



*South Africa's District Health  
Information System:  
Case Study from Eastern Cape Province*

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# *Program*

- ▶ Objectives
- ▶ South African Health Sector Context
- ▶ Scope of HMIS enhancement efforts
- ▶ Lessons Learned
- ▶ Challenges Remaining
- ▶ Future directions



## *Objectives*

- Describe efforts to strengthen district primary health care information systems in South Africa
- Highlight innovations & difficulties in software design and data use
- Suggest lessons learned & future directions



# *South African Health Sector Context*

- Apartheid meant stark inequities in access to health services
- Multi-tiered system for whites and three other 'racial' groups as well as a large private sector resulted in little standardisation
- Very hospital- and curative-care oriented services
- Health information systems varied greatly, most focussed on hospital/practice management & some epidemiological surveillance.



## *Scope of DHIS enhancement efforts*

- Introduction of standard tick registers (or tallies)
- Selection of minimum PHC data set-1 page report
- Computerisation at district, province, and national level with Open Source software
- Human resource development - recruitment & training of district information officers
- Focus on improving use of information by managers
- Hand-drawn maps and computerized GIS to define catchment areas and analyze disease distribution



## *Initial PHC Minimum indicator data set*

- Workload (1)
- Tracer supplies/drugs availability (1)
- Maternal Health/Reproductive health (7)
- Child Health (3)
- Sexually Transmissible Infections (2)
- Mental Health/Chronic Care (3)
- Referrals (1)
- Information system (2)



# *ECDOH HIS Sub-systems*

## Surveillance

- ANC HIV surveillance
- Demographic & Health Survey
- Notifiable diseases

## Routine Service Reporting

- Monthly PHC Reports**
- Monthly Hospital Reports**
- TB Quarterly Reports**
- Environmental Health Reports**
- Lab reporting (LAM)

## Administrative

- Annual facility audit**
- PERSAL
- Financial Management System
- MEDSAS - drug procurement

## Civil Registration

- 1996 Census

# *Metadata makes DHIS flexible*

**Construct Indicators**

**Define or Edit Indicators:**

Indicator:  Indicator Short:

Indicator Type:  Origin:

Description:   
DEFINITION: The percentage of pregnant women coming for at least one antenatal visit. The number of children under one year is used as a proxy denominator.   
USE: Monitoring to what extent antenatal services are reaching pregnant women.

Health Data Fields Community/Facility Data Fields

Constant to add:  1 \* First antenatal visit Maternity and neonatal services   
Add/Remove Numerators

Numerator Description:

Health Data Fields Community/Facility Data Fields

Constant to add:  0.085 \* Females under 1 year Target Population   
0.085 \* Males under 1 year Target Population   
Add/Remove Denominators

Denominator Description:



# Database driven data-entry

**Routine Health Data**

**District:** ec King William's Town Health District ☐ Short names

**Facility:** ec Cathcart Clinic ☐ Last Changed By: on Date: 2/8/2000 9:02:28

**Period:** January 2000 ☐ Show both active and inactive facilities **mini** ☒ Validation ☒ Add data elements ☐ Delete Displayed Dataset

Data Element Category	No	Data Element	Min	Max	Entry	Check!	Comment
Attendance	2	PHC headcount 5 years and older	0	0	344	<input type="checkbox"/>	Note: Total PHC head
Attendance	3	DOTS visit - Facility	0	43	3	<input type="checkbox"/>	
Attendance	4	Nurse clinical work days (PHC)	9	49	10	<input type="checkbox"/>	
Maternity and neonatal servc	6	First antenatal visit	0	35	1	<input type="checkbox"/>	
Maternity and neonatal servc	7	Follow-up antenatal visit	2	39	5	<input type="checkbox"/>	
Reproductive Health	13	Oral pill cycle	9	150	24	<input type="checkbox"/>	
Reproductive Health	14	Nuristerate injection	0	0	10	<input type="checkbox"/>	Note: split from Injecta
Reproductive Health	15	Depo-provera/Petogen injection	0	0	14	<input type="checkbox"/>	Note: split from Injecta
Reproductive Health	17	Condoms distributed	60	1,850	500	<input type="checkbox"/>	
Child Health	19	Diarrhoea under 5 years - new	0	13	1	<input type="checkbox"/>	
Child Health	21	Child under 5 years weighed	12	477	30	<input type="checkbox"/>	
Immunisation	25	BCG at birth	0	19	19	<input type="checkbox"/>	
Immunisation	26	DTP-Hib 1st dose	0	4	1	<input type="checkbox"/>	
Immunisation	27	DTP-Hib 2nd dose	0	4	4	<input type="checkbox"/>	
Immunisation	28	DTP-Hib 3rd dose	0	3	2	<input type="checkbox"/>	
Immunisation	29	OPV 1st dose	0	4	1	<input type="checkbox"/>	
Immunisation	30	OPV 2nd dose	0	4	4	<input type="checkbox"/>	
Immunisation	31	OPV 3rd dose	0	3	2	<input type="checkbox"/>	
Immunisation	32	HepB 1st dose	0	4	1	<input type="checkbox"/>	
Immunisation	33	HepB 2nd dose	0	4	4	<input type="checkbox"/>	
Immunisation	34	HepB 3rd dose	0	3	2	<input type="checkbox"/>	
Immunisation	35	Measles 1st dose at 9 months	0	3	1	<input type="checkbox"/>	

# Great links to Excel pivot tables

Microsoft Excel - DHIS\_\$EC.xls

File Edit View Insert Format Tools Data Window Help

100% Prompt

D18 = 1138256

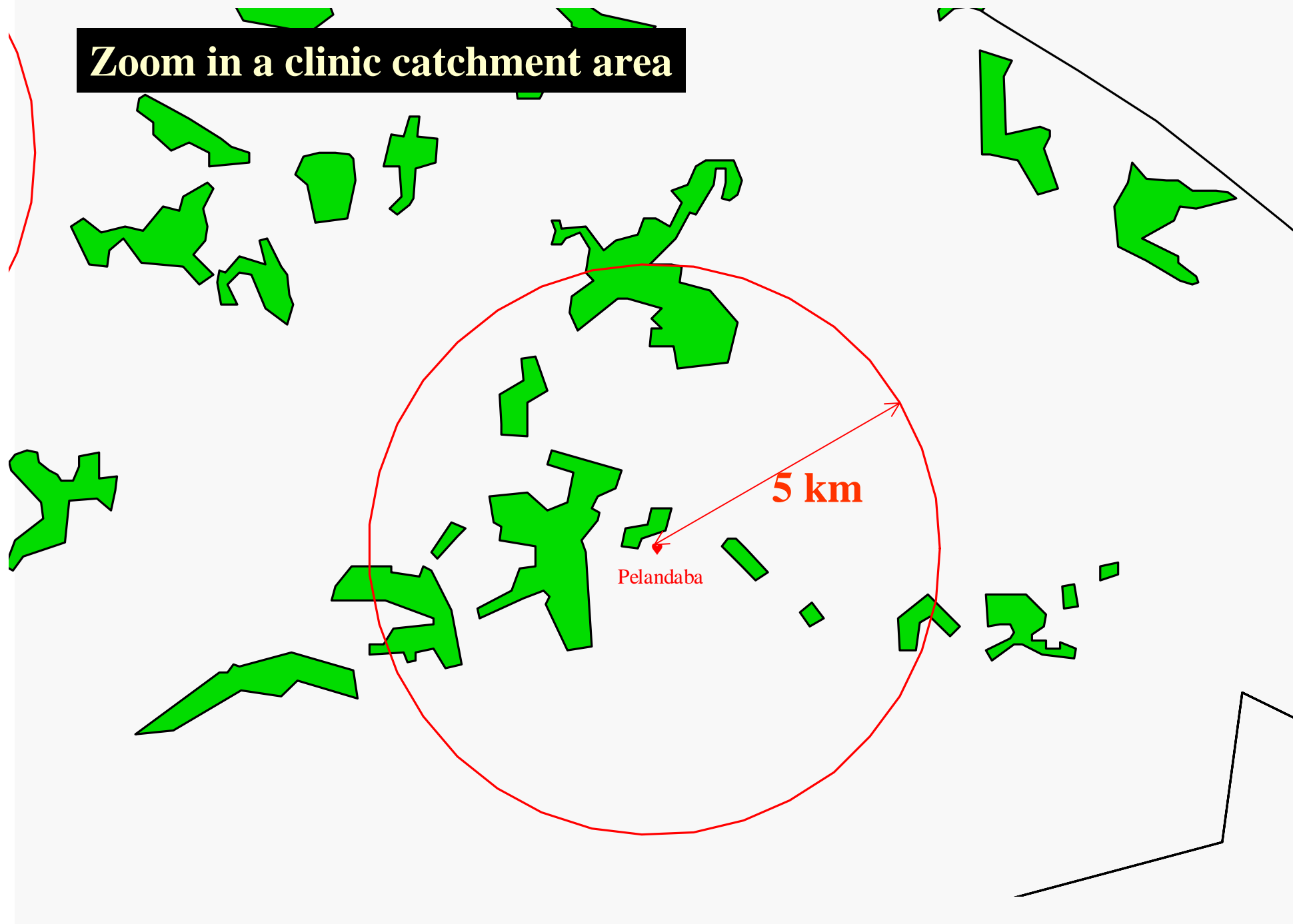
	A	B	C	D	E	F
1	<b>Eastern Cape Province - Monthly Data (Sum) from January 2000</b>					
2						
3	NB: Start DHIS_MD with correct back-end before refreshing data!!!					
4	Note: The "Set Filter Data Period" button in AccessMD/TB/RG filters your Pivot Data!!!					
5						
6						
7	RegShort	(All)				
8	DistShort	(All)				
9	MagShort	(All)				
10	Authority	(All)				
11	FacShort	(All)				
12	OrgUnitCategory	(All)				
13	OrgUnitType	(All)				
14						
15	Sum of Entry			Period		
16	Order	Category	Field	Jan-00	Feb-00	Mar-00
17	1	Attendance	PHC headcount under 5 years	42,589	49,797	36,424
18	2	Attendance	PHC headcount 5 years and older	1,138,256	1,085,142	946,828
19	3	Attendance	DOTS visit - Facility	135,029	131,696	126,856
20	4	Attendance	Nurse clinical work days (PHC)	49,681	47,219	44,166
21	6	Maternity and neonatal services	First antenatal visit	11,236	8,728	7,344
22	7	Maternity and neonatal services	Follow-up antenatal visit	25,603	23,178	20,224
23	8	Maternity and neonatal services	Tet Tox 3rd/booster dose to pregnant woman	5,486	4,148	4,057
24	9	Maternity and neonatal services	Live birth	3,282	2,576	2,006
25	10	Maternity and neonatal services	Live birth under 2500g	424	339	227
26	12	Maternity and neonatal services	Still birth	39	41	13



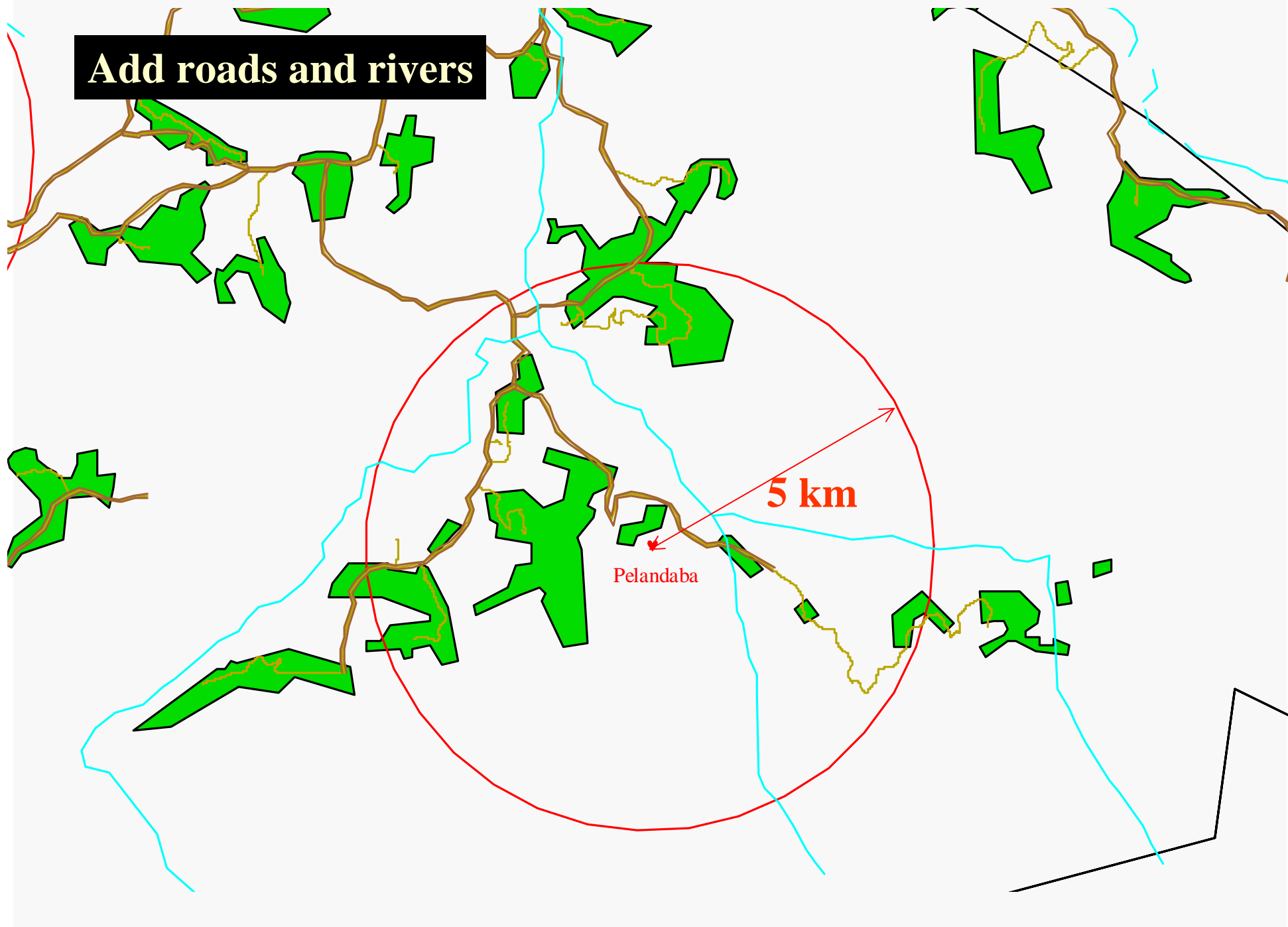
## *Innovative uses of data*

- Rationalising health centre placement by analyzing service data - putting the power to decide in health workers' hands
- Analyzing workload to re-allocate staffing
- Developing thematic presentations for the district management team rather than standard feedback reports
- Allocating reduced TB programme funds using 'cure rates'
- Linking DHIS data to annual health work plans that contain target outcomes as well as resource requirements

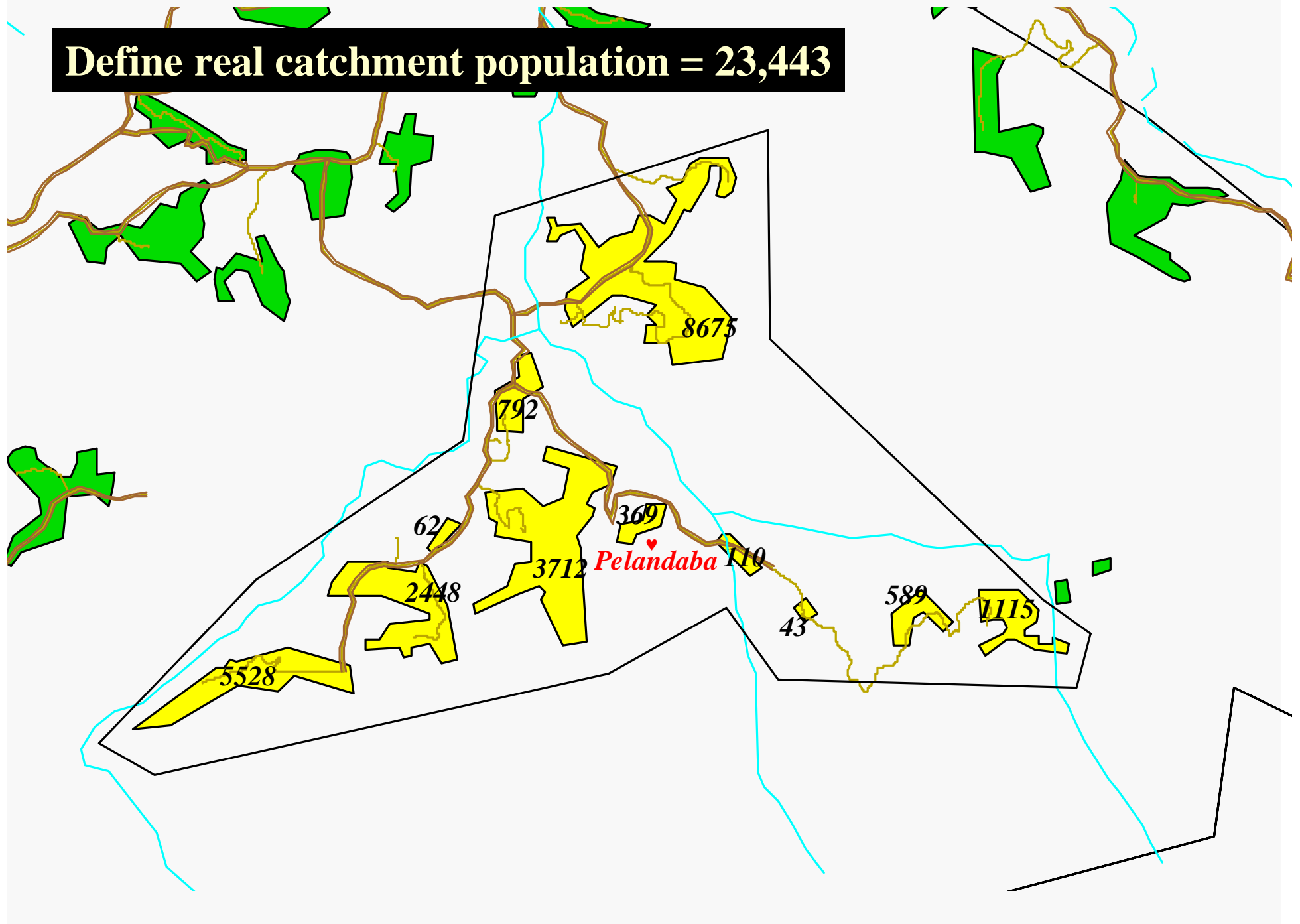
## Zoom in a clinic catchment area



**Add roads and rivers**

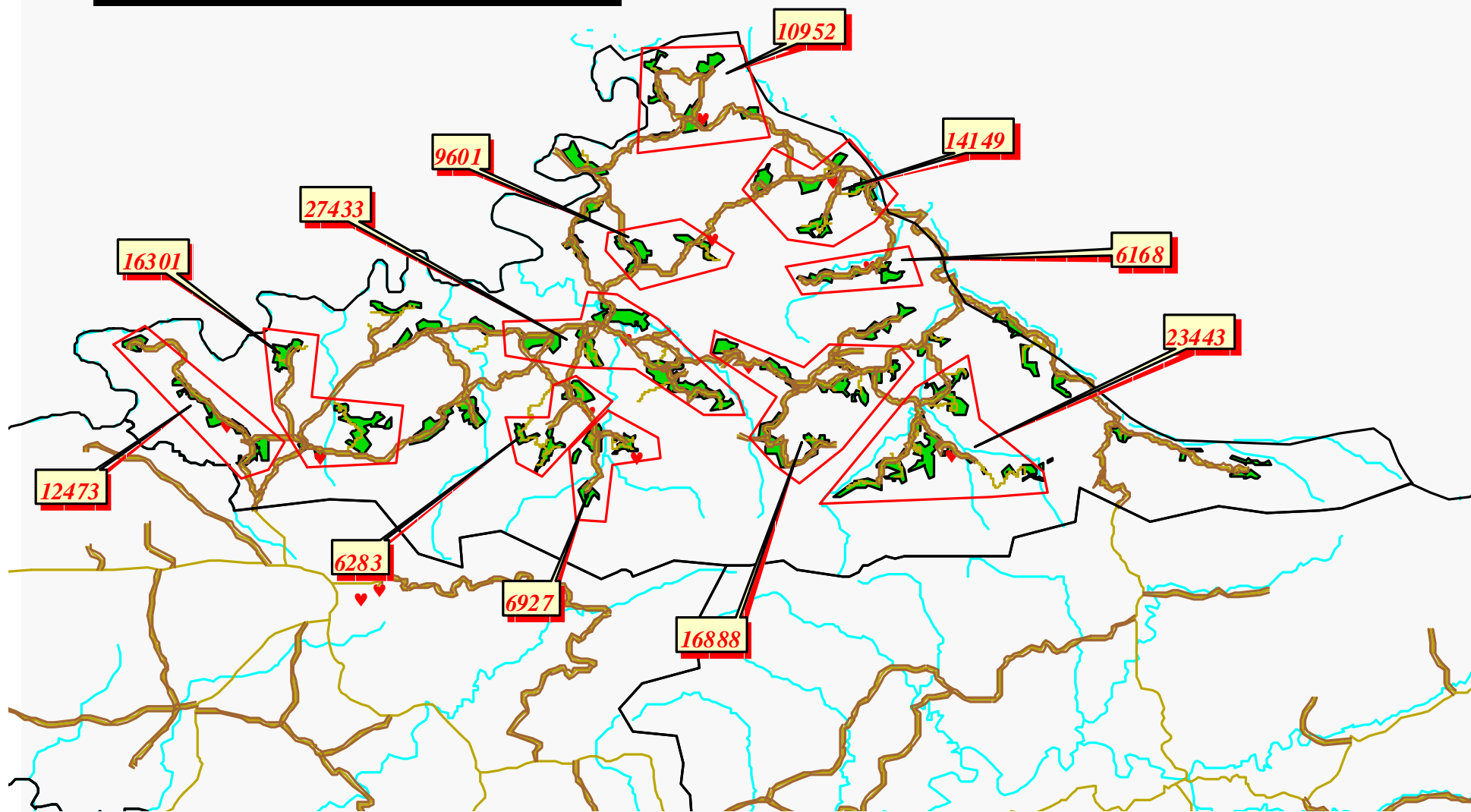


Define real catchment population = 23,443



## Population in clinic catchment area

Total = 150,618 (80.1%)





## *General Lessons Learned*

- **District-level involvement in HIS development is critical for the success of PHC information systems**
- **Identify and involve all stakeholders or ‘actors’ in the process - high level managers as well as health workers.**
- **‘Crawl before you Walk’ – ability to calculate indicators and draw maps on paper crucial for proper use of DHIS/GIS**
- **An indicator-based approach to determining information needs is an effective way to develop a ‘minimum’ data set**
- **Improvements in data recording procedures and use of data at the periphery deserve as much attention as reporting and data processing.**
- **Its hard to get people to make timely reports - too much focus on historical trends not on what’s happening now.**





## *Lessons learned - Software development*

- **Implementation of new software can become a vehicle for change**
- **Complex systems development requires good linkages between users and a professional software development team - participative prototyping proved highly suitable**
- **Maximise data use by building links to off the shelf software people are already comfortable with**
- **Open source software that is distributed for free is easy to 'sell', but don't underestimate the amount of technical support it requires**
- **Sometimes hard to find a balance between precision and approximation (population denominator data)**
- **Increasing 'transparency' by avoiding codes can result in huge files and poor performance at provincial/national level**



## *Challenges Remaining*

- Different provinces have different priorities for investing their information systems budgets - Hospitals vs. PHC
- Donor procurement requirements need to be mastered (if buying in USA, ensure support in South Africa)
- “WHO required” data sets (e.g. TB) - difficult to promote the ‘minimum’ data set.
- Computer system growth: managing growing user community, demand for more modules and bigger data sets
- Need to develop provincial capacity to support system
- Turning anecdotal use of information into a ‘data culture’



## *Future directions*

- Finalise roll-out to all South African provinces (both PHC and hospital data) in 2001 – pilots in 4 other countries
- More focus on data interpretation & use
- Develop capacity to support system at provincial level
- Develop new version of software:
  - DHIS lite (simpler database, browser interface)
  - Standard tools for reporting via Data Mart tables
  - Several new modules and interfaces (e.g. EpiInfo)
  - Full multi-lingual support