopic anisometropia &gt;1.25D (SER)</b>	26.6%
<b>Astigmatic Anisometropia &gt;1.25D</b>	12.6%
<b>Mixed Anisometropia &gt;1.25D (SER)</b>	2.0%

## Conclusions

- Early detection of amblyogenic risk factors is essential for preventing permanent visual impairment caused by amblyopia.
- Timely interventions can be implemented to ensure normal visual development and optimise visual outcomes.
- In this predominantly Caucasian population 5.06% (95% CI: 4.84-5.29%) of Scottish children (3.5 – 5.5 years) have at least one ARF.
- The high prevalence of ARFs validates the importance of carrying out a universal vision screening programme.

## References

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## Acknowledgements

- Thanks to screening leads and heads of orthoptic services in Scotland, Information Services Division (ISD) of National Services Scotland (NSS), Data & Digital Innovation Public Health Scotland, Hoya for funding support.
- The project and presenter's attendance at EVER were funded by HOYA. Rakhee Shah is an employee of HOYA.