DataHealth Pakistan

Disease Mapping in Lahore Pakistan

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Motivation

- Desire to apply statistics knowledge to serve those in need

- Simple Techniques can be used to prevent many needless morbidities and mortalities

- Desire to bring healthcare services to the underserved

Why Lahore, Pakistan?

- Over 250,000 deaths due to diarrhea

- Over 300,000 deaths due to diseases such as TB, measles, whooping cough, and pneumonia

- Health expenditure per capita was $16 in 1999 and $13 in 2003

- National Health Management Information Systems (NHMIS)

Project Overview: Innovative Data Tracking

- Uses data from public hospitals and cross references it with socioeconomic information

- Constructs maps that identify highly vulnerable communities

- Targets vulnerable communities for improved healthcare

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Please see "Seasonal Awareness and Alert Letter, 2nd issue." Islamabad, Pakistan: National Institute of Health, February-May 2005.

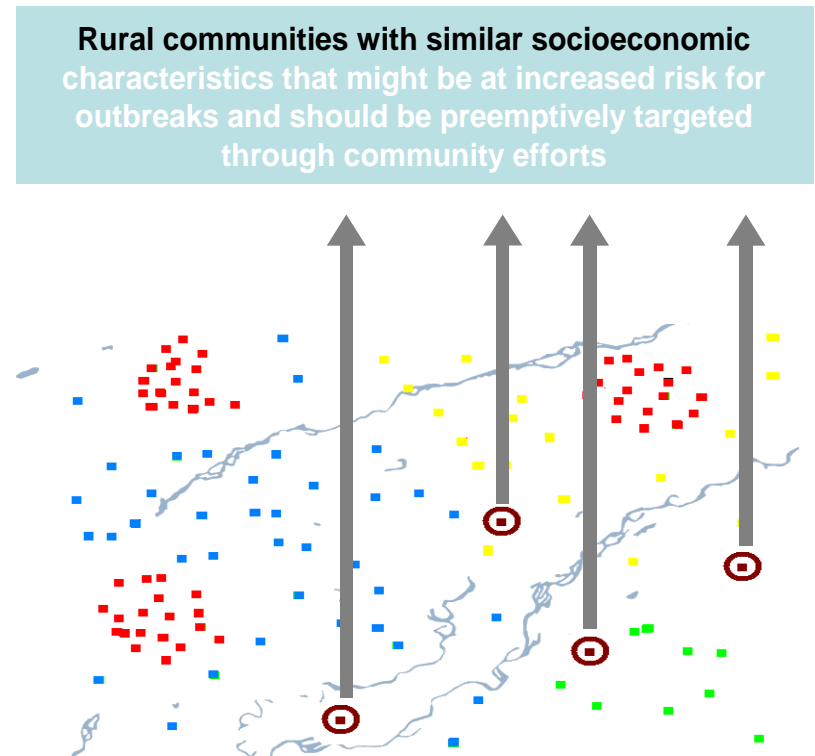http://www.nih.org.pk/publications/dews%202nd%20issue.pdf

Phase I: Data Interface

- Pool together information from public hospitals and NHMIS

- Collect data for major respiratory, diarrheal, and venereal diseases

- Collected information to include disease details as well as geographic location of patient

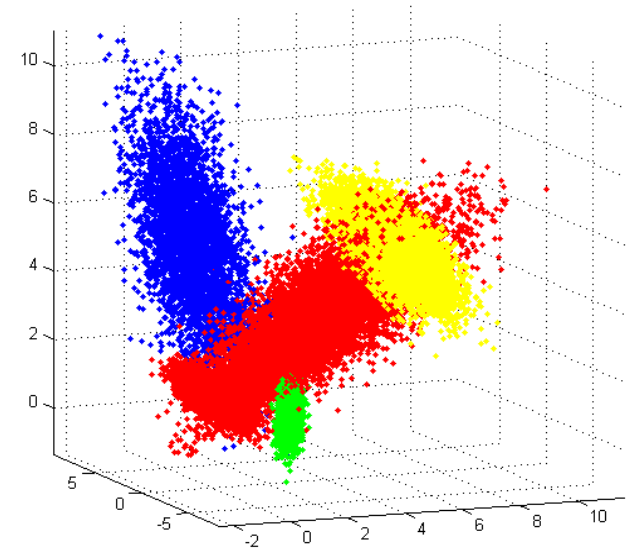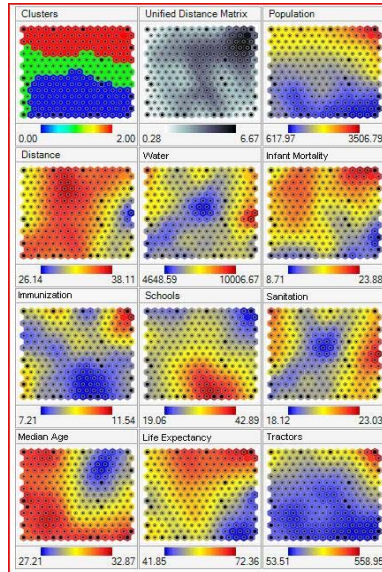- Develop high resolution map of geographical distribution of diseases
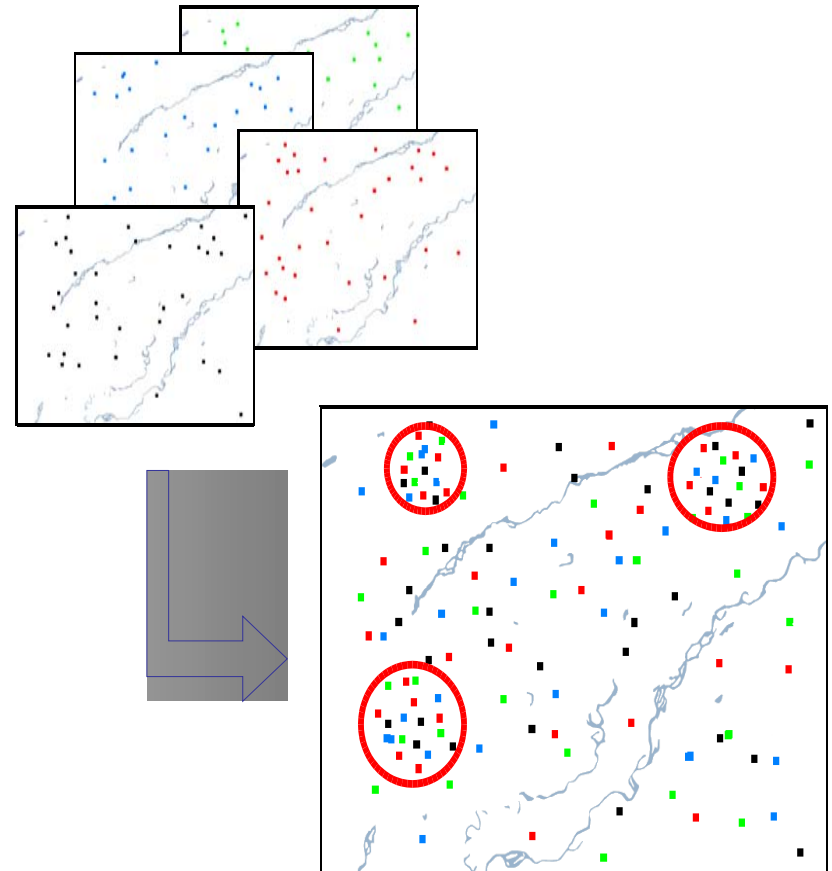
Phase II: Data Analysis

- Use information to identify underserved communities and discover disease outbreak patterns:

1. Identify areas prone to outbreaks but lack onsite medical facilities

2. Identify how frequently diseases occur within geographical community classes

3. How frequently patients visit hospitals once cases have been reported

Rural communities with similar socioeconomic characteristics that might be at increased risk for outbreaks and should be preemptively targeted through community efforts

Sample Analysis

Statistical Analysis:
Advanced PCA
Techniques

Community/	Socioeconomic Indicators					
	Water	Median	Schools	Sanitation	Population	Infant
Manga Pathar	**9996**	**31.64**	**39**	**22.77**	**3476**	**22.51**
Mojoki	**7091**	**29.56**	**33**	**20.64**	**1987**	**14.39**
Utaarh	**4805**	**28.07**	**21**	**18.65**	**854**	**9.10**
Ghuwind	**8858**	**30.99**	**40**	**22.84**	**3389**	**21.68**
Theh Janab	**6899**	**29.23**	**31**	**19.97**	**1812**	**13.33**

Phase III: Reporting findings to guide community-based efforts

- Communicate findings to Ministry of Health as well as NGO's and similar organizations

- Select representative from communities to promote community based projects for awareness regarding first-line defense mechanisms for disease

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Please see "Where There is No Doctor." Berkeley, CA: The Hesperian Foundation, 2007.

http://www.hesperian.org/publications_download_wtnd.php

Budget

	$
Income:	
PSC Fellowship	4,000
DLab Fund	1,000
	5,000
Expenses:	
Technical Requirements:	
Computers, Software, and Office Space	0.00
Internet Connection	240 (12mo. x $20)
Equipment	500
Services:	
Data Entry	2400 (12mo. x $200)
Printed Info. For Communities	300
Community Incentives and materials	1200
Transportation	365
Mailing Costs	100
	5105
Net	**-105**

Community Partners and future outlook

- **Advisory Board:**
    - John Guttag: Leads Data-Driven Medicine group at MIT CSAIL
    - Jonathan Rosen, MD: Harvard-MIT HST, Executive Director of BU's ITEC
    - Susan Murcott: MIT Civil and Environmental Engineering

- **Lahore Hospital Partners:**
    - Shalimar Hospital: 1,000 Patients per day
    - Gulab Devi Hospital: Biggest TB treatment center in South Asia

- $5,000 raised in capital so far
- 2 members traveling to Lahore this summer
- Data collection to begin…

Questions?