



OREGON LIONS  
Sight & Hearing Foundation

# Vision Screening Pilot Project



*Prepared By*

**Oregon Lions Sight & Hearing Foundation**

*For*

**Oregon Department of Education Contract #8921 – Final Report**

February 15, 2011

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## Vision Screening Pilot Project Summary

The 75<sup>th</sup> Oregon Legislative Assembly, 2010 Special Session through House Bill 3626, directed the Oregon Department of Education (ODE) to establish a Vision Screening Pilot Project. The Oregon Lions Sight & Hearing Foundation (OLSHF), an Oregon based 501(c)(3) nonprofit, was awarded Contract #8921 and provided the following objectives:

- Arrange and conduct vision screenings in three Oregon school districts
- Screen all students in grades one through eight in those districts
- Provide parents or guardians of students an “opt out” option for the vision screenings
- Conduct background checks on all staff and volunteers
- Establish a system of documentation and tracking of:
  - the school districts where vision screening occurred
  - number of students screened and the results of those screenings
  - which grades were screened
  - the number of students who, based on the vision screenings, were:
    - referred to an ophthalmologist or an optometric physician for an eye exam;
    - identified as requiring vision correction or treatment; and
    - provided vision correction or treatment
- The estimated cost for the students who received vision screenings
- Make recommendations for how to fund and implement statewide a program that provides students with vision screenings
- Submit an Interim Report due by December 1, 2010 providing an update on the progress of the Vision Screening Pilot Project
- Provide a final written report, no later than February 15, 2011, with information requested to be reported to the Legislature as part of HB 3626

Since 1959, the Oregon Lions Sight & Hearing Foundation has provided vision and hearing related services to those in need. In 1994, OLSHF created a health screening program designed to identify vision and hearing impairment. The program’s mission was to provide access to resources for vision and hearing care in rural and underserved areas of Oregon. Initially focused on adults, school based vision and hearing screenings now represent over 86% of all OLSHF screening events. OLSHF provides vision screenings to over 25,000 children and 5,000 adults annually throughout the state of Oregon. It is the largest program of its kind in the state.

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OLSHF recognizes the importance of vision screening programs in schools to assist in identifying students with visual impairments. Visual problems can and do affect the physical, intellectual, social and emotional development of children. Early detection of vision problems can provide a child more opportunity for educational success. Because vision loss may impede normal development, the earlier vision impairments are diagnosed and treated, the more favorable the outlook for correction or improvement of the child's well-being.

Experts estimate vision problems affect 25% of all school children in the United States. However, research shows that only 10% of children 9 to 15 years old who need eyeglasses actually have them. Even when children with vision problems are identified during vision screenings, an alarming 40% to 67% do not receive recommended follow-up eye exams or eyeglasses.

In the Oregon Department of Education (ODE) Vision Screening Pilot Project, the Oregon Lions Sight & Hearing Foundation (OLSHF) has provided an evidence-based, cost-effective method for identifying students that may have vision problems that interfere with learning and school performance. OLSHF provided vision screening for 6,823 school children in grades 1 to 8 in six Oregon school districts from Sept. 13 through Nov. 19, 2010. Working with partners at Lions Clubs, Oregon Health & Science University's Casey Eye Institute and Prevent Blindness America, OLSHF coordinated screenings and follow-up contact with the parents or guardians of children referred for eye examination. OLSHF provides the following final report to ODE.

Thank you for this opportunity.



## Detailed Findings of Objectives

### 1. The School Districts Where Vision Screenings Occurred

The school districts where vision screenings occurred were Klamath County School District, Lincoln County School District, Cove School District, Elgin School District, Imbler School District and Union School District. OLSHF understands that schools are the critical setting for vision screenings for children. Public schools provide an opportunity to screen the largest population of children in Oregon.

OLSHF was tasked to screen the vision of approximately 7,000 students in grades one through eight using space within each school facility where possible. On November 19, 2010, OLSHF completed all screenings as defined by Contract #8921 for the Vision Screening Pilot Project at the following 37 school locations in Oregon:



#### **Klamath County School District**

Bonanza Elementary	Gearhart	Malin
Bonanza Jr/Sr	Gilchrist Elementary	Merrill
Brixner Jr	Gilchrist Jr/Sr	Peterson
Chiloquin Elementary	Henley Elementary	Sage Community
Chiloquin Jr/Sr	Henley Middle School	Shasta
Falcon Heights	Keno	Stearns
Ferguson	Lost River Jr/Sr	

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**Lincoln County School District**

Crestview Heights	Newport Prep	Taft Elementary
Eddyville	Oceanlake	Taft 7-12
Isaac Newton Magnet School	Olalla	Toledo Elementary
	Sam Case Elementary	Toledo Jr/Sr
Newport Intermediate	Siletz	

**Cove School District, Elgin School District, Imbler School District And Union School District**

Cove Elementary	Stella Mayfield Elementary
Imbler Elementary	Union Elementary

In order to coordinate efforts with each school district, OLSHF contacted school nurses, principals, and other school personnel. OLSHF introduced the project and its objectives, requested assistance with:

- identifying and reserving space in each school facility,
- requested class rosters and other student information,
- recruiting volunteers, and
- distributing an “opt out” option to each parents or guardians.

**Reserving Space** - Each school in Klamath County School District, Cove School District, Elgin School District, Imbler School District and Union School District was able to reserve space within their schools for screenings to take place. Schools used gymnasiums the majority of the time. Lincoln County School District (LCSD) was unable to provide space and requested the use of the OLSHF screening vehicle. The space exception request was approved by the ODE prior to screenings. In LCSD, OLSHF provided a semi-truck and trailer on which screening stations were set up and conducted in the same manner as the in-school locations.

**Student Information** - In order to track individual student results and to match those results with follow up care, OLSHF requested student information from each district. The requested information included student first and last name, date of birth, gender, grade, teacher, parents or guardians name, and parents or guardians contact information. This information was consolidated into a database and each student was assigned a unique identifier solely for the purposes of this project. All identifying information is confidential and will be securely destroyed per contractual requirements upon completion of the project.

**Volunteers** - OLSHF worked with each school district and with local organizations to recruit and train volunteers. One or two OLSHF staff was on site for set up, training, managing the screening process, and data collection. In addition, OLSHF estimated a need for a minimum of eight volunteers for the duration of each screening. Members of the local Lions Clubs, PTA,

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school staff and OHSU nursing students, were asked to volunteer for no less than a three hour shift of vision screening at one or more schools.

OLSHF professional screening staff coordinated volunteer trainings with Prevent Blindness America (PBA) in Union County School District and in Lincoln County School District. Prevent Blindness America has a national program that trains and certifies people to conduct screenings. PBA screening procedures are recommended by many of the nation's leading children's eye care professionals and researchers.

Each volunteer who participates in the project underwent a background check through the Oregon State Police or was verified to have gone through a specific school district background check process. In all, OLSHF cleared 163 volunteers. There were an additional four background checks conducted that returned an "In Process" result, meaning that a record had been found. All volunteers who were found to have an "In Process" result were informed that they could not volunteer for the project. To be clear, these were not criminals. For example, one person was removed for a DUI from their distant past and another was removed based on a conviction for having their dog off of the leash. In addition, all OLSHF staff passed comprehensive fingerprinted background checks through the Oregon State Police Department.

### Volunteers Cleared in Background Checks

	<b># of Volunteers</b>
<b>Klamath County School District</b>	<b>94</b>
OLSHF - "No Record"	52
KCSD/ODE Background Check Done	32
OHSU Nursing Student - FBI Background Check Done	8
OLSHF - "In Process"	2
<b>Lincoln County School District</b>	<b>55</b>
LCSD/ODE Background Check Done	37
OLSHF - "No Record"	16
OLSHF - "In Process"	2
<b>Union School District</b>	<b>9</b>
OLSHF - "No Record"	9
<b>Elgin School District</b>	<b>5</b>
OLSHF - "No Record"	5
<b>OLSHF Office Volunteer</b>	<b>4</b>
OLSHF - "No Record"	4
<b>Grand Total</b>	<b>167</b>

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**“Opt Out”** - Schools were provided a form to be sent home with each student prior to screening. Only four of the forms were returned and collected. Feedback from school staff about the “opt out” letter included:

- The form was redundant as schools reported that student enrollment forms included an “opt out” option that includes screenings such as vision screenings; and
- The form was confused as an “opt in” by a small number of parents or guardians.
  - One parent was reported to have said they were excited for their child’s vision screening when they had signed and submitted the “opt out” form. The school contact clarified the parent’s intent and the student was able to be screened.

## 2. The number of students who received vision screenings

6,823 students received vision screening. 5,698 passed (83.5%) and 1,125 were referred for further eye examinations (16.5%). This is consistent with prior OLSHF screenings (over the past 16 years).

### Summary of Students Screened: Vision Passed and Referred by School District

	Passed All Vision Screenings	Referred for One or More Vision Screenings	Grand Total	% Referral Rate
Klamath County School District	2732	529	3261	16.22%
Lincoln County School District	2303	513	2816	18.22%
Union School District	205	21	226	9.29%
Imbler School District	175	18	193	9.33%
Elgin School District	167	32	199	16.08%
Cove School District	116	12	128	9.38%
<b>Grand Total</b>	<b>5698</b>	<b>1125</b>	<b>6823</b>	<b>16.49%</b>

Student absenteeism among other factors resulted in approximately 804 (10.5%) students not being screened in the six school districts.

### Students Absent/Not Screened by School District

	Absent/Not Screened	Absent/Not Screened %
Klamath County School District	445	12.01%
Lincoln County School District	275	8.90%
Cove School District	33	20.50%
Elgin School District	30	13.10%
Imbler School District	15	7.21%
Union School District	6	2.59%
<b>Grand Total</b>	<b>804</b>	<b>10.54%</b>

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3. **The number of students who were**
- a. **Referred to an ophthalmologist or an optometric physician for an eye examination**

#### Overall Vision Referrals By School District

	Referred for One or More Vision Screenings	% Referral Rate
Klamath County School District	529	16.22%
Lincoln County School District	513	18.22%
Elgin School District	32	16.08%
Union School District	21	9.29%
Imbler School District	18	9.33%
Cove School District	12	9.38%
<b>Grand Total</b>	<b>1125</b>	<b>16.49%</b>

See Lessons Learned and Conclusions on page 21 for an analysis of the significant differences in the three smaller school districts listed in the chart above.

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**Overall Vision Referrals by School**

	Referred for One or More Vision Screenings	% Referral Rate		
<b>Klamath County School District</b>	<b>529</b>	<b>16.22%</b>		
Shasta	71	19.72%		
Brixner Jr	69	23.79%		
Peterson	51	12.35%		
Ferguson	51	14.49%		
Stearns	43	16.93%		
Henley MS	41	12.62%		
Henley Elementary	40	14.04%		
Chiloquin Elementary	38	27.14%		
Malin	20	19.05%		
Bonanza Elementary	20	11.05%		
Keno	18	13.04%		
Gilchrist Elementary	17	27.42%		
Merrill	15	17.65%		
Lost River Jr/Sr	10	14.93%		
Chiloquin Jr/Sr	10	24.39%		
Bonanza Jr/Sr	9	12.33%		
Gearhart	2	16.67%		
Sage Community	2	4.65%		
Gilchrist Jr/Sr	2	7.14%		
Falcon Heights	0	0.00%		
<b>Lincoln County School District</b>	<b>513</b>	<b>18.22%</b>		
Newport Intermediate	77	23.62%		
Oceanlake	73	22.32%		
Crestview Heights	69	21.70%		
Sam Case	68	18.18%		
Taft Elementary	50	15.53%		
Taft 7-12	47	21.36%		
Toledo Elementary	38	13.15%		
Newport Prep	31	22.14%		
Siletz	22	13.41%		
Isaac Newton Magnet School	20	15.38%		
Toledo Jr/Sr	12	12.63%		
Eddyville	6	5.71%		
Olalla	0	0.00%		
<b>Elgin School District</b>	<b>32</b>	<b>16.08%</b>		
Stella Mayfield Elementary	32	16.08%		
<b>Union School District</b>	<b>21</b>	<b>9.29%</b>		
Union Elementary	21	9.29%		
<b>Imbler School District</b>	<b>18</b>	<b>9.33%</b>		
Imbler Elementary	18	9.33%		
<b>Cove School District</b>	<b>12</b>	<b>9.38%</b>		
Cove Elementary	12	9.38%		
<b>Grand Total</b>	<b>1125</b>	<b>16.49%</b>		

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**i. The number of students referred for Distance Visual Acuity problems**

According to current medical standards, the vision chart line the child must read in order to successfully pass the Distance Visual Acuity screening is 20/30 for students that are ages six and above. First graders below six years of age were tested to the 20/40 line according to current standards. The line that a student must successfully read at is referred to as the “critical line”. First graders were screened using a LEA Symbols chart and second through eighth graders were screened using a HOTV chart.



**Figure 1 - Example of LEA Symbols and HOTV Distance Vision Screening Charts and Screening**

Screeners selected one symbol or letter from each line of the chart on the way down to the “critical line”. This gave younger children practice at identifying the symbols or letters and helped the eye adjust to the font becoming smaller on the chart. To pass a line, the child must have correctly identified at least four out of five of the symbols or letters at the critical line. Screeners first tested the right eye (while the left eye was “occluded” or blocked) and then repeated the process for the left eye. The following chart shows referrals by school district based on Distance Visual Acuity. Of the 6,770 students screened, 698 (10.3%) were referred based on the Distance Visual Acuity screening.

**Referrals based on Distance Visual Acuity by School District**

	Passed DVA	Referred DVA	Grand Total	% Referral Rate
Klamath County School District	2914	339	3253	10.42%
Lincoln County School District	2493	299	2792	10.71%
Union School District	204	17	221	7.69%
Imbler School District	176	13	189	6.88%
Elgin School District	170	21	191	10.99%
Cove School District	115	9	124	7.26%
<b>Grand Total</b>	<b>6072</b>	<b>698</b>	<b>6770</b>	<b>10.31%</b>

Note that the total screened for Distance Visual Acuity is slightly lower than the total overall screened because some students are not capable of completing an individual portion of the screening (for example, language barriers or special needs students.)

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**Referrals based on Distance Visual Acuity by Individual Schools**

	Passed DVA	Referred DVA	Grand Total	% Referral Rate
<b>Klamath County School District</b>	<b>2914</b>	<b>339</b>	<b>3253</b>	<b>10.42%</b>
Peterson	371	42	413	10.17%
Shasta	329	31	360	8.61%
Ferguson	309	43	352	12.22%
Henley MS	297	27	324	8.33%
Henley Elementary	264	19	283	6.71%
Brixner Jr	254	36	290	12.41%
Stearns	222	32	254	12.60%
Bonanza Elementary	168	13	181	7.18%
Keno	123	15	138	10.87%
Chiloquin Elementary	116	22	138	15.94%
Malin	90	15	105	14.29%
Merrill	74	11	85	12.94%
Bonanza Jr/Sr	64	9	73	12.33%
Lost River Jr/Sr	57	8	65	12.31%
Gilchrist Elementary	54	8	62	12.90%
Sage Community	41	2	43	4.65%
Chiloquin Jr/Sr	38	3	41	7.32%
Gilchrist Jr/Sr	25	2	27	7.41%
Gearhart	11	1	12	8.33%
Falcon Heights	7	0	7	0.00%
<b>Lincoln County School District</b>	<b>2493</b>	<b>299</b>	<b>2792</b>	<b>10.71%</b>
Sam Case	332	39	371	10.51%
Crestview Heights	285	33	318	10.38%
Newport Intermediate	282	41	323	12.69%
Taft Elementary	279	32	311	10.29%
Oceanlake	277	49	326	15.03%
Toledo Elementary	262	24	286	8.39%
Taft 7-12	195	25	220	11.36%
Siletz	150	13	163	7.98%
Newport Prep	122	16	138	11.59%
Isaac Newton Magnet School	117	13	130	10.00%
Eddyville	102	3	105	2.86%
Toledo Jr/Sr	84	11	95	11.58%
Olalla	6	0	6	0.00%
<b>Union School District</b>	<b>204</b>	<b>17</b>	<b>221</b>	<b>7.69%</b>
Union Elementary	204	17	221	7.69%
<b>Imbler School District</b>	<b>176</b>	<b>13</b>	<b>189</b>	<b>6.88%</b>
Imbler Elementary	176	13	189	6.88%
<b>Elgin School District</b>	<b>170</b>	<b>21</b>	<b>191</b>	<b>10.99%</b>
Stella Mayfield Elementary	170	21	191	10.99%
<b>Cove School District</b>	<b>115</b>	<b>9</b>	<b>124</b>	<b>7.26%</b>
Cove Elementary	115	9	124	7.26%
<b>Grand Total</b>	<b>6072</b>	<b>698</b>	<b>6770</b>	<b>10.31%</b>

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**ii. The number of students referred for Stereopsis or depth perception problems**

In addition to the need for prescription eyeglasses, one of the most pervasive but overlooked problems for a child is amblyopia (also known as “lazy eye”). Three to four percent of school age children in America suffer from amblyopia. Early detection and treatment can usually reverse amblyopia. If it is not reversed, permanent impairment may result leading to decreased academic achievement. A child with amblyopia may then experience other developmental problems leading to socioeconomic disadvantages and a significantly reduced quality of life. Amblyopia is detected through Stereo Vision screening. The Stereo Vision screening checks if students are using both eyes together effectively using “3D” cards. Primarily this part of the screenings focuses on identifying eye conditions such as amblyopia. As stated, if undetected and untreated, amblyopia can lead to permanent vision loss.



**Figure 2 - Example of the "3D" cards used for the Stereopsis Screening**

The following chart shows student referrals by school district based on Stereo Vision screening. Of the 6,782 students screened, 534 (7.87%) were referred based on Stereo Vision screening.

**Referrals based on Stereo Vision Screening by School District**

	Passed SV	Referred SV	Grand Total	% Referral Rate
Klamath County School District	2945	287	3232	8.88%
Lincoln County School District	2605	201	2806	7.16%
Union School District	212	14	226	6.19%
Imbler School District	187	6	193	3.11%
Elgin School District	180	19	199	9.55%
Cove School District	119	7	126	5.56%
<b>Grand Total</b>	<b>6248</b>	<b>534</b>	<b>6782</b>	<b>7.87%</b>

Note that the total screened for Stereo Vision is slightly lower than the total overall screened because some students are not capable of completing an individual portion of the screening (for example, language barriers or special needs students.)

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**Referrals based on Stereo Vision Screening by Individual Schools**

	Passed SV	Referred SV	Grand Total	% Referral Rate
<b>Klamath County School District</b>	<b>2945</b>	<b>287</b>	<b>3232</b>	<b>8.88%</b>
Peterson	394	17	411	4.14%
Ferguson	330	22	352	6.25%
Shasta	304	55	359	15.32%
Henley MS	302	23	325	7.08%
Henley Elementary	261	24	285	8.42%
Stearns	235	19	254	7.48%
Brixner Jr	224	45	269	16.73%
Bonanza Elementary	172	9	181	4.97%
Keno	130	7	137	5.11%
Chiloquin Elementary	113	26	139	18.71%
Malin	95	9	104	8.65%
Merrill	78	6	84	7.14%
Bonanza Jr/Sr	70	3	73	4.11%
Lost River Jr/Sr	65	2	67	2.99%
Gilchrist Elementary	48	14	62	22.58%
Sage Community	42	1	43	2.33%
Chiloquin Jr/Sr	36	4	40	10.00%
Gilchrist Jr/Sr	28		28	0.00%
Gearhart	11	1	12	8.33%
Falcon Heights	7		7	0.00%
<b>Lincoln County School District</b>	<b>2605</b>	<b>201</b>	<b>2806</b>	<b>7.16%</b>
Sam Case	351	23	374	6.15%
Taft Elementary	303	15	318	4.72%
Newport Intermediate	299	26	325	8.00%
Oceanlake	295	30	325	9.23%
Crestview Heights	282	35	317	11.04%
Toledo Elementary	272	16	288	5.56%
Taft 7-12	202	18	220	8.18%
Siletz	151	13	164	7.93%
Newport Prep	128	11	139	7.91%
Isaac Newton Magnet School	124	6	130	4.62%
Eddyville	101	4	105	3.81%
Toledo Jr/Sr	91	4	95	4.21%
Olalla	6		6	0.00%
<b>Union School District</b>	<b>212</b>	<b>14</b>	<b>226</b>	<b>6.19%</b>
Union Elementary	212	14	226	6.19%
<b>Imbler School District</b>	<b>187</b>	<b>6</b>	<b>193</b>	<b>3.11%</b>
Imbler Elementary	187	6	193	3.11%
<b>Elgin School District</b>	<b>180</b>	<b>19</b>	<b>199</b>	<b>9.55%</b>
Stella Mayfield Elementary	180	19	199	9.55%
<b>Cove School District</b>	<b>119</b>	<b>7</b>	<b>126</b>	<b>5.56%</b>
Cove Elementary	119	7	126	5.56%
<b>Grand Total</b>	<b>6248</b>	<b>534</b>	<b>6782</b>	<b>7.87%</b>

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**iii. The number of students referred for Appearance/Behavior/Complaints (ABCs)**

Student vision screening began with Appearance/Behavior/Complaints screenings. If a student appeared, behaved, or complained of a vision or eye problem, the student was referred for further care.

- Appearance signs can include crossed eyes, watering or red eyes, drooping eyelid, sties or infection, or possible injury.
- Behaviors can include a rigid body, thrusting head forward or backward, tilting head, squinting or frowning, or excessive blinking.
- Complaints can include headaches, blurred or double vision, burning or scratchy eyes, or unusual sensitivity to light.

The following chart shows referrals by school district based on Appearance / Behavior / Complaints screening. Of 6,762 total students screened, only 265 were referred based on the ABCs of screening.

**Referrals based on Appearance/Behavior/Complaints (ABCs) by School District**

	Passed ABCs	Referred ABCs	Grand Total	% Referral Rate
Klamath County School District	3169	68	3237	2.10%
Lincoln County School District	2600	189	2789	6.78%
Union School District	219	3	222	1.35%
Imbler School District	193	0	193	0.00%
Elgin School District	193	5	198	2.53%
Cove School District	123	0	123	0.00%
<b>Grand Total</b>	<b>6497</b>	<b>265</b>	<b>6762</b>	<b>3.92%</b>

Note that the total screened for ABCs is slightly lower than the total overall screened because some students are not capable of completing an individual portion of the screening (for example, language barriers or special needs students.)

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**Referrals based on Appearance/Behavior/Complaints (ABCs) by Individual Schools**

	Passed ABCs	Referred ABCs	Grand Total	% Referral Rate
<b>Klamath County School District</b>	<b>3169</b>	<b>68</b>	<b>3237</b>	<b>2.10%</b>
Peterson	409	3	412	0.73%
Shasta	348	9	357	2.52%
Ferguson	343	8	351	2.28%
Henley MS	321	2	323	0.62%
Henley Elementary	279	5	284	1.76%
Brixner Jr	278	10	288	3.47%
Stearns	247	6	253	2.37%
Bonanza Elementary	177	3	180	1.67%
Keno	134	3	137	2.19%
Chiloquin Elementary	124	9	133	6.77%
Malin	100	3	103	2.91%
Merrill	82	2	84	2.38%
Bonanza Jr/Sr	73	0	73	0.00%
Lost River Jr/Sr	66	0	66	0.00%
Gilchrist Elementary	62	0	62	0.00%
Sage Community	43	0	43	0.00%
Chiloquin Jr/Sr	37	4	41	9.76%
Gilchrist Jr/Sr	28	0	28	0.00%
Gearhart	11	1	12	8.33%
Falcon Heights	7	0	7	0.00%
<b>Lincoln County School District</b>	<b>2600</b>	<b>189</b>	<b>2789</b>	<b>6.78%</b>
Sam Case	340	30	370	8.11%
Oceanlake	300	18	318	5.66%
Newport Intermediate	296	29	325	8.92%
Taft Elementary	295	25	320	7.81%
Crestview Heights	289	28	317	8.83%
Toledo Elementary	276	11	287	3.83%
Taft 7-12	192	23	215	10.70%
Siletz	161	3	164	1.83%
Newport Prep	123	14	137	10.22%
Isaac Newton Magnet School	123	7	130	5.38%
Eddyville	105	0	105	0.00%
Toledo Jr/Sr	94	1	95	1.05%
Olalla	6	0	6	0.00%
<b>Union School District</b>	<b>219</b>	<b>3</b>	<b>222</b>	<b>1.35%</b>
Union Elementary	219	3	222	1.35%
<b>Imbler School District</b>	<b>193</b>	<b>0</b>	<b>193</b>	<b>0.00%</b>
Imbler Elementary	193	0	193	0.00%
<b>Elgin School District</b>	<b>193</b>	<b>5</b>	<b>198</b>	<b>2.53%</b>
Stella Mayfield Elementary	193	5	198	2.53%
<b>Cove School District</b>	<b>123</b>	<b>0</b>	<b>123</b>	<b>0.00%</b>
Cove Elementary	123	0	123	0.00%
<b>Grand Total</b>	<b>6497</b>	<b>265</b>	<b>6762</b>	<b>3.92%</b>

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**iv. Students also screened with PediaVision Plusoptix autorefractor**

As part of the Vision Screening Pilot Project, OLSHF screened 395 students vision using a PediaVision Plusoptix SO9 autorefractor. This objective, non-invasive computerized system was used to take a digital image of the students' eyes. The computer software processed the measurements from the image to indicate the presence of a variety of eye and vision problems. According to doctors at Queen's University, Kingston, Ontario, Canada, "The accuracy of the Plusoptix camera in detecting amblyopiogenic factors appears sufficiently high to further deployment in a widespread school screening program. Immediate determination of need for referral to an eye care specialist can be made at the time of the screening process." This additional screening was used to double check the results of the manual screening process.

**Summary of the Results of PediaVision Screenings**

	Passed PediaVision	Referred by PediaVision	Grand Total
Referred for One or More Manual Screening	169	185	354
Passed All Manual Screenings	41	0	41
<b>Grand Total</b>	<b>210</b>	<b>185</b>	<b>395</b>

The \$10,000 PediaVision photo screener OLSHF purchased for this project has limitations at this time that make it a less attractive option for school screenings. The device is not ideal because it has difficulty measuring the pupil when a child has dark irises (in particular African American and Hispanic eyes) and may not be effective when used under halogen type light bulbs. The device is particularly attractive, however, when screening pre-verbal children or when a language barrier makes it more difficult for the screener to communicate with a child or group of children. The PediaVision device takes a digital picture of a person's eyes and diagnoses them. It is completely objective and does not require the screener or child being screened to do anything other than open their eyes and remain still. In our first attempt at using this new technology, we found that the device was calibrated at a very different bar than our standard manual screening. Many more children passed the PediaVision double check but OLSHF chose to refer them anyway based on our traditional screening protocols.

**3. The number of students who were****b. Identified as requiring vision correction or treatment**

Students referred for comprehensive eye exams were provided a referral letter to parents or guardians that detailed the results of the screenings (see page 2 of Appendix A). If a student received a "Refer" for any of the screenings, parents or guardians were encouraged to take the student in for a comprehensive eye exam. OLSHF's contact information was also noted for families that might require financial assistance with an eye exam and/or eyeglasses. OLSHF detected a total of 1125 students who were referred for a comprehensive exam. OLSHF attempted to contact each home three times when it had a telephone for that household. It

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also used email or mail when a telephone number was not available. OLSHF was able to make follow up contact with 51.9% of households whose children were referred for eye exams.

### Summary of Parents or Guardians Follow Up Effort and Response Rate

Type of Contact	Total # of Attempts	Total # of Responses	% of Responses
Phoned Contact	1618	495	30.6%
Emailed Contact	524	105	20.0%
Mailed Letter	79	1	1.3%
School Contacted Parent	3	0	0.0%
<b>Grand Total</b>	<b>2224</b>	<b>601</b>	<b>51.9%</b>

### Summary of Parents or Guardians Reported Exam Status

	Exam Reports	% of Total Referred
Exam Occurred	272	24.2%
Going to Schedule an Exam	248	22.0%
Exam Scheduled	51	4.5%
No Exam Scheduled	30	2.7%
<b>Grand Total</b>	<b>601</b>	<b>53.4%</b>

Of those households contacted, over 50% reported that an eye exam had occurred or was being scheduled.

During data collection, OLSHF was able to specifically identify and correct 94 documentation errors of a total of 6823 screened. A small percentage of students (1.4%) were incorrectly passed or incorrectly referred. Less than initially presented in the Interim Report, OLSHF was able to review each student's results form to identify actual documentation errors. As part of the follow up process, OLSHF contacted parents or guardians of those students whose results form was sent home with documentation errors. See Lessons Learned and Conclusions on page 21 for an analysis of documentation errors.

### Summary Totals of Identified Documentation Errors

Error Type	# of Errors	% of Errors
Incorrectly Passed	80	1.2%
Incorrectly Referred	14	0.2%
<b>Grand Total</b>	<b>94</b>	<b>1.4%</b>

#### i. The number of students referred for a comprehensive dilated eye exam by Casey Eye Institute staff

OLSHF provided 400 randomly selected students the opportunity for a comprehensive dilated eye exam using OHSU's Casey Eye Institute medical professionals and technicians. Of those, only 101 consent forms (see Appendix B) were returned giving OLSHF permission to conduct an eye exam. The eye exams were offered free of charge and results, as well as any prescriptions, were distributed by OLSHF to parents or guardians along with a resource list should families require financial assistance. The exams were performed by Casey Eye Institute medical

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professionals and technicians on site at Taft, Toledo, and Sam Case Elementary schools in Lincoln County School District. Exams occurred on December 3 and 10, 2010.

The Casey Eye Institute exam results demonstrate that the manual screening process used in this project accurately passed or referred a student at least 76% of the time. The exams found that in 6 cases a student was passed when a visual impairment did exist and 18 cases where a student was referred and no visual impairment existed. See Lessons Learned and Conclusions on page 21 for an analysis of these results.

### Summary of Casey Eye Institute Exam Results

	Total # of Exam Results	Total % of Exam Results
<b>OLSHF Passed</b>	<b>64</b>	
Casey Passed	58	57.4%
CEI Referred	6	5.9%
<b>OLSHF Referred</b>	<b>37</b>	
Casey Passed	18	17.8%
CEI Referred	19	18.8%
<b>Grand Total</b>	<b>101</b>	<b>100.0%</b>

### 3. The number of students who were

#### c. Provided vision correction or treatment

Of the households contacted, 33.9% reported that a prescription for eyeglasses was given to them during their comprehensive eye exam.

### Summary of Parents or Guardians Reported Prescription Status

	Prescription Reports	% of Reported Rx
Yes, the student received a Rx	204	33.9%
No, the student did not receive a Rx	83	13.8%
Unknown, no exam results reported	3	0.5%
<b>Grand Total</b>	<b>290</b>	<b>48.3%</b>

### 4. The estimated cost per student for the students that received vision screenings

The estimated cost per student screened for the OLSHF Vision Screening Pilot Project was \$15.93 per student. However, vision screening actually accounted for only part of the \$15.93 per student cost. New equipment (PediaVision Plusoptix photo screener), testing the OLSHF methodology for screening, follow-up calls to parents, follow-up eye exams and reporting accounted for a considerable percentage of the \$15.93 per student cost however.

The actual cost to screen per student (without the study) is approximately \$10 per student with OLSHF's current method. This cost does not include services provided by the OLSHF for the Vision Screening Pilot Project detailed above. This figure does include all allocated indirect costs involved in running a nonprofit organization.

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## Conclusions

### 5. Recommendations for how to fund and implement statewide a program that provides students with vision screenings

Oregon has mandated that school districts screen the vision and hearing of school children for many years but the regulation is neither well defined nor enforced consistently throughout the state. The state mandates vision and hearing screening as part of several other health care regulations regarding schools but it does not provide funds for school districts to provide these services.

“581-022-0705 Health Services:

(1) The school district shall maintain a prevention oriented health services program for all students which provides:

(f) Vision and hearing screening;

Stat. Auth.: ORS 326 & ORS 342

Stats. Implemented: ORS 326.051

Hist.: 1EB 19-1980, f. 6-17-80, ef. 9-1-80; 1EB 16-1981 (Temp), f. & ef. 11-3-81; 1EB 12-1982, f. & ef. 3-24-82; EB 21-1988, f. & cert. ef. 4-26-88; EB 17-1996, f. & cert. ef. 11-1-96”

In 1996, the nonprofit Oregon Lions Sight & Hearing Foundation began offering these services free of charge to schools in areas where Lions Clubs existed. This program has grown to the largest screening program in Oregon serving over 25,000 school children and 5,000 adults per year. The screenings are provided by paid staff coordinating lay volunteers, primarily Lions Club members.

It is important to recognize that a vision screening is different from a comprehensive exam by an eye care professional. Screening covers a baseline of important vision functions often including distance visual acuity, stereo vision as well as appearance, behavior and complaints. It may also cover near visual acuity. Results of a vision screening are used to assess whether a child needs to see an eye doctor. A comprehensive exam involves much more. In a full exam, a patient’s eyes would usually be dilated so an eye care professional can look inside the eye as well. According to Prevent Blindness America, a comprehensive eye examination includes an evaluation of the refractive state, dilated fundus examination, visual acuity, ocular alignment, binocularity, and color vision testing, where appropriate. An optometrist or ophthalmologist may check for additional eye problems including glaucoma, etc.

Only an eye doctor can diagnose and treat visual impairment, but vision screenings help find children who need a full eye exam. Children's vision screenings are an accurate, cost-effective way to identify visual impairment in children. Children who need a full eye exam are referred to an eye doctor of the parent's choice.

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## Lessons Learned and Conclusions

1. A summary of results from the Vision Screening Pilot Project shows that:
  - a. 89.5% of children in grades one to eight in six school districts were screened
    - iv. 10.5 % of children were absent or not screened
  - b. 16.5% of children were referred over all for follow up exams (some children were referred for more than one issue so the percentages below do not add up to 16.5%)
  - c. 10.3% of children were referred for distance visual acuity
  - d. 7.9% of children were referred for stereo vision
  - e. 3.9 % of children were referred for ABCs (Appearance/Behavior/Complaints)
  - f. Parents or guardians reported 50.7% of the time the screening referral prompted them to attend or schedule a comprehensive exam for their child
  - g. Based on parents or guardians reporting, 33.9% of the households contacted report their child received a prescription for or obtained eyeglasses
2. Where possible, schools or the organization screening students should mail screening results home to parents or guardians instead of sending results home with the child usually in their backpacks. Children who do not pass the vision screening may not want to share the information with their parents out of fear that they “failed” or not wanting to go to the doctor or get eyeglasses. 21.1% of the parents or guardians OLSHF was able to contact reported they did not receive a copy of the screening results form. Too many results forms do not get to the parent or guardian if they are sent home with the child, and the child does not get the appropriate follow up vision examination or care. Vision screenings take time and money, approximately \$10 per child in fact. The cost of an envelope and stamp may be the most important expenditures to make vision screening more effective.
3. The Vision Screening Pilot Project allowed OLSHF to evaluate its own screening process from top to bottom. During the project, OLSHF discovered an error rate of approximately 1.4% that the organization never knew it had. The mistakes are primarily human error when documenting the results of screening on paper forms. The screener may accidentally circle “pass” when they meant to circle “refer” or vice versa. These forms are later sent home to parents who may make decisions based in inaccurate information. OLSHF is told that the rate of error is typical and to be expected when using lay volunteers for vision screenings. However, OLSHF intends to do everything it can to improve these results. The error rate can be reduced by a simple quality control process that OLSHF is implementing. At the end of the screening day, the screening coordinator will go through every form to make sure the lay screeners filled them out correctly before they are sent home via the school administration. The coordinator will find a quiet place to take this final important step before completing the screening. OLSHF is also reviewing its forms to see if revisions can make the process more clear to volunteer screeners.

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4. OLSHF can screen a student's vision in approximately three to five minutes. With three "lanes" of screening, it can screen approximately 45 children an hour. In six hours of near nonstop screening, it can screen approximately 270 children in less than one school day. With additional volunteers, OLSHF has screened 400 students in one school day. This level of efficiency takes one lead person on site to train and coordinate the screening and at least 12 other volunteers to perform screening.
5. The lower referral rates at Union, Imbler and Cove School Districts are based on much smaller data sets. OLSHF and Children's Vision Foundation (CVF) screened children at these schools for at least the past two years; however, that does not explain the significant difference in overall referral rates. OLSHF and CVF also screened recently in nearby Elgin School District which had higher referral rates, similar to the larger school districts, and OLSHF has screened in the past few years in the Lincoln and Klamath School Districts, where the rates were higher. While OLSHF cannot determine the reasons for the lower referral rates in Union, Imbler and Cove School Districts, the smaller data sets make these anomalies statistically unreliable.
6. For the Distance Visual Acuity screening, there are many methods to occlude or block vision in one eye while testing the other. Children naturally want to pass any "test". It is very important that a child is not allowed to "peek" or see around the occluding device when the other eye is being tested. Some organizations recommend that occlusion be done with medical tape to completely cover the eye, but OLSHF found that this method was impractical when attempting to screen large quantities of school children in an efficient process. Alternately, OLSHF used a simple and inexpensive paper condiment cup. To avoid peeking, a child is asked to hold the cup over one eye with their hand over the cup so it is more difficult to peek. It is essential that the screener watch the child carefully so the child does not peek. To test these two methods, OLSHF used medical tape in Lincoln County School District (LCSD) and paper cups in Klamath County School District (KCSD). The distance visual acuity referral rate in LCSD was 10.71% and the referral rate in KCSD was 10.42%. Although a direct correlation cannot be drawn (there were different volunteer sets at each as well), it is of note that when the tape was used and that less children were able to peek, 0.29% more children were referred for eye exams. Since the difference was statistically irrelevant, OLSHF concluded the process of using the medical tape is too cumbersome and inefficient to recommend for large scale school screenings with lay volunteers.
7. Obtaining parental consent for follow up eye exams presented a significant challenge. Of the 400 parents and guardians OLSHF asked to sign permission slips to provide a free comprehensive eye exam for their child, only 101 parents or guardians gave consent.
8. The OHSU Casey Eye Institute exam results demonstrate that the manual vision screening process used in this project accurately passed or referred a student at least 76% of the time. The exams found that in 6 cases a student was passed when a visual impairment did exist and 18 cases where a student was referred and no visual impairment existed. There were three times more "false positives". In screening, it may be better to be safe than sorry. The OHSU exam results also highlight the difference

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between vision screening and examinations. For example, in screening, OLSHF might refer a student for red and watery eyes, but an examination might determine the cause to be allergies not visual impairment. An examination also looks for vision issues that student screening is not designed to detect such as glaucoma. The exams found three cases of suspected glaucoma, interestingly each of those students was correctly referred for an exam. The exam results also highlighted the need to potentially add Near Visual Acuity screenings to the recommended screening method. Four of the six cases where OLSHF methods incorrectly passed the student during screening were found to be hyperopic, or farsighted.

9. The PediaVision photo screener OLSHF purchased for this Pilot Project has limitations at this time that make it a less attractive option for school screenings. The device is not ideal because it has difficulty measuring the pupil when a child has dark irises (in particular African American and Hispanic eyes) and may not be effective when used under halogen type light bulbs. The device is particularly attractive, however, when screening pre-verbal children or when a language barrier makes it more difficult for the screener to communicate with a child or group of children. The PediaVision device takes a digital picture of a person's eyes and diagnoses them (see Appendix C). It is completely objective and does not require the screener or child being screened to do anything other than open their eyes and remain still. OLSHF plans to monitor this technology as it develops in the future and would be glad to demonstrate this device to ODE and legislators if an opportunity is provided.
10. For 16 years, OLSHF provided screening in two 64 foot tractor trailer trucks that obtained approximately 6 miles per gallon and required a coordinator who could drive a truck, as well as work well with children. For the Vision Screening Pilot Project, OLSHF compared the use of new vision screening kits that bring all the necessary equipment into the school for screening. The school must provide a dedicated space for vision screening such as the school gym, auditorium or multi-purpose room. OLSHF found that the needed equipment can be transported in much more fuel efficient cars and that the lead staff person would not need to know how to drive a truck. This model is much less expensive and will allow OLSHF to screen in many more locations on the same day. This successful debut of the vision screening kit system has led OLSHF to develop a 2020 Vision Capital Campaign to revamp the entire program using this new model. To compare results, in Lincoln where a truck was used (see page 4 above for explanation), 18.8% of children screened were referred for follow up eye exams. In Klamath where kits were used in school buildings, 16.8% of children screened were referred for follow up eye exams. There is no clear explanation for the 2% difference in referral rates; however, screening is much more cost effective using kits inside schools. This new model will allow OLSHF to decrease its cost per student to provide screenings. In addition, there are advantages to keeping school children in the school environment where they are comfortable and more relaxed. In order to make this model work, schools will need to provide space for screenings.
11. OLSHF attempted to contact the parents or guardians of all 1,125 students referred for follow up vision exams. When appropriate, OLSHF used a native Spanish speaker to

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make follow up calls to Spanish speaking households. Parents or guardians reported 50.7% of the time the screening referral prompted them to attend or schedule a comprehensive exam for their child. 33.9% of the households OLSHF was able to contact reported receiving a prescription for eyeglasses.

12. While some people were suspicious, most parents we spoke to were grateful for the follow up contact.

Here is one example: *“Baylee was seen by an eye doctor on 1-5-11 to follow up on the results of her screening. Thank you for the follow up email and for the efforts you put into our community. Best Regards, Melissa Dieckhoff (her mom)”*

Here is another example: *“Thank you for the eye exam. I had no idea my daughter’s vision was bad. I had her examined and she’s already got her new glasses. Hopefully her reading will improve now. Teresa Erickson (Breana Erickson’s mom)”*

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## Recommendations

1. Oregon should adopt regulations that set a minimal baseline to define vision screening based on the Prevent Blindness America model. Any methodology should include: Appearance/Behavior/Complaints, Distance Visual Acuity and Stereopsis screenings. A minimal standard would help create consistency in vision screening in the state. As an example, one very large school district that currently screens its own students through an Educational Service District (ESD), does not include stereo vision, potentially missing amblyopia in hundreds or even thousands of children each year.
2. Standards should define (1) methodology, (2) frequency and grades of children screened, (3) visual functions assessed, and (4) criteria for referral to an eye care professional.
3. As it may be impractical to screen every student in every grade every year, a minimum standard should require schools to screen students in kindergarten, first, third and fifth grades. This approach would allow for detection of solvable vision impairments at younger ages and help children to achieve educational success from the start. With amblyopia, the impairment must be detected and treated before age 10 or it is not treatable most of the time and the child loses vision in the affected eye. Amblyopia is a significant reason to screen children while they are younger.
4. The standard adopted should set minimum expectations for screening rather than perfect conditions so screening does not become too expensive for nonprofit organizations and school districts to perform. Several other states have set standards for vision screening (see Prevent Blindness America website for a list of all state regulations).
5. A state methodology should allow the screening organization or school district to add but not require near visual acuity to the screening process.
6. OLSHF recommends vision screening should test for stereopsis using the Random Dot E method. The Random Dot “E” screening is the only method recommended by Prevent Blindness America and Casey Eye Institute. This study found that this method is faster, less expensive and more effective than the Lang model that was previously used by OLSHF.
7. The focus of this project was only vision screening, but OLSHF recommends the state of Oregon consider hearing screenings for school children. Hearing is certainly important in a learning environment and it is equally mandated in Oregon regulations cited above in this report. There may be economies of scale to perform these screenings together. In a recent Portland Public School, MESD, OLSHF, Walmart and Prevent Blindness America partnership at seven schools, children had their vision, hearing and teeth screened at the same time.
8. Private nonprofit and other screening organizations face a major challenge helping school districts provide screening due to lack of access to follow up contact information

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for the parents or guardians of children screened. When a student is referred for follow up examination, the screening organization should contact the parent or guardian to make sure they got the results form (preferably mailed) and ask if parents have questions or need assistance getting their child seen by an eye care professional. Schools, however, are hesitant to share parent data with outside organizations due to concerns about Family Educational Rights and Privacy Act (FERPA), Health Insurance Portability and Accountability Act (HIPAA) and the right to privacy. Unfortunately, schools often do not have the capacity, whether administrative personnel or school nurses, to do follow up with the parents of referred students. The result is a lack of follow up. OLSHF is often asked by potential funders how we follow up with parents of children who need further assistance. Direct follow up contact with parents is a key factor in the success of screening programs. Follow up is currently stymied by other legitimate interests such as the expectation of privacy. Unfortunately, a form requesting parental “consent to contact” them are not an easy answer since so many parents do not return these forms. Schools could address this issue by including a comprehensive waiver as part of their enrollment process allowing certain partner organizations to contact parents directly for healthcare reporting. In some ways, this is similar to the partnership between schools and PTAs. A qualified partnering organization would sign an agreement with the school or district that private information could only be used for legitimate reasons and never sold, traded or given away. Confidential information could be treated as such under established guidelines and data could also be destroyed after a certain period of time.

OLSHF recognizes the difficulty of resolving this problem. However, when contracting with ODE on this project, most school districts treated OLSHF as a partner and after some initial hesitation, shared data with OLSHF. In this instance, the contract between OLSHF and ODE gave the school districts an assurance that it was appropriate to share data. Perhaps ODE could create permanent nonprofit partners for this purpose going forward. OLSHF would be interested in contracting with ODE and school districts even when it is providing screening services free of charge to help overcome the problem of follow up.

Currently, OLSHF uses a triplicate results form with one copy going to parents, one to the school and one to our office so we can compile anonymous data on screening, such as what percentage of children are referred for follow up. Often times OLSHF is provided a blank form with screening results but no other student information. Some schools do this by attaching a label to the parent and school copy but not the OLSHF copy. An alternative option would be to share a unique student identifier such as a student ID that a partner organization cannot connect to a student’s identity without the school’s assistance. Then at least each record or form would be able to be traced back to a student by the school or school district should follow be requested by the partner.

9. Many studies have shown that children who have difficulty seeing have difficulty learning. OLSHF recommends the state of Oregon and school districts allocate funds to pay for a statewide vision screening program. Nonprofit organizations such as OLSHF can fund raise for private funds but this is an inconsistent model for funding such an

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important healthcare and education program. OLSHF recommends the state offer to match dollars that nonprofits raise for vision screening in public schools dollar for dollar. This would provide an effective incentive for private funders creating a public-private-nonprofit collaboration to make sure Oregon school children receive critical vision screenings in kindergarten, first, third and fifth grades. An annual matching fund of approximately \$400,000 per year would be a major step toward making sure school children are screened.

10. The state of Oregon should focus resources on vision screening at Title 1 schools perhaps based on percentage of students receiving free and reduced school lunch. Students at traditionally underserved schools statistically have far greater numbers of children who do not have health and vision insurance.
11. Screening organizations such as OLSHF, various ESDs, Children’s Vision Foundation, OHSU Casey Eye Institute and Pacific University should meet to discuss screening methodology and consider using a common reporting form available in multiple languages. At minimum, the form should include language translation of key parts such as the designation of Pass or Refer.
12. There are several options for screening students but all of the options recommended in this report require staffing, administration and coordination. The importance of experienced staff as part of a successful screening program cannot be overlooked. This requires professionals dedicated to working with schools and students to provide high quality screening events. In the past, most schools had a school nurse who was in charge of screening school children’s vision and hearing, but in the past 30 years, the number of school nurses has been drastically reduced. Schools often share a nurse (if they have one at all) who is only at the school for a very limited amount of time. This means that the school nurse often does not have the time to coordinate the entire screening process. In some areas, Educational Service Districts (ESDs) have taken on this role. The schools themselves usually do not have adequate personnel with appropriate training to provide screening on their own. The coordinating organization or agency needs to manage location, training, equipment, scheduling, volunteers, data collection and reporting, and more.

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### **Options for School Based Vision Screening**

There are several options in a menu of how schools can screen student's vision. Whatever options are selected by the state, must be both affordable and scalable. Here are several examples estimated from least to most expensive:

1. For approximately, \$250 each, school districts can purchase a vision screening kit from Prevent Blindness America (PBA). See the online store at [www.preventblindness.org](http://www.preventblindness.org). The kit would include distance visual acuity charts (\$15-50), a Random Dot E Stereopsis kit for stereo vision testing (\$110), a device for covering one eye at a time, measuring tapes to measure proper distance to the charts, and a vinyl bag to carry the equipment in. OHSU's Casey Eye Institute provides a \$500 kit for Head Start programs around the state that also includes a light box along with the equipment listed above.

It should be noted that any kit should include charts for both younger, pre-alphabet children and older children. (OLSHF recommends using a LEA Symbols chart and an HOTV chart.) One major limitation to this approach is that the PBA kit does not include an electric light box to display the charts and to ensure equal and adequate light is provided for the screening (a light box is approximately \$270 with a stand and it is heavier and more fragile). Another limitation is that this kit only provides equipment and does not resolve the issue of who will coordinate the actual screening process. School nurses, ESDs and PTAs can work together with this equipment but in all likelihood someone will have to be paid to coordinate the screening and recruit volunteers or it may not get done.

2. An attractive option is for the state of Oregon and ODE to partner with nonprofit organizations to provide vision screening. Nonprofits have the advantage of being able to attract grant funding to help pay for vision screening and they attract volunteers that help keep costs low. As stated above this would be most effective in a public-private-nonprofit partnership. OLSHF is currently able to screen school children for approximately \$10 per child or \$1,000 per day using this model. One option would combine an effective nonprofit organization with adequate infrastructure and equipment and school personnel such as school nurses to help schedule school space and dates, and PTA volunteers where possible.
  - a. The value of volunteer labor or soft costs cannot be overlooked in the nonprofit model. In a recent application to the Ford Family Foundation, OLSHF was asked to provide a realistic estimate of the value of the volunteer labor provided each year to this program. Using the Independent Sector's model for valuing in-kind or volunteer labor, OLSHF estimated the value of volunteer labor at \$198,396 per year for a program that serves approximately 30,000 people annually. If OLSHF had to pay for this volunteer labor, the average cost to screen one child would increase from approximately \$10 per child to over \$16.60 per child. While lay screening with volunteers has limitations and challenges regarding training and consistency, it can be reliable and very cost effective.

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3. ODE and the Oregon Legislature could review how ESDs are providing vision screenings in certain school districts. ODE could compare the costs and methods to screen using an ESD versus a nonprofit volunteer model. The Multnomah ESD successfully uses volunteers and paid professionals, as well as retired school nurses. However, Multnomah ESD should be strongly encouraged to add a stereo vision test in its current screening method. Without this element of screening, children with amblyopia will not be detected. If not treated at an early age, these children are at risk for losing vision in the affected eye. Multnomah ESD also does not use light boxes at screenings.
4. Another option is for ODE and school districts to contract with private for-profit professionals to provide vision screening for schools. This option is likely to be cost prohibitive, however, because a profit margin would need to be built in, and a for-profit company could not attract grant and charitable donations to help offset the costs of screening. In addition, a for-profit company would be unlikely to offset its costs with volunteer labor that nonprofit organizations often use to keep costs low.
5. School Districts could also purchase high tech equipment such as the PediaVision photo screener at approximately \$10,000 each but the equipment requires training and maintenance. A large school district would also have to purchase more than one device to cover a larger number of schools that would need to share these devices. Scheduling and training would have to be coordinated centrally. As prices drop and these devices become smaller and easier to use, this may become a good option, but this method is not recommended at this time.

OLSHF has initiated an Oregon School District Vision Screening Survey to determine the prevalence of vision screening in Oregon schools. The survey will help determine where gaps exist. With 25% (50 of 200 Districts) reporting so far, we have the following preliminary results to report. It should be noted that the self-reporting districts that filled out the online survey in its first week may be more likely to be providing vision screening than those school districts that have not responded. OLSHF will follow up with calls to each District and report the results of this survey to ODE by May 1, 2011. One week into the survey, OLSHF has found thus far:

- 62% of school districts report they are screening student's vision
- 9% do not screen and 29% screen at some but not all schools in their district
- 67% screen hearing (a slightly higher number than vision)
- Grade one students are screened the most at 79% with kindergarten students second highest at 70%. Each year after that the percentage decreases.
- Most school districts that screen vision report that they do so annually
- When asked who performs the screening, 42% said the school nurse, 29% said ESD, and 29% said a nonprofit partner
- When asked if the school district utilizes volunteers, 64% said yes with 35% utilizing PTA volunteers and 29% utilizing Lions Club members.

February 15, 2011

We conclude with a story about one particular child that was helped by this project in a very significant way. OLSHF worked with OHSU's Casey Eye Institute to provide free comprehensive dilated eye exams to 101 students in Lincoln County. On the final day of exams, one student, Aiden, insisted multiple times that he needed to have an exam. His mother had not returned the consent form and the school worked with staff to try to obtain consent to perform an exam. Aiden had been referred through the OLSHF screening process and he knew there was something wrong with his vision but he didn't know what. Upon performing the dilated eye exam, Aiden was found to have severe glaucoma, a rare condition in someone so young. Aiden and his mother have been provided follow up support and resource information to ensure that Aiden's condition receives treatment and his remaining vision is preserved.

OLSHF is pleased to provide this Final Report to ODE. Representative Tina Kotek, who sponsored HB 3626 that led to the Vision Screening Pilot Project, has expressed interest in an information session for ODE and state legislators where OLSHF presents a summary of these findings and answers questions. OLSHF would be pleased to schedule an information session at ODE and the legislature's convenience.



**STUDENT HEALTH SCREENINGS: CONFIDENTIAL VISION RESULTS FORM**

<p>This year, the Oregon Department of Education (ODE) has contracted with the Oregon Lions Sight &amp; Hearing Foundation (OLSHF) to administer a "Vision Screening Pilot Project" in this school and district. Each child in grades 1 through 8 will receive vision screenings to identify potential eye or vision problems. Vision problems affect one in four school children. Without early detection, vision problems can lead to permanent vision loss and/or learning difficulties. Vision screenings such as these provide an effective way to identify children who may need a comprehensive exam with an optometrist or other eye care professional.</p>	<p><b>INITIAL HERE:</b></p> <hr/> <p><b>Is the student wearing eyeglasses?</b></p> <p><b>YES      NO</b></p>
<p><b>The "ABCs":</b> While greeting the student, observe them for signs of vision or eye problems. If the child appears, behaves, or complains of a vision or eye problem, REFER the student for further care. <u>Appearance</u> signs include: crossed eyes, watering or red eyes, drooping eyelid, sties or infection, possible injury. <u>Behaviors</u> can include a rigid body, thrusting head forward or backward, tilting head, squinting or frowning, or excessive blinking. <u>Complaints</u> can include headaches, blurred or double vision, burning or scratchy eyes, unusual sensitivity to light.</p>	<p><b>Appearance/Behavior/Complaints:</b></p> <p><b>PASS      REFER</b> <b>Pasó      No Pasó</b></p>
<p><b>Distance Visual Acuity:</b> Checks the student's distance vision using a 10 foot equivalent LEA symbol chart or an HOTV letter chart. Explain the screening to the child. Have the child cover their right eye using the paper cup. <b>WATCH FOR PEAKING THROUGHOUT THE SCREENING!</b> Ask them to read the right critical line, when complete, cover the left eye and ask them to read the left critical line. To PASS, the child must identify one more than half the symbols or letters in the critical line. Document the students results. The criteria for referral for <u>children 6 years or older</u>: if vision in either eye is worse than <b>20/30</b>, the student should be referred for a comprehensive exam with an optometrist or other eye care professional.</p>	<p><b>Distance Visual Acuity:</b></p> <p><b>Right Eye: 20/_____</b> <b>Left Eye: 20/_____</b></p> <p><b>PASS      REFER</b> <b>Pasó      No Pasó</b></p>
<p><b>Stereopsis Vision:</b> This screening identifies eye conditions such as amblyopia, a condition characterized by poor or indistinct vision in one or both eyes. Place the polarized glasses on the child. After mixing up the cards out of the child's view, hold the cards 20 inches from the student's eyes. Ask the student to identify the card with the "E" symbol. Repeat. The student must identify the card with the "E" symbol 4 out of 6 times to PASS the screening. If they cannot, the student should be referred for a comprehensive exam with an optometrist or other eye care professional.</p>	<p><b>Stereo Vision:</b> <i>Circle the number of times the student correctly identified the "E":</i></p> <p><b>0   1   2   3   4</b></p> <p><b>PASS      REFER</b> <b>Pasó      No Pasó</b></p>
<p><b>PediaVision "Auto-Refractor" Screening:</b> As part of the "Vision Screening Pilot Project", the OLSHF will be checking a limited number of students vision using a machine known as the PediaVision Screener. This objective, non-invasive computerized system is a sophisticated vision screener. The student will be seated approximately 3 feet away from the machine. The machine will be pointed at the student, will take a moment to adjust and focus, and will take a digital image the child's eyes. The computer software processes the image in a matter of seconds. Using the measurements from the image, the machine can indicate the presence of a variety of eye and vision problems. This screening is intended to check the results of the manual screening process.</p>	<p><b>PediaVision:</b> <i>If no results indicated, the child did not receive this screening.</i></p> <p><b>PASS      REFER</b> <b>Pasó      No Pasó</b></p> <p>A detailed results form of the PediaVision screening may be available separately. Contact the OLSHF directly for more information.</p>
<p><b>PLEASE NOTE:</b> Thank you for this opportunity to serve your students, school and community. If <b>any</b> of the vision screenings provided to the child today indicates REFER, the OLSHF recommends the student receive a comprehensive exam provided by an optometrist or other eye care professional. Financial assistance may be available. <b>For information or assistance referrals, please contact the Oregon Lions Sight &amp; Hearing Foundation at <a href="mailto:info@orlions.org">info@orlions.org</a> or call 1-800-635-4667.</b></p>	



— OREGON LIONS —  
Sight & Hearing Foundation

Name: \_\_\_\_\_  
Teacher: \_\_\_\_\_ VSPPID: \_\_\_\_\_  
DOB: \_\_\_\_\_ Gender: \_\_\_\_\_  
School: \_\_\_\_\_ Grade: \_\_\_\_\_

**STUDENT HEALTH SCREENINGS: CONFIDENTIAL VISION RESULTS FORM**

**Attention Parent or Guardian:**

This year, the Oregon Department of Education (ODE) has contracted with the Oregon Lions Sight & Hearing Foundation (OLSHF) to administer a “Vision Screening Pilot Project” in this school and district. Vision problems affect one in four school children. Without early detection, vision problems can lead to permanent vision loss and/or learning difficulties. Vision screenings such as these provide an effective way to identify children who may need a comprehensive exam with an optometrist or other eye care professional.

The screenings are performed by community volunteers and are intended to discover obvious eye or vision problems. Because this is a screening and not an exam, even if all of the screening tests were passed, this does not guarantee your child is free from eye or vision problems. A yearly comprehensive eye exam is recommended for every child.

Each year, the Lions Clubs of Oregon and the OLSHF work with Oregon based schools to provide sight and/or hearing screenings to over 25,000 students. The results of this years efforts will be reported to the ODE and eventually the Oregon State Legislature. Any identifying information received regarding your student will be kept confidential throughout the duration of the project and will be securely destroyed upon the project’s completion.

Understanding the results:

**Appearance/Behavior/Complaints:** If the child appeared, behaved, or complained of a vision or eye problem, the student was referred for further care. Appearance signs include: crossed eyes, watering or red eyes, drooping eyelid, sties or infection, possible injury. Behaviors can include a rigid body, thrusting head forward or backward, tilting head, squinting or frowning, or excessive blinking. Complaints can include headaches, blurred or double vision, burning or scratchy eyes, unusual sensitivity to light.

**Distance Visual Acuity:** the student’s distance visual acuity was checked using a lighted box with a vision chart for a 10 foot equivalent lane. The student was asked to name the symbols or read the letters on the chart. If the vision in either eye screened was worse than 20/30 it is recommended that your child be referred for a comprehensive exam with an Optometrist or other eye care professional.

**Stereopsis Vision:** this screening checks if the student is using both eyes together effectively using “3D” cards. Primarily it is focused on identifying eye conditions such as amblyopia, a condition characterized by poor or indistinct vision in one or both eyes. If undetected and left untreated, amblyopia can lead to permanent vision loss.

**PediaVision “Auto-Refractor” Vision Screening:** As part of the “Vision Screening Pilot Project”, the OLSHF will be checking a limited number of students vision using a machine known as the PediaVision Screener. This objective, non-invasive computerized system may have been used to take a digital image your child’s eyes. The computer software processed the measurements from the image to indicate the presence of a variety of eye and vision problems. This screening was intended to check the results of the manual screening process.

- **If any of the results boxes on the right side of this page indicate REFER, that means that your child appears to need a comprehensive exam with an Optometrist or other eye care professional.**
- **If any of the results boxes along the right side of this page indicate PASS, that means that your child’s results were considered within the normal range.**
- **If any of the results boxes along the right side of this page ARE NOT MARKED, that means that your child did not receive that particular screening.**
- ***Si alguno de los cuadros de resultados a lo largo de la parte derecha de esta página indican que su hijo/a PASÓ el examen, significa que los resultados se consideran dentro del rango normal.***
- ***Si alguno de los cuadros de resultados a lo largo de la parte derecha de esta página NO ESTÁN MARCADOS, significa que su hijo/a no recibió ese examen.***
- ***Si alguno de los cuadros de resultados en el lado derecho de esta página indican DERIVE, significa que su hijo/a necesita un examen completo con un Optometrista u otro especialista del cuidado de los ojos .***

**If you need financial assistance with a vision exam and your child is participates in the free or reduced lunch program, please contact us at 1-800-635-4667, or email us at [info@orlions.org](mailto:info@orlions.org). For more information about your local Lions Clubs please call 1-866-623-9053.**

<b>INITIAL HERE:</b>	
<b><u>Is the student wearing eyeglasses?</u></b>	
<b>YES</b>	<b>NO</b>
<b><u>Appearance/Behavior/Complaints:</u></b>	
<b>PASS</b>	<b>REFER</b>
<b>Pasó</b>	<b>No Pasó</b>
<b><u>Distance Visual Acuity:</u></b>	
<b>Right Eye: 20/_____</b>	
<b>Left Eye: 20/_____</b>	
<b>PASS</b>	<b>REFER</b>
<b>Pasó</b>	<b>No Pasó</b>
<b><u>Stereo Vision:</u></b>	
<i>Circle the number of times the student correctly identified the “E”:</i>	
<b>0</b>	<b>1</b>
<b>2</b>	<b>3</b>
<b>4</b>	
<b>PASS</b>	<b>REFER</b>
<b>Pasó</b>	<b>No Pasó</b>
<b><u>PediaVision:</u></b>	
<i>If no results indicated, the child did not receive this screening.</i>	
<b>PASS</b>	<b>REFER</b>
<b>Pasó</b>	<b>No Pasó</b>
<small>A detailed results form of the PediaVision screening may be available separately. Contact the OLSHF directly for more information.</small>	



OREGON LIONS  
Sight & Hearing Foundation

Name: \_\_\_\_\_  
 Teacher: \_\_\_\_\_ VSPPID: \_\_\_\_\_  
 DOB: \_\_\_\_\_ Gender: \_\_\_\_\_  
 School: \_\_\_\_\_ Grade: \_\_\_\_\_

**STUDENT HEALTH SCREENINGS: CONFIDENTIAL VISION RESULTS FORM**

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OREGON LIONS  
Sight & Hearing Foundation

Name: \_\_\_\_\_  
 Teacher: \_\_\_\_\_ VSPPID: \_\_\_\_\_  
 DOB: \_\_\_\_\_ Gender: \_\_\_\_\_  
 School: \_\_\_\_\_ Grade: \_\_\_\_\_

OREGON LIONS SIGHT &amp; HEARING FOUNDATION AND OHSU'S CASEY EYE INSTITUTE

## Dilated Eye Exam Permission Form

<b>Child's Name:</b>	<b>Date of Birth:</b>	<b>School and Classroom:</b>
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Dear Parent/Guardian,

The Oregon Lions Sight & Hearing Foundation (OLSHF) and Casey Eye Institute are offering comprehensive dilated eye exams at no cost to a select group of students as part of the Oregon Department of Education Vision Screening Pilot Project.

The eye exam includes the use of eye drops to dilate the pupils. These drops make the pupils larger. The drops will make vision blurry and eyes sensitive to light. This is normal and will usually go away by the next day. These are tests that an eye doctor would normally do as part of an exam if your child went to an eye doctor.

The OLSHF is conducting a research study on the results of these eye exams.

If you agree to participate in this free eye exam, the results will be entered into a computer database. These results will help determine if vision screenings are effective or if they need to be changed.

The OLSHF and Casey Eye Institute will maintain the confidentiality of your child's information in accordance with all applicable state and federal laws and regulations. Any information that could identify your child and family will not be used without your permission and will be securely destroyed upon completion of the project.

ALL INFORMATION WILL BE KEPT CONFIDENTIAL.

**Please check YES and sign below if you would like your child to be considered eligible for this free dilated eye exam.**

- YES, I give my consent** for my child to participate in this program.  
(In order to participate, you must complete the medical history form on the reverse)
- NO, I do not give my consent** for my child to participate in this program.

---

Signature of parent or legal guardian

Date

**Questions? Please contact Brenda Anderson or Mara Steen at 1-800-635-4667 or [info@orlions.org](mailto:info@orlions.org).**

**This is a validation eye examination and does not establish an ongoing physician patient relationship.**

OREGON LIONS SIGHT & HEARING FOUNDATION AND OHSU'S CASEY EYE INSTITUTE

EYE EXAM: YOUR CHILD'S MEDICAL HISTORY

Child's Name: \_\_\_\_\_ Child's Date of Birth: \_\_\_\_\_

Has your child seen an eye doctor in the past year?  YES  NO Eye Dr. Name \_\_\_\_\_

Has your child ever worn glasses?  YES  NO For how long? \_\_\_\_\_

Has your child ever complained of pain?  YES  NO Where? \_\_\_\_\_ Date of onset \_\_\_\_\_

List any allergies to medications \_\_\_\_\_

List all current medications, including vitamins and supplements \_\_\_\_\_

List any surgeries \_\_\_\_\_

Was your child premature?  YES  NO Birth weight \_\_\_\_\_ Complications?  YES  NO

DOES YOUR **CHILD** HAVE ANY PROBLEMS IN THE FOLLOWING AREAS? Please check all that apply

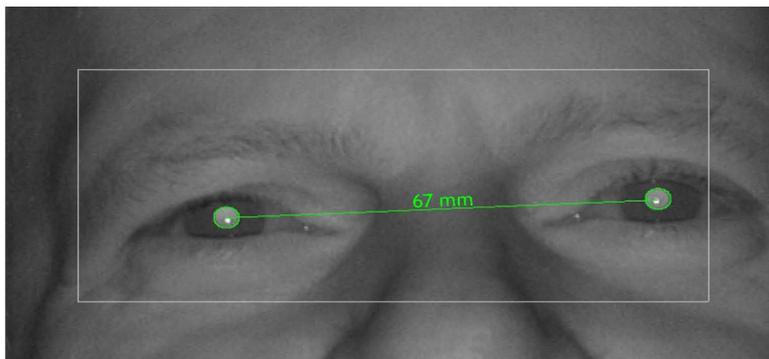
	YES	NO
Fever, unexplained weight loss or gain, tires easily		
Ear, nose, throat (hearing, sinus, ear tubes, nose bleeds, etc)		
Respiratory (asthma, pneumonia)		
Gastrointestinal (reflux, diarrhea, pain)		
Genital, kidney, bladder (urinary infections, pain)		
Skin (rashes, acne, warts, unusual birth marks)		
Muscles, bones, joints (arthritis, pain, swelling, lump)		
Neurological (seizures, weakness, delayed development, brain shunt, cerebral palsy)		
Behavioral (hyperactivity, depression, attention deficit, unusual anxiety)		
Endocrine (diabetes, thyroid, growth hormone)		
Blood (anemia, high cholesterol, poor clotting)		
Allergy/Immunological (hay fever, eczema, hives, autoimmune)		
Other?		

IS THERE **FAMILY HISTORY** OF ANY OF THE FOLLOWING PROBLEMS? Please check all that apply

	YES	NO
Crossed, wandering, or lazy eyes?		
Blindness?		
Need for glasses other than reading glasses?		
Glaucoma?		
Migraines?		
Family/Hereditary disease?		
Other?		

## Vision Screening Result

Surname:  
 First name:  
 Date of birth:  
 Date of measurement: 10/20/2010



Right eye

Left eye

	<b>Spherical equivalent</b> [dpt] +1.50      +0.50	
	<b>Refraction</b> [dpt] +2.25 -1.25 96°    +1.00 -0.75 113°	
	<b>Corneal reflexes</b> [°] Symmetric (0)      1.9      (20) Asymmetric	
	<b>Pupil size</b> [mm] 3.7                      3.5	

Referral criteria

Refer

Anisometropia	Spherical equivalent $\geq 1.00$ dpt	Yes
Astigmatism	Cylinder $\geq 1.50$ dpt	No
Hyperopia	Spherical equivalent $\geq 1.50$ dpt	Yes
Myopia	Spherical equivalent $\geq 0.75$ dpt	No
Corneal reflexes	Asymmetry $\geq 10.0^\circ$	No
Anisocoria	Pupil size $\geq 1.0$ mm	No

This measurement is part of an eye exam. Vision Screening does not replace a complete eye examination by an ophthalmologist or optometrist. Vision Screening must be conducted regularly as eyes may change over time.

Screening performed at:  
 Oregon Lions Sight & Hearing Foundation  
 1010 NW 22nd Ave., #144  
 Portland, OR 97210  
 (503) 413-7399