



Blindness and health seeking in the Sunderbans: a geographically complex region

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Global blindness

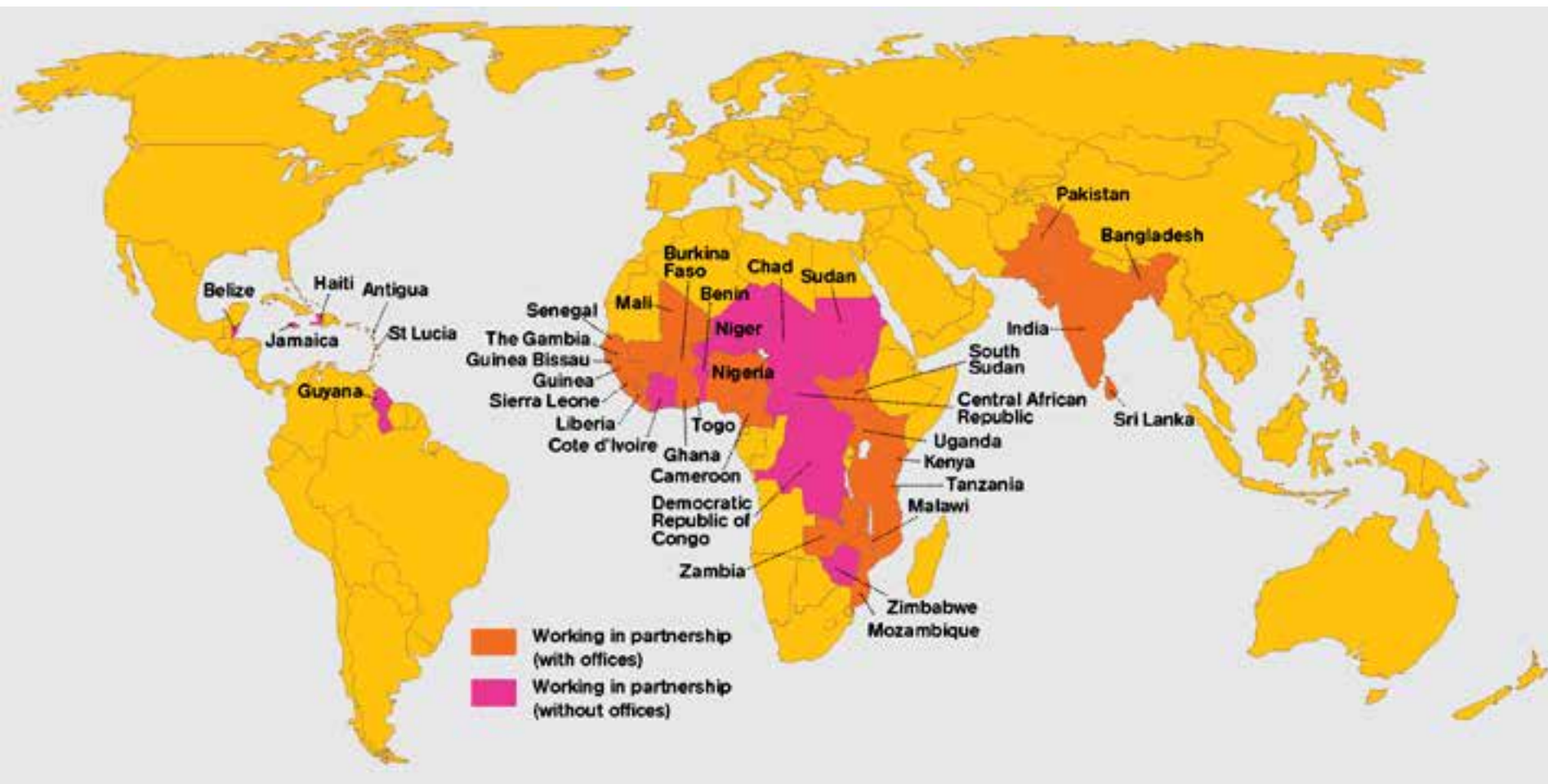
- 285 million people are visually impaired worldwide
- 39 million of these are blind
- Cataract is the leading cause of blindness globally
- 80% of blindness is avoidable
- About 90% of the world's visually impaired people live in developing countries



- NGO founded in 1950
- Vision: a world where no one is blind from avoidable causes and where visually impaired people participate equally in society
- Annual income of ~£50 million p.a. (£200 million including in-kind drug donations)
- Employs >350 staff in > 30 countries



Where Sightsavers works



Sunderbans (Indian)

- Largest mangrove forest in the world in the Ganges delta
- Cyclones, rising sea levels, tigers...
- Population in West Bengal: over 4 million
- 20-30% illiterate
- ~40% households BPL
- ~1/3 children chronically malnourished



(Ref Health care in the Sundarbans (India): Challenges and plan for a better future. 2010. Future Health Systems Research Programme)









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Objective

Five year project to reduce the prevalence of avoidable blindness funded by Standard Chartered Bank

Main activities include

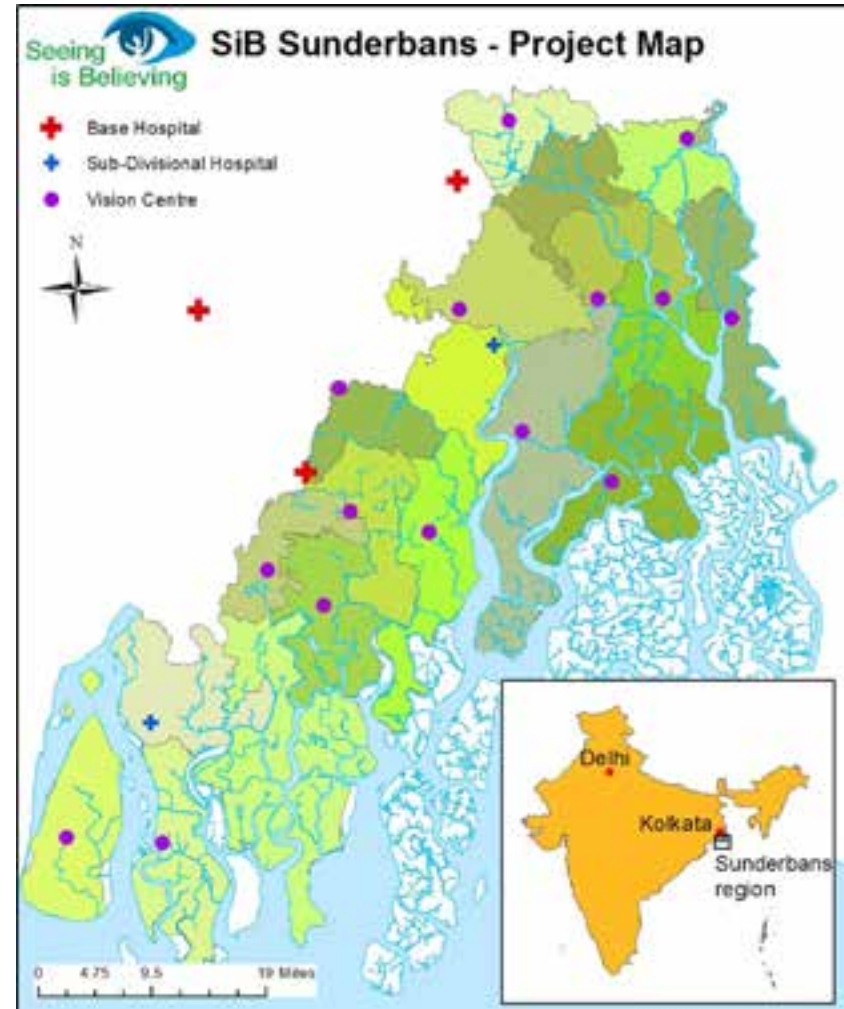
- School eye health screening and general community awareness raising
- Integrating eye health in to existing static and mobile primary centres
- Upgrading capacity of referral hospitals

Need to establish baseline prevalence of visual impairment

Need to gather other information to hone project design

Where does spatial data fit in?

- Where are the health centres?
- Where are the people with problems?
- How can they travel about?
- Where do they access information?



Methodology



Population based survey among the over 40s

2 stage cluster sampling: 46 clusters with approx. 65 people in each (>3,000 people in total)

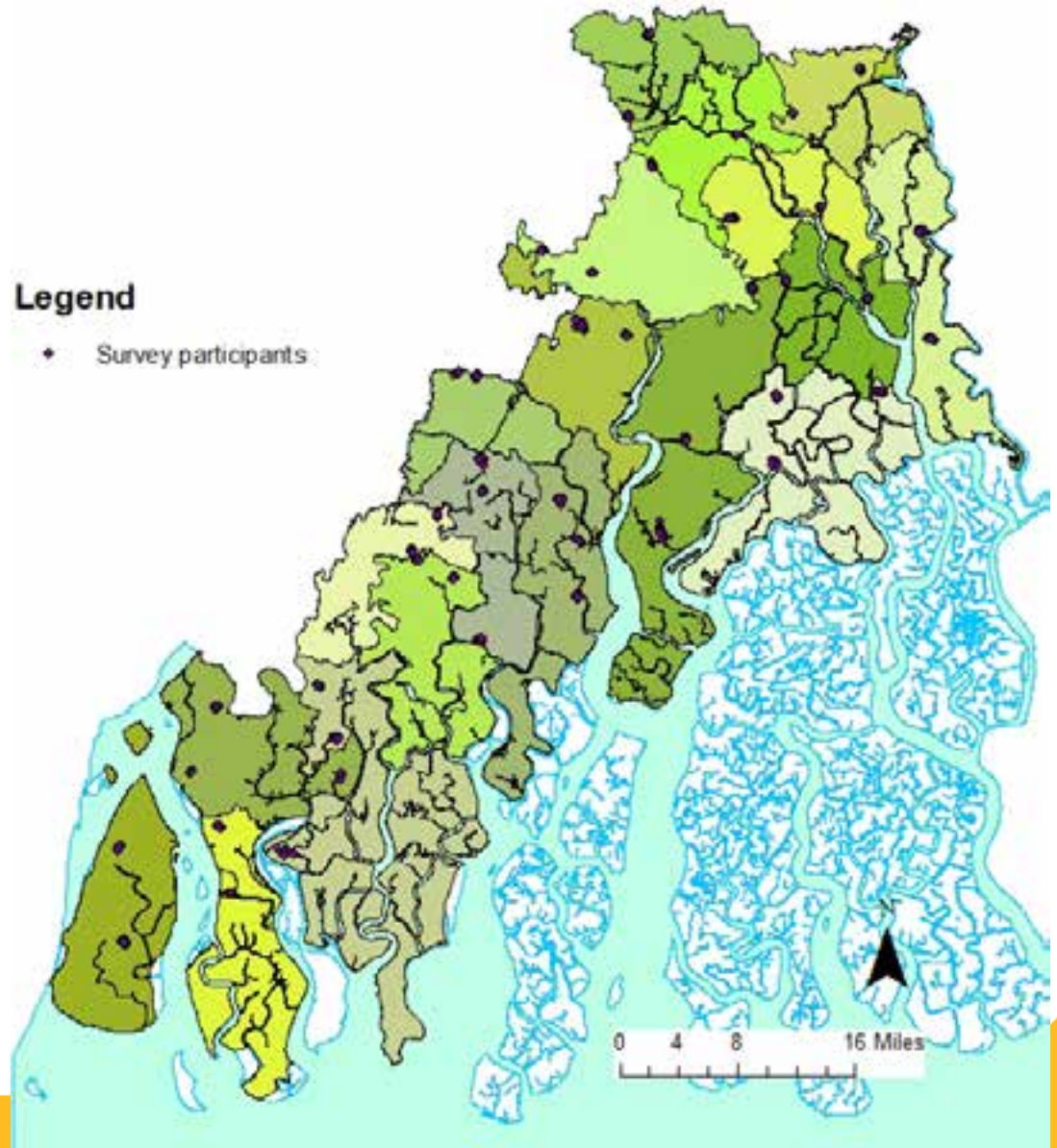
- Eye exam
- Health seeking behaviour
- Socio-economic information
- GPS coordinates

Ethical review and approval granted by Vivekananda Mission Ashram (VMA), India.

Analysis: Stata & ArcMap (Cut, kernel density mapping)

Findings

- 54.4% male (vs 52.1% in the population)
- Median age 50 (mean 53)
- 32% illiterate
- 55.2% Scheduled caste, tribe or 'other backward caste'
- 40% agricultural or day labourers workers



Prevalence of blindness

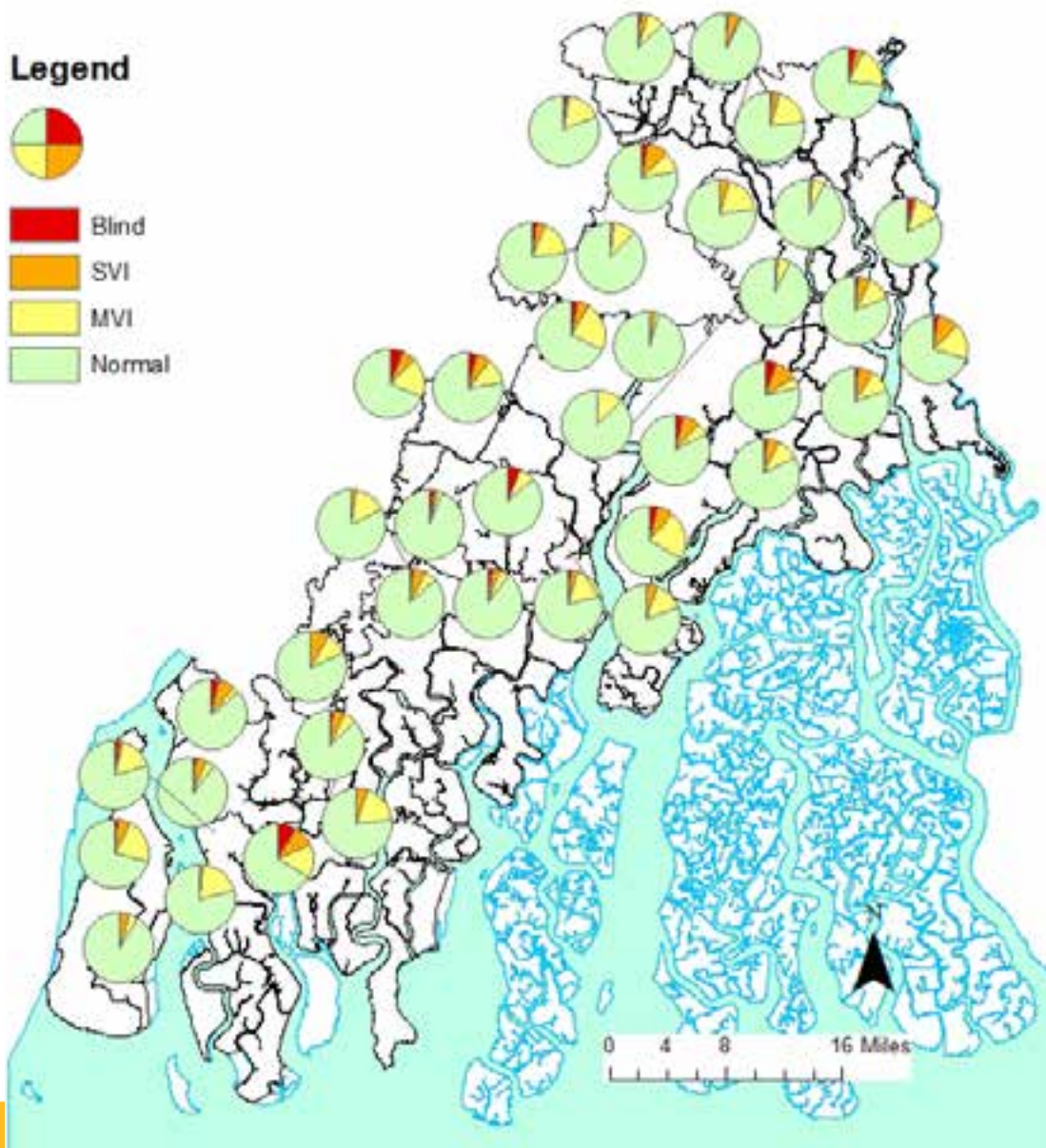
1.5% blind

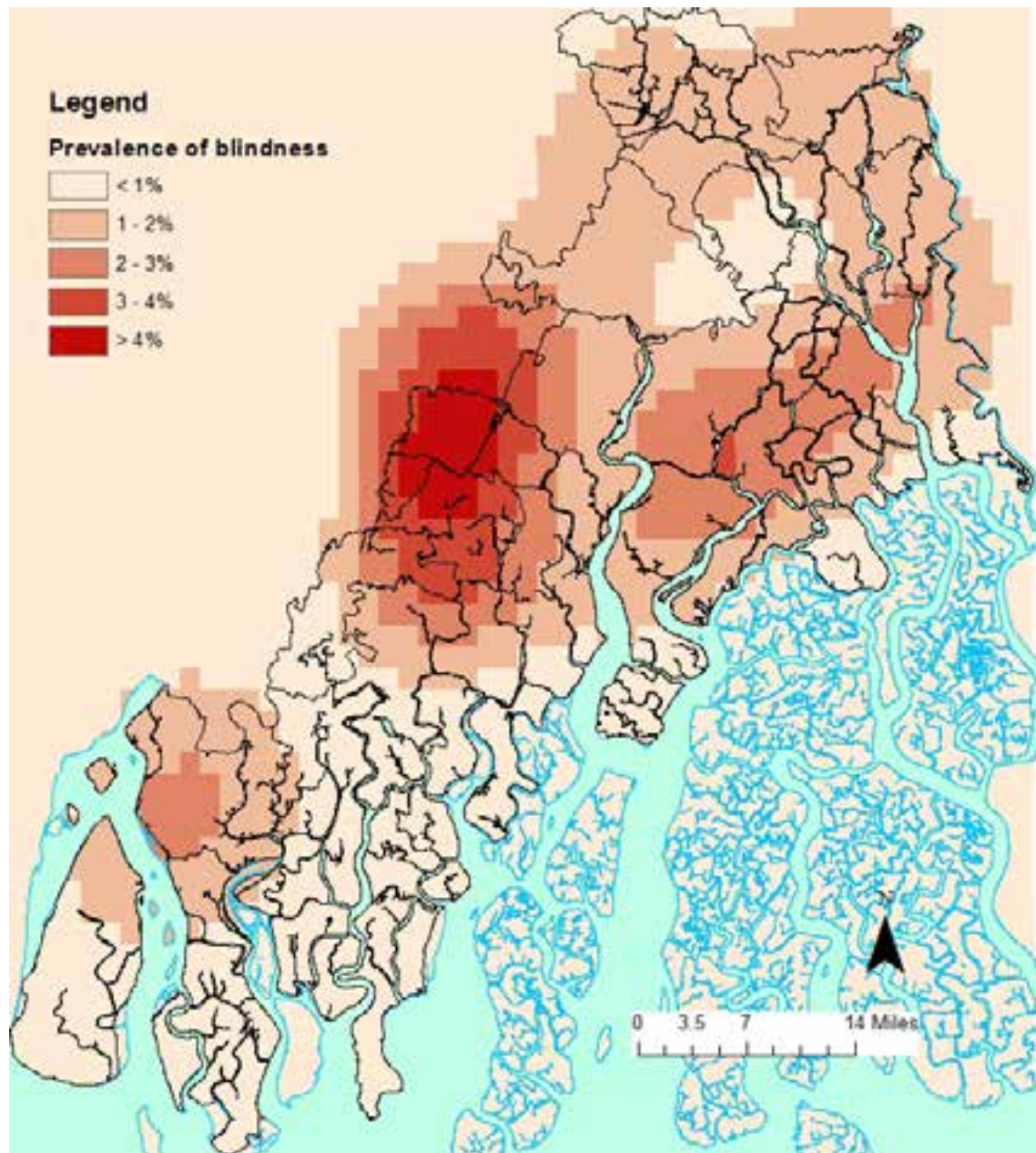
4.8% severe visual impairment

12.3% moderate visual impairment

Main cause of all three is cataract (unusual)

Refractive error is second most common cause

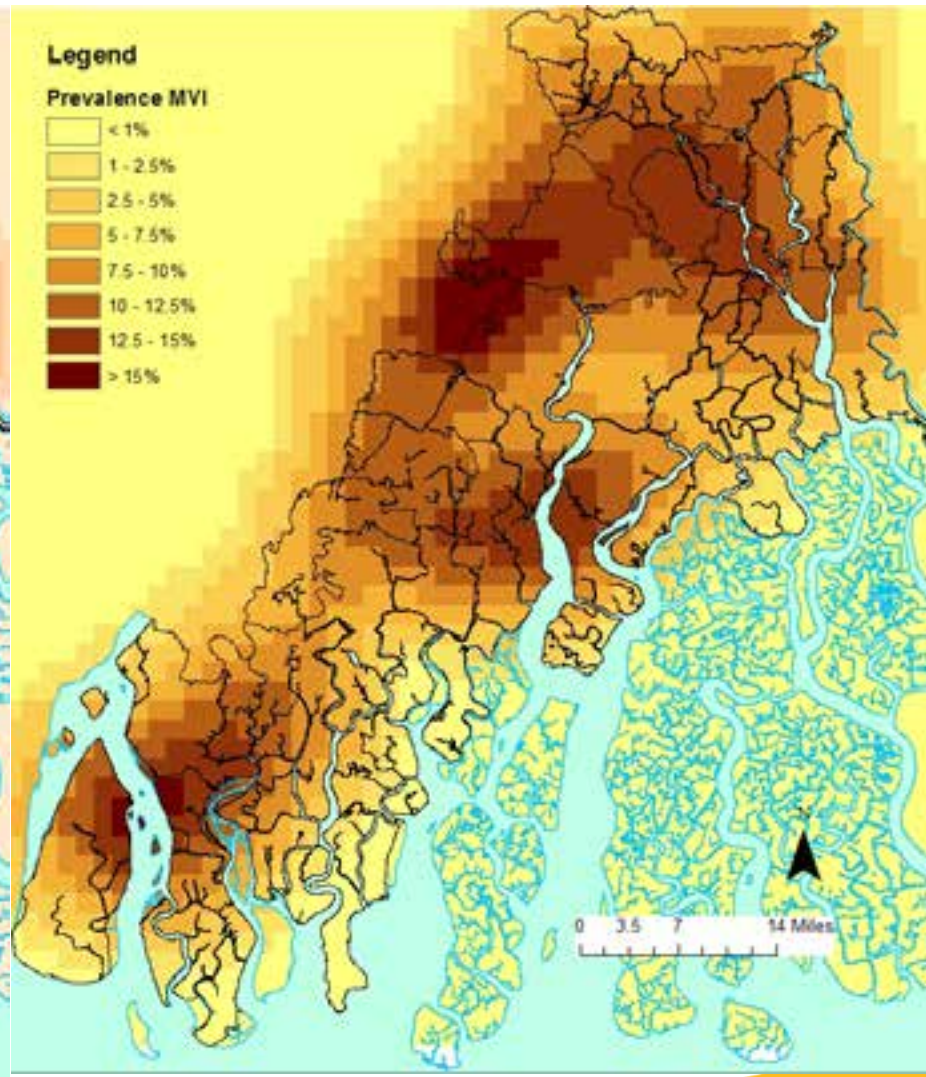
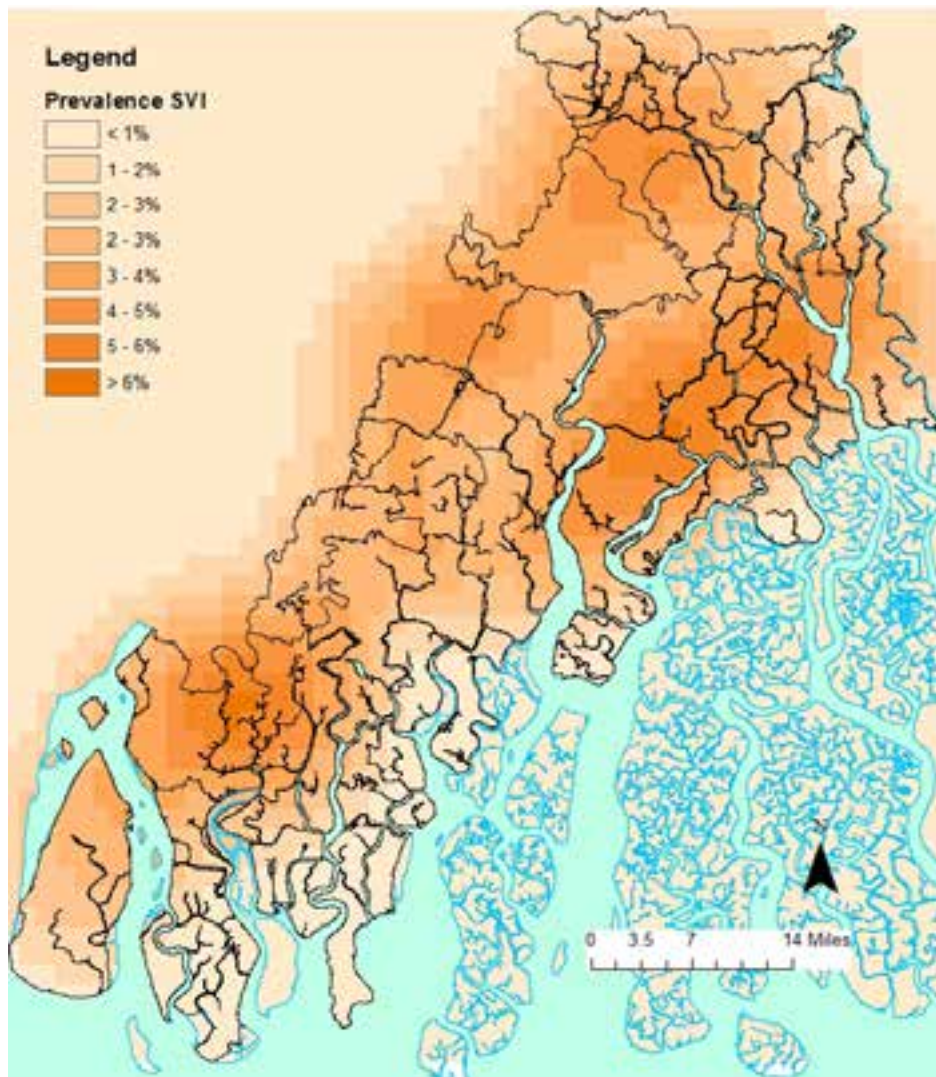




Prevalence of blindness

Kernel density mapping

Prevalence of non-blinding visual impairment



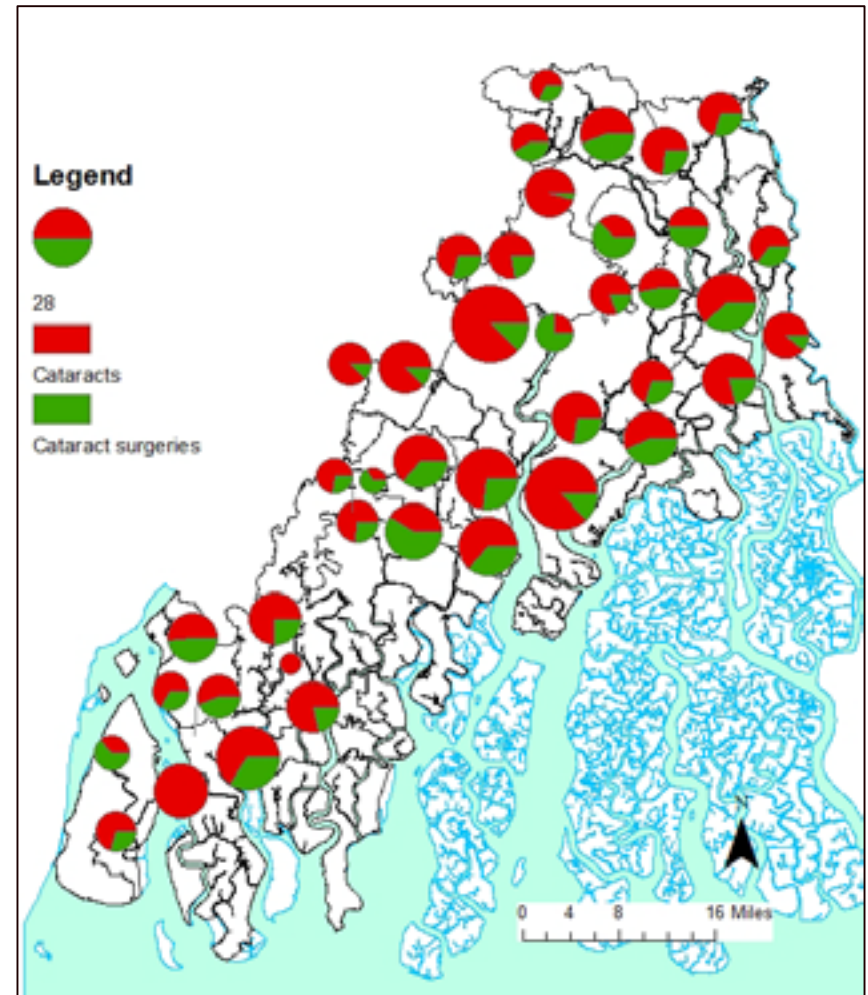
Cataracts vs Cataract operated

10.8% of eyes affected by cataract

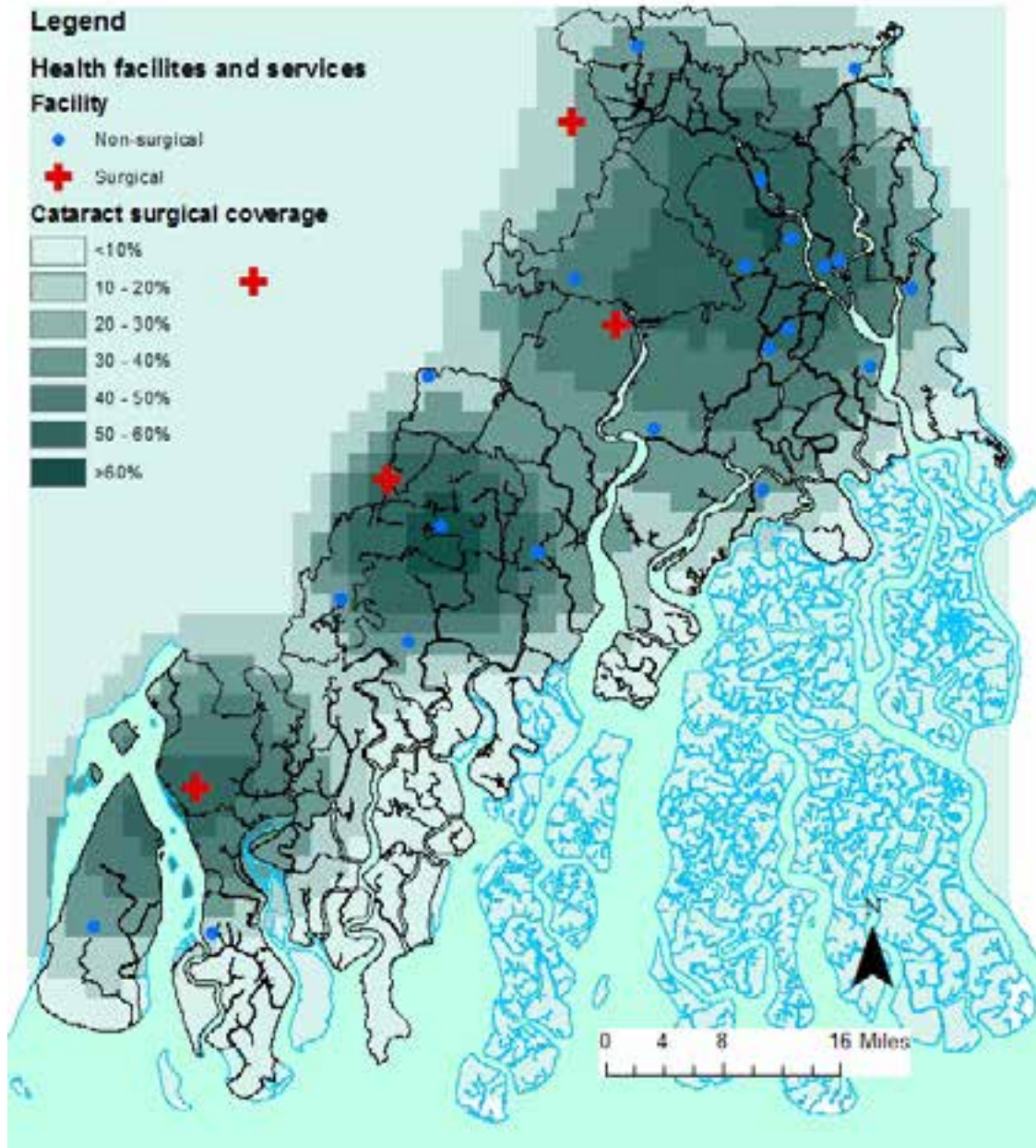
More women than men (12.4% vs 9.4%)

Cataract surgical coverage:

- 75% of blind people who needed surgery had it
- Only 35% of moderately visually impaired people who needed surgery had it



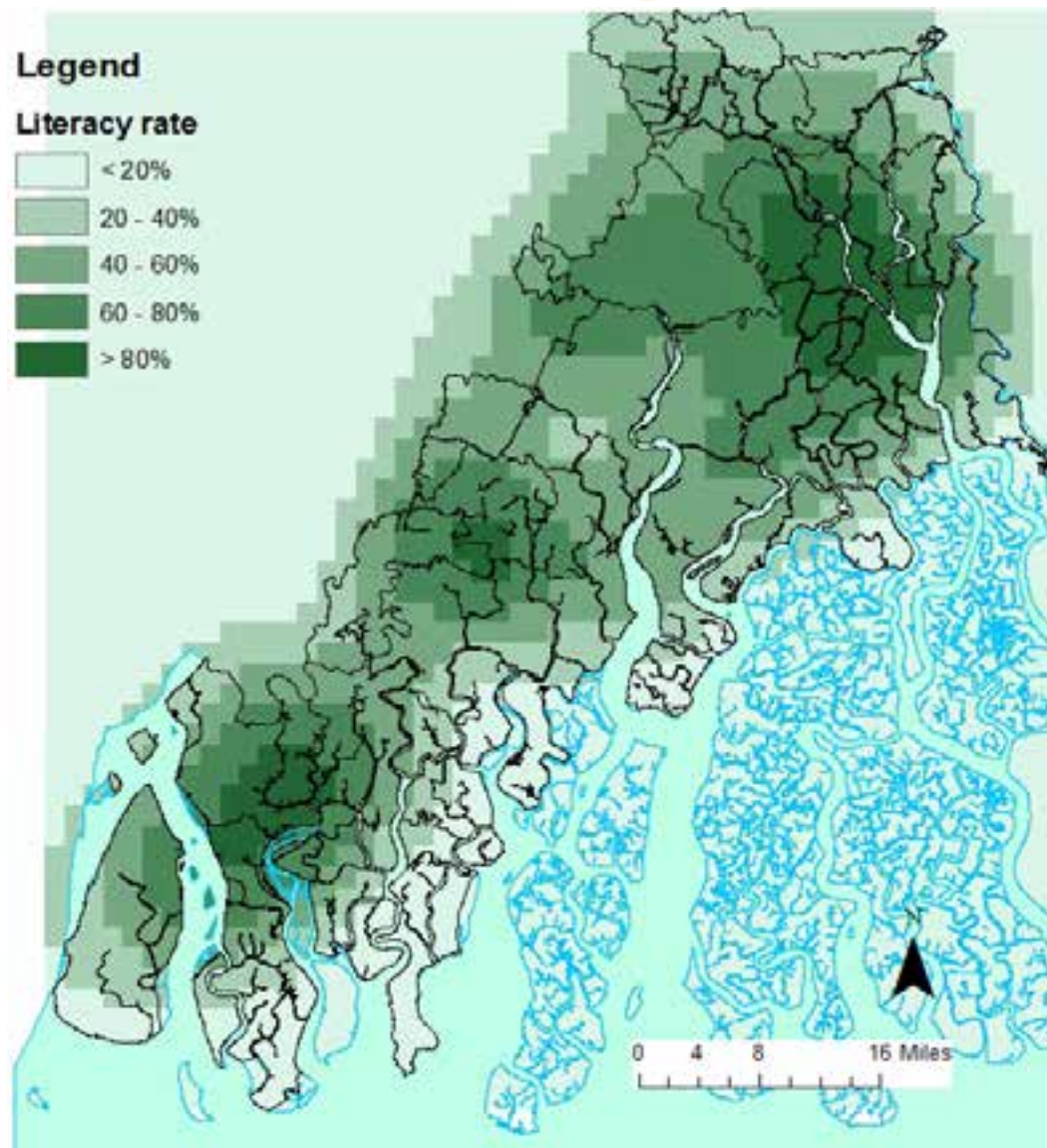
Cataract surgical coverage and surgical provision



Literacy rate in villages

Statistically, age (increased) and literacy (reduced) are associated with visual impairment among individuals

Individual or community knowledge?



Challenges

- Base maps – 1850?
- Detailed layers
- Paper forms & GPS devices
- Sampling requires interpolation
- Complex issues

How is the data being used?



- Provides baseline for project (study will be repeated at the end)
- Project routine monitoring data to see if targets are feasible
- Inform location of project sites, e.g. new services, community awareness raising activities
- Advocacy with government for new services

What next?

In the Sunderbans

- Continue mapping survey data – multilevel modelling
- Patient data tracking
- Referral tracking

Elsewhere in Sightsavers

- Establish handheld devices as standard for survey data collection
- Establish portal for staff to access, share & use GIS data
- Increase staff capacity to use GIS data

Thanks to



- Standard Chartered Bank (Seeing is Believing)
- The Sunderbans Eye Health Service Strengthening Project
- Dr Asim Sil and VMA
- Andy Tate, Pankaj Kholi, Sandeep Buttan, Sudipta Mohanty, Sameera Ahmed, Abraham George, Elena Schmidt