This requirement has allowed us to gather information regarding disease prevalence in a local population.
Methods: IRB approval was through Northwestern Medicine. A retrospective chart review was undertaken of kindergarten eye examinations performed at the Wheaton Eye Clinic between September 2008 and February 2017. Inclusion criteria included school eye examination as reason for visit and a cycloplegic refraction was completed. Data was collected regarding patient demographics, family history, past medical/birth history, all exam findings, and final diagnoses.
Results: Of 1131 patient charts identified, 676 satisfied the inclusion criteria, of which 49% were female. Historical characteristics showed 84 were premature, 20 patients were autistic and 52 were developmentally delayed. On examination, 147 had <20/30 vision in either eye, 17 had refractive errors > +3.50 D and one < −3.00 D. Abnormal external examination finding was found in 135 while 14 had an abnormal fundus finding. Diagnoses included 9 as glaucoma suspects, 36 with amblyopia, 28 with anisometropia, 1 with esotropia, 4 with exotropia, 95 with phorias, and 13 with convergence insufficiency. 50%of the autistic children were diagnosed with ocular pathology. At the end of the examination, 49 patients were given glasses.
Discussion: Using the published criteria by Donahue, we found 8% had amblyopia risk factors compared to the 10% referral rate for photoscreening 1. Glasses were given to 7.2% of the cohort, similar to Traboulsi et al 2. Autistic children maybe more likely to have eye disorders.
Conclusions: Our rate of treatable ocular conditions discovered via state-mandated kindergarten eye examinations compares favorably to photoscreening and large scale screening programs.

249 Traditional and instrument-based vision screening in third-grade students. Evan Silverstein, Elaine R. McElhinny
Introduction: AAPOS recommends optotype-based vision screening for children >5 years old. Instrument-based screening for 3- to 4-year-olds are more time-efficient and have higher positive predictive value (PPV) than traditional optotype screening. This study evaluates instrument-based vision screening and traditional screening for third-grade students.
Methods: Third-graders from 16 schools in a single county in Virginia were screened by traditional methods(optotypes and stereoacuity) and Plusoptix S12. Children referred from either method received a comprehensive eye examination with cycloplegic refraction in the schools. Time to screen was recorded.
Results: A total of 1,593 children were screened by both methods. 516 (32.4%) children were referred—287 (18.0%) by traditional and 398 (25.0%) by Plusoptix. 247 (47.9%) children received cycloplegic examinations. There was no statistical difference ($P > 0.05$) of PPV between the methods for identifying children with acuity <20/30 (75.2% and 70.1%) or who were prescribed glasses (73.8% and 82.2%). Time to screen was significantly less ($P < 0.01$) for the Plusoptix (2.0 vs 0.5 minutes). Eight children referred only by the traditional screen (passing the Plusoptix screen) had visual acuity <20/40 without any explainable refractive error or amblyopia risk factors.
Discussion: The Plusoptix has similar PPV to traditional vision screening and detects children with acceptable visual acuity but may have a need for glasses. Children with non-refractive decreased visual acuity may be missed by instrument-based screens.
Conclusions: Instrument-based vision screening is more time efficient than traditional screening and has a similar PPV in third-grade students. Input from teachers to identify struggling students may be helpful if students are screened solely with autorefractors or photoscreeners.

250 Setting high referral thresholds in non-cycloplegic refraction screening: most missed children have borderline refractive risk factors. Oliver Ehrt
Introduction: Amblyopia should be detected as early as possible. However, in early live without reliable visual acuity we can only detect amblyogenic risk factors. Over referrals and over prescription of glasses must be avoided by setting high referral thresholds in non-cycloplegic refraction screening. The aim of the study was to evaluate which children will be missed by videorefractometry.
Methods: Five studies with PlusoptiX (A04-A12) from 2005-2015 (n = 883 children aged 0.5-7 years) were analyzed. Amblyogenic refractive error was defined by German guideline (hyperopia >3 D, astigmatism >1 D, anisometropia >1 D in cycloplegic retinoscopy). Thresholds for referral were set at >2 D, >0.75 D and >1 D, respectively, for high specificity (94%).
Results: Prevalence of risk factors were: hyperopia 11%, astigmatism 20%, anisometropia 6%. Overall sensitivity was 80%; 26% of hyperopes were missed on screening. Of those 39% had severe hyperopia > +4 D. 24% of children with astigmatism were missed. Of those only 5% had severe astigmatism >2 D.5 of 43 children with anisometropia were missed. Of those only 2 had anisometropia >2 D.
Discussion: Although astigmatism was the most frequent amblyopia risk factor in this amblyopia enriched population, only 2 children with severe astigmatism went undetected. As expected in non-cycloplegic screening, severe hyperopia was the most frequent overlooked risk factor (9 children).
Conclusions: Overall, a sensitivity of 80% is acceptable because most missed children will have mild, if any amblyopia and can be treated later when it is picked up with visual acuity testing at a later age.

251 Referral outcomes from a vision screening program for school-aged children. John Anhalt, Marlee Silverstein, Katelyn Scharf, Eileen L. Mayro, Melanie Snitzer, Michael Pond, Linda Siam, Alex V. Levin
Introduction: Community vision screening programs rely on appropriate care of identified ocular disease through pediatric ophthalmology referral and consultation to ensure successful correction of each students vision challenges.
Methods: We reviewed the referrals generated by our in-school vision screening program for children in grades K-5 in School District of Philadelphia public schools between January 2014 and June 2015. Children with subnormal best corrected visual acuity or other ocular conditions were referred to a pediatric ophthalmology service. A social worker assisted parents/guardians of referred children in scheduling an appointment and navigating insurance/payment issues.Â
Results: Of 10,726 children screened, 509 (4.7%) were referred for a follow-up eye examination. Of these 509 children, only 127 (25.0%) completed their referral eye examination. Most children (57.5%) were diagnosed with more than one eye condition. The most common ocular conditions were refractive error (75.6%), amblyopia (42.5%), strabismus (15.7%), and anisometropia (12.6%). Other conditions included macular hypoplasia, ptosis and other congenital anomalies.
Discussion: Our study illustrates the potential efficacy of a community based vision screening program to identify significant ocular