



## Summary Vision Screening Data: Albania

### Produced as part of Work Package 3

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## 1 Glossary of Terms: Vision Screening

<b>Abnormal test result</b>	A test result where a normal “pass” response could not be detected under good conditions. The result on screening equipment may indicate “no response,” “fail,” or “refer.”
<b>Attendance rate</b>	<p>The proportion of all those invited for screening that are tested and receive a result:</p> <ul style="list-style-type: none"> <li>• Invited for screening includes all those that are offered the screening test.</li> <li>• Tested and receive a result could be a “pass” or “referral to diagnostic assessment”.</li> </ul> <p>Attendance rate provides information on the willingness of families to participate in screening.</p>
<b>Compliance with referral (percentage)</b>	<p>The percentage of those who are referred from screening to a diagnostic assessment that actually attend the diagnostic assessment.</p> <p>Percentage of compliance provides information on the willingness of families to attend the diagnostic assessment after referral from screening.</p>
<b>Coverage</b>	<p>The proportion of those eligible for screening that are tested and receive a result:</p> <ul style="list-style-type: none"> <li>• Eligible for screening includes those within the population that are covered under the screening or health care programme.</li> <li>• Tested and receive a result could be a “pass” or “refer to diagnostic assessment”.</li> </ul> <p>Factors such as being offered screening, willingness to participate, missed screening, ability to complete the screen, and ability to document the screening results will influence the coverage.</p>
<b>False negatives</b>	<p>The percentage of children with a visual deficit (defined by the target condition) that receive a result of “pass” during screening.</p> <p>Example: If 100 children with visual deficit are screened, and 1 child passes the screening, the percentage of false negatives is 1%.</p>
<b>False positives</b>	The percentage of children with normal vision that are referred from screening to a diagnostic assessment.
<b>Guidelines</b>	Recommendations or instructions provided by an authoritative body on the practice of screening in the country or region.



<b>Vision screening professional</b>	A person qualified to perform vision screening, according to the practice in the country or region.
<b>Inconclusive test result</b>	A test result where a normal “pass” response could not be detected due to poor test conditions or poor cooperation of the child.
<b>Invited for screening</b>	Infants/children and their families who are offered screening.
<b>Outcome of vision screening</b>	An indication of the effectiveness or performance of screening, such as a measurement of coverage rate, referral rate, number of children detected, etc.
<b>Untreated amblyopia</b>	Those children who have not received treatment for amblyopia due to missed screening or missed follow-up appointment.
<b>Persistent amblyopia</b>	Amblyopia that is missed by screening, or present after the child has received treatment.
<b>Positive predictive value</b>	<p>The percentage of children referred from screening who have a confirmed vision loss.</p> <p>For example, if 100 babies are referred from screening for diagnostic assessment and 10 have normal vision and 90 have a confirmed visual defect, the positive predictive value would be 90%.</p>
<b>Prevalence</b>	The percentage or number of individuals with a specific disease or condition. Prevalence can either be expressed as a percentage or as a number out of 1000 individuals within the same demographic.
<b>Programme</b>	An organised system for screening, which could be based nationally, regionally or locally.
<b>Protocol</b>	Documented procedure or sequence for screening, which could include which tests are performed, when tests are performed, procedures for passing and referring, and so forth.
<b>Quality assurance</b>	A method for checking and ensuring that screening is functioning adequately and meeting set goals and benchmarks.
<b>Referral criteria</b>	A pre-determined cut-off boundary for when a child should be re-tested or seen for a diagnostic assessment.
<b>Risk babies / Babies at-risk</b>	<p>All infants that are considered to be at-risk or have risk-factors for vision defects/ophthalmic pathology according to the screening programme.</p> <p>Two common risk factors are admission to the neonatal-intensive care unit (NICU) or born prematurely. However, other risk factors for visual defects may also be indicated in the screening programme.</p>



<b>Sensitivity</b>	<p>The percentage of children with visual defects that are identified via the screening program.</p> <p>For example, if 100 babies with visual defects are tested, and 98 of these babies are referred for diagnostic assessment and 2 pass the screening, the sensitivity is 98%.</p>
<b>Specificity</b>	<p>The percentage of children with normal vision that pass the screening.</p> <p>For example, if 100 babies with normal vision are tested, and 10 of these babies are referred for diagnostic assessment and 90 pass the screening, the specificity is 90%.</p>
<b>Target condition</b>	<p>The visual defect you are aiming to detect via the screening programme.</p>
<b>Well, healthy babies</b>	<p>Infants who are <i>not</i> admitted into the NICU or born prematurely (born after a gestation period of less than 37 weeks).</p>



## **2 Abbreviations**

**AAO** – American Academy of Ophthalmology

**GDP** – Gross Domestic Product

**ICO** – International Council of Ophthalmology

**NICU** – Neonatal-intensive care unit

**PPP** – Purchasing Power Parity

**WHO** – World Health Organisation



### **3 Population and Healthcare Overview**

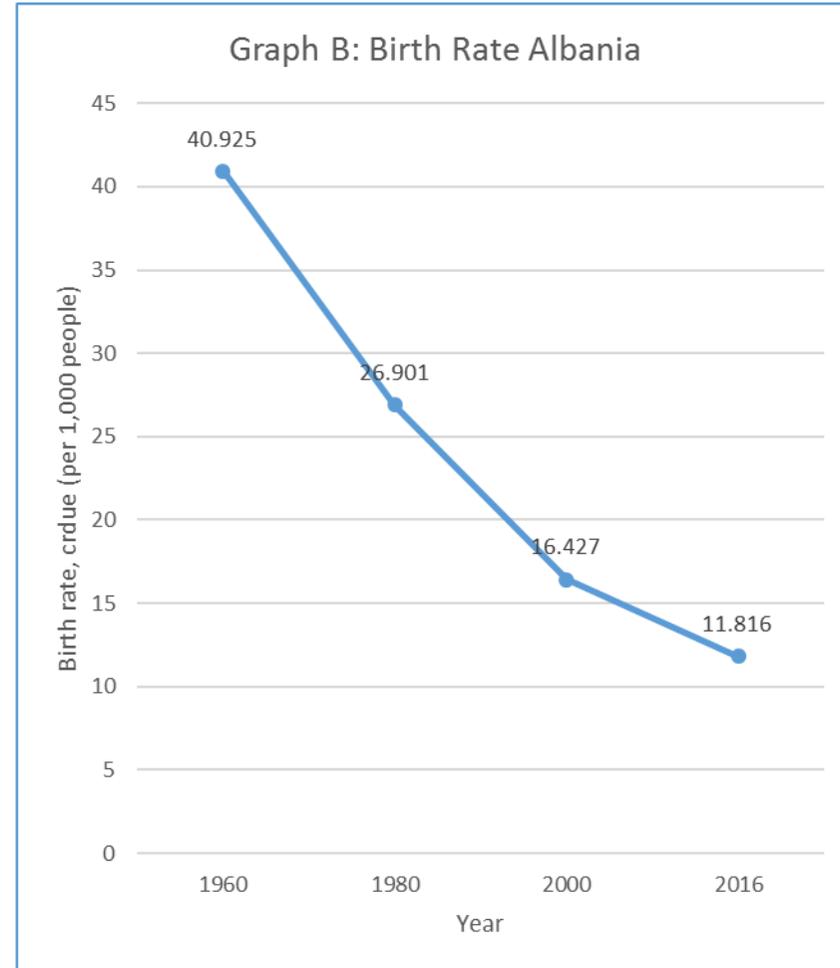
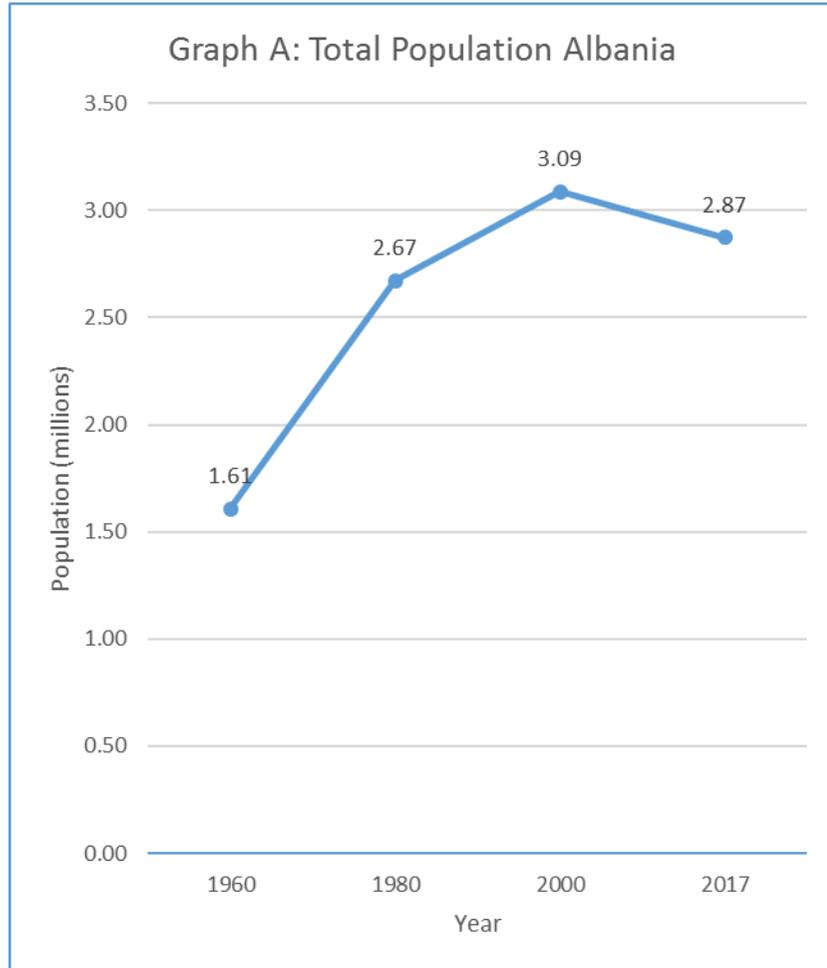
The population of Albania is estimated at 2,800,000 (World Bank, 2018a) and a birth rate estimated at 12 births/1,000 population (World Bank, 2018b). The change in population and birth rate from 1960 to 2017 is shown in Figure 1, graphs A and B respectively.

Albania had a reported population density of 105 people per square kilometre in 2017 and this has risen from 61 people per square kilometre in 1961 (World Bank, 2018c). In terms of healthcare facilities, the total density of hospitals in 2013 was 0.72 per 100,000 population (WHO, 2016a). Infant mortality in 2017 is estimated at 8 deaths/1,000 live births (World Bank 2018d).

The average life expectancy in Albania is estimated at 78 years (World Bank, 2018e), with a death rate of 7 deaths/1,000 population in 2016 (World Bank, 2018f). Albania has a gross national income per capita (PPP int. \$, 2013) of \$10,000 (WHO, 2016b). The estimated total expenditure on health per capita in 2014 was \$615 (Intl \$) and the total expenditure on health in 2014 as percentage of GDP was 5.9% (WHO, 2016b).



*Figure 1: Change in the Total Population and Birth Rate in Albania between 1960 and 2017*



Source: Information sourced from World Bank (2018)



#### **4 Vision Screening Commissioning and Guidance**

Vision screening in Albania is funded through national health insurance and is not embedded into general preventative child healthcare screening. There are no guidelines for ophthalmologists to follow however, they are guided by the American Academy of Ophthalmology (AAO) and International Council of Ophthalmology (ICO) guidelines. The content of the Albanian vision screening programme is decided upon by the Ministry of Health and was implemented nationally in 2013, with no changes since its commencement.

Vision screening is conducted by ophthalmologists, nurses, or paediatricians. No other general health care professionals have been identified that do not currently screen, but could do so with additional training. There is no specific training provided for vision screening; ophthalmologists undertake a 4-year residency where they acquire the skills and knowledge to perform such tasks.

Vision screening is conducted in hospitals or primary service. It is not known how often the vision screening programme is reviewed, who decides upon revisions, how revisions are funded, or how the revisions take place.

There are no methods imposed by the government regarding quality monitoring of the vision screening programme, but there has been some PhD research concerning the programme, the details of this research have not been shared and therefore the content is not known. There has been no cost-effectiveness analysis conducted pertaining to the vision screening programme, nor studies on the effectiveness of vision screening in Albania.



## 5 Screening programme

In Albania, retinopathy of prematurity, congenital eye defects and amblyopia are the target conditions screened for by vision screening. The health care professionals delivering vision screening, venue for screening and tests used vary depending on the age of the child as shown in Tables 1, 2 and 3 respectively. Specific details of the screening offered within each age group are described more fully in sections 5.1 to 5.4 below.

### 5.1 Vision screening - Preterm babies

Preterm babies up to the age of 3 months are screened using an eye inspection. This vision screening is conducted by an ophthalmologist in either a maternity clinic or an eye clinic.

### 5.2 Vision screening - Birth to 3 months

Well, healthy babies up to the age of 3 months are screened using an eye inspection and red reflex examination. These tests are conducted by an ophthalmologist or a nurse in either a hospital or primary service. Paediatricians or ophthalmologists perform the fundus red reflex examination to diagnose white pupil. The timing and number of eye screenings offered during this 3 month period is not clearly defined and it is not known after how many abnormal or inconclusive tests a baby is referred for further diagnostic examination.

### 5.3 Vision screening - 3 months to 36 months

Vision screening is conducted on children aged 3 months to 36 months by an ophthalmologist at an eye clinic. It is not clear what vision screening tests are performed in children aged 3 months to 36 months. It is known that a visual acuity measurement is conducted at the age of 2 years, although the method of measurement is not clear and the sequence of testing during this period or the referral criteria are not known.

### 5.4 Vision screening - 36 months to 7 years

Children aged 36 months to 7 years are screened by either an ophthalmologist or a paediatrician in a primary care clinic, using an eye inspection and an unspecified 'other' test. The timing and frequency of vision screening at any other age between 36 months and 7 years is not known and it is not known after how many abnormal or inconclusive tests a child is referred for further diagnostic examination. Visual acuity is measured at age 3 to 4 years by an ophthalmologist, using Lea Symbols, HOTV, Keeler, Snellen, Allen Cards or Numbers. Visual acuity is repeated at ages 6 to 7 years. It is not known how many abnormal or inconclusive tests necessitate a child to be referred for further diagnostic examination.



**Table 1:** Healthcare professionals who conduct vision screening in each age group

<b>Table 1</b>	<b>Paediatrician</b>	<b>Ophthalmologist</b>	<b>Nurse</b>
Preterm babies	×	✓	×
0 to 3 months	✓	✓	✓
3 to 36 months	×	✓	×
3 to 7 years	✓	✓	×



**Table 2:** Vision screening tests used in vision screening for each age group

<b>Table 2</b>	<b>Eye inspection</b>	<b>Red Reflex</b>	<b>Visual Acuity Measurement</b>	<b>Other</b>
Preterm babies	✓	×	×	×
0 to 3 months	✓	✓	×	×
3 to 36 months	×	×	✓	×
3 to 7 years	×	×	✓	✓



**Table 3:** Location of vision screening for each age group

<b>Table 3</b>	<b>Maternity</b>	<b>Eye Clinic</b>	<b>Hospital</b>	<b>Primary Care Clinic</b>
Preterm babies	✓	✓	×	×
0 to 3 months	×	×	✓	✓
3 to 36 months	×	✓	×	×
3 to 7 years	×	×	×	✓



## **6 Automated Screening**

Automated vision screening is achieved using handheld, portable devices designed to detect presence of refractive error in infants from 6 months of age. It provides objective results and is used to detect amblyopic risk factors. This differs from other methods used to screen children for amblyopia which focus on detection of the actual condition and the resulting visual loss.

Automated vision screening is used in Albania, but only in the private sector (therefore not every child who attends vision screening has automated vision screening). The content of this private sector vision screening is not clear. These devices cost approximately 5,000 Euros, however, the maintenance costs and the number of years before a device is scheduled to be replaced are not known.



## **7 Provision for Visually Impaired**

In Albania, there is one school for blind children, it is located in Tirana and accommodates around 60 pupils. There are specific lessons concerning Braille writing and this school is supported by the Albanian government. The costs per child for these schools and whether or not there is any special support for visually impaired children who attend regular primary school is not known.



## **8 Knowledge of existing screening programme**

### *8.1 Prevalence/Diagnosis*

There is no information provided pertaining to the prevalence and diagnosis of vision disorders in children aged up to 7 years.

### *8.2 Coverage*

All children commencing school at the age of 6 years are invited and must attend vision screening. There is no information provided relating to the coverage and treatment success of vision disorders in children aged up to 7 years. The coverage and subsequent attendance rates of vision screening are not known.

### *8.3 Screening Evaluation*

There is no information provided pertaining to the screening outcomes of vision disorders in children aged up to 7 years.

### *8.3 Treatment success*

Ophthalmologists prescribe glasses to children under the age of 7 years; other treatments include patching and cataract surgery. All eligible children are offered treatment. There is no information provided pertaining to treatment outcomes.



## **9 Costs of vision screening in children**

In Albania, vision screening is free of charge for parents and there is no financial reward for attending and no penalty for not attending a vision screening appointment.

### *9.1 Cost of vision screening*

There is no information provided relating to the costs of performing vision screening in children aged up to 7 years.

### *9.2 Cost of treatment for amblyopia*

There is not information provided relating to the costs of treatment for amblyopia in children aged up to 7 years.

### *9.3 Cost of Treatment for strabismus*

There is not information provided relating to the costs of treatment for strabismus in children aged up to 7 years.

### *9.4 Cost of treatment for cataract*

There is not information provided relating to the costs of treatment for cataract in children aged up to 7 years.

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