

# **Accuracy of the poverty quintile system for classifying South African schools**

**2<sup>nd</sup> Monitoring and Evaluation Colloquium  
Gauteng Department of Education  
20 November 2009, Sandton**

**Anil Kanjee - HSRC  
Prof Amita Chudgar – Univ of Michigan, USA**



HSRC RESEARCH OUTPUTS

6124

## **Acknowledgement**

**Presentation based on paper by Chudgar,  
A & Kanjee, A**

**Paper part of HSRC research program on  
Equity, Funding and Quality in schools**

## **Focus of paper**

- **To determine whether the quintile system is an effective mechanism for classifying schools**

# Overview of funding system

- Schools categorised into quintiles
- Q1 = poorest schools & Q5 = least poor
- More money allocated to poorest schools and less funds allocated to least poorest schools
- Quintile score calculated based on national census data for school catchment area (EA)
  - Income
  - Unemployment rate
  - Level of education (literacy rate)

# School allocations

	<b>% Alloc</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
NQ1	30.0	R 703	R 738	R 775
NQ2	27.5	R 645	R 677	R 711
NQ3	22.5	R 527	R 554	R 581
NQ4	15.0	R 352	R 369	R 388
NQ5	5.0	R 117	R 123	R 129

# **Data and methodology**

- **PIRLS 2006 - the latest available national data**
- **For each school in each quintile:**
  - **Generated mean score for each variable**
  - **Calculated distance from national average**

# Variables used

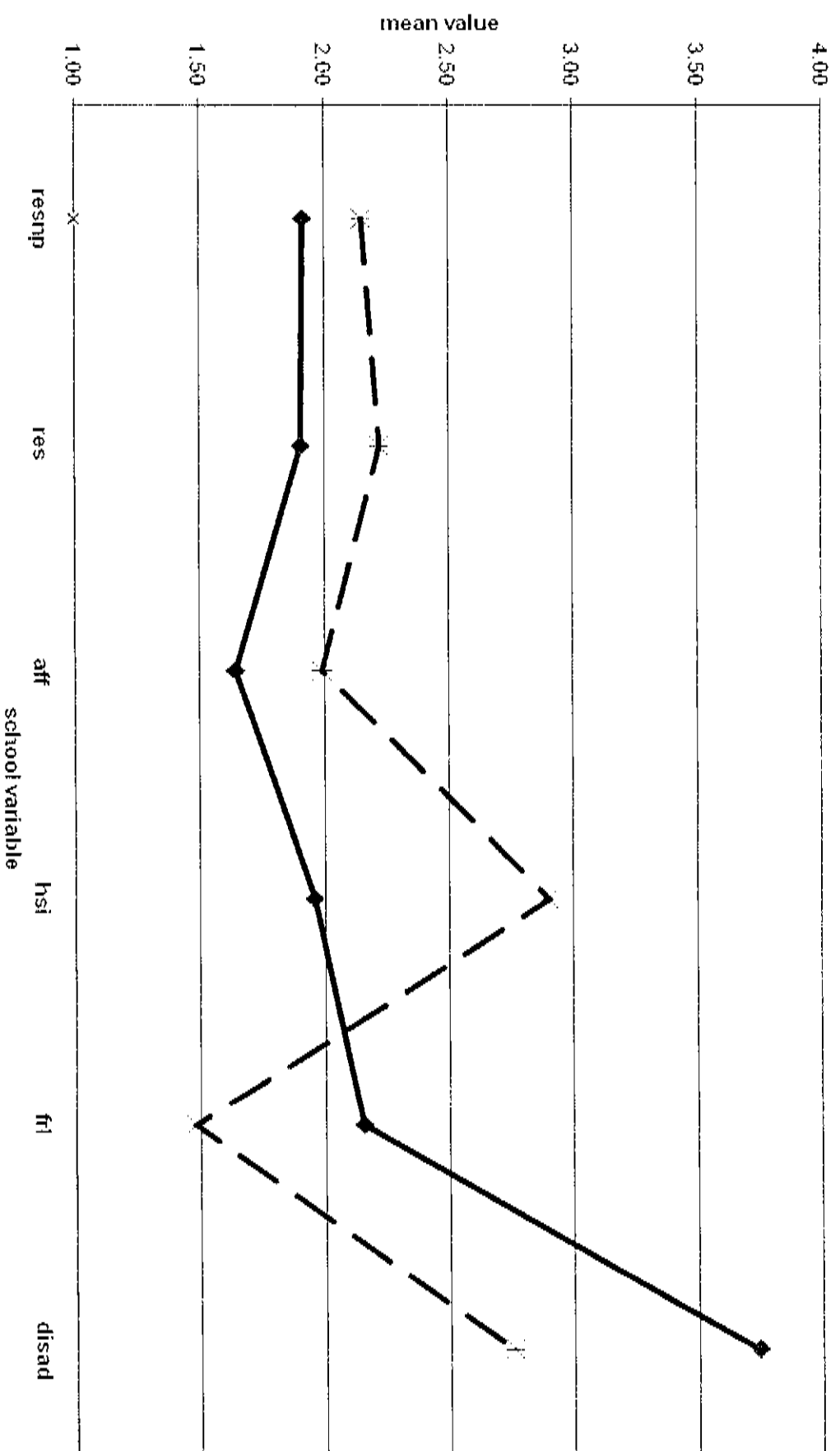
Variable name	Description	Source
Quintile ranking	Quintile ranking of the school, range 1 to 5. 1 = higher poverty 5= lower poverty	DoE
<b>School Resources</b>		
Resource_NP	Non-personnel resources, average score for school shortage on 11 variables (excluding personnel shortage questions), 1=Low -3 = High	Author
Resource_O	Overall resources, average score for school shortage on 14 variables (including personnel shortage questions), 1=Low -3 = High	PIRLS
<b>School composition</b>		
FRL	Learner receiving free and reduced price lunch , 1 = None, 2= Some, 3= All	PIRLS
P_Disad	Proportion of learners in school from economically disadvantaged home, 1= 0-10% - 4 = More than 50%	PIRLS
P_Aff	Proportion of learners in school from economically affluent home, 1= 0-10% - 4 = More than 50%	PIRLS
HSI	Index of home school involvement, 1= Low - 3 High	PIRLS

## Mean and distance from national mean

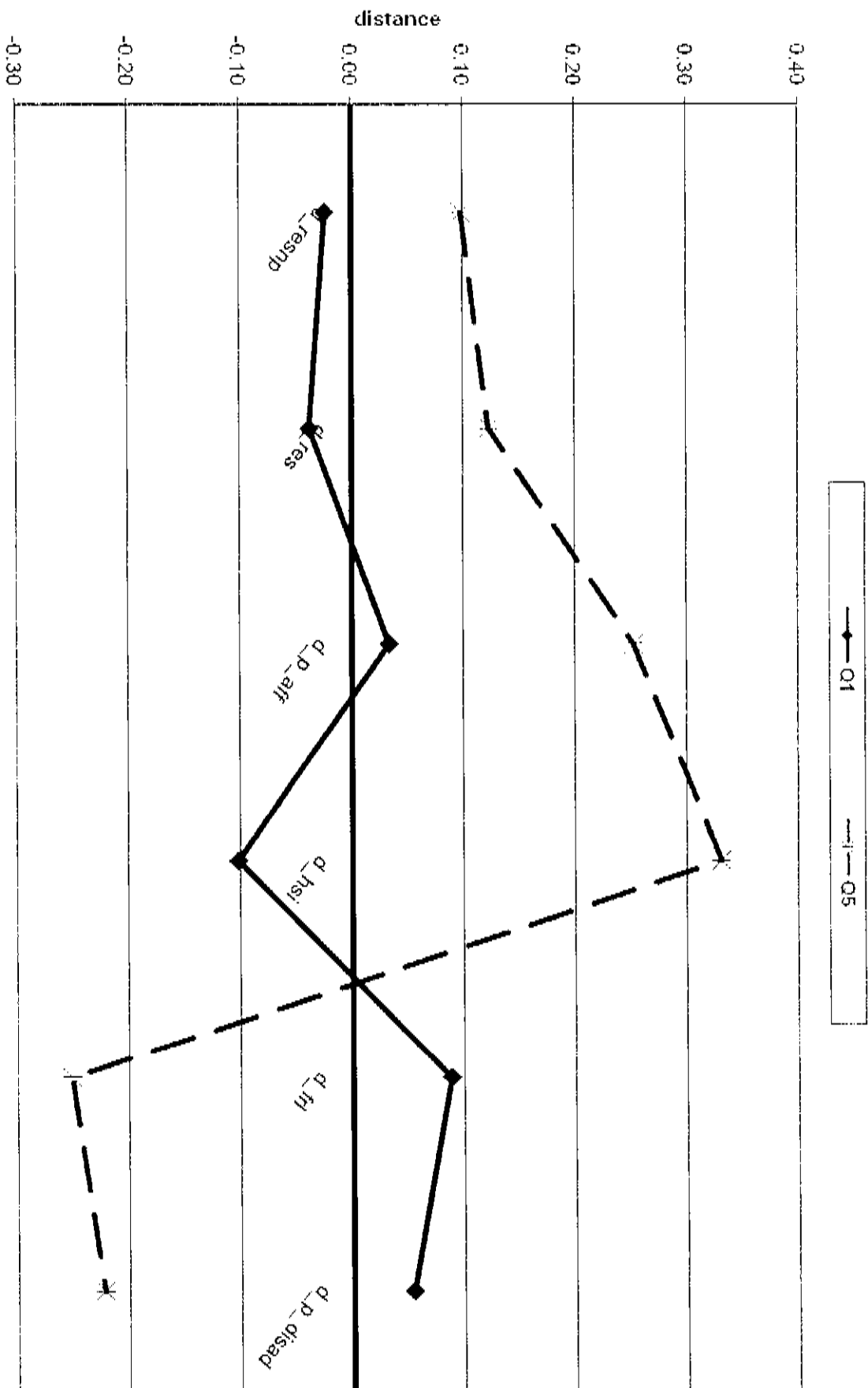
	Q1	Q2	Q3	Q4	Q5
Resource_NP	1.91	1.79	1.94	1.98	2.15
Resource_O	1.91	1.82	1.92	2.08	2.22
P_Aff	1.64	1.32	1.33	1.66	1.99
FRL	2.16	2.01	2.02	1.98	1.48
P_Disad	3.74	3.82	3.74	3.69	2.76
	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>
D_Resource_NP	-0.02	-0.09	-0.01	0.01	0.10
D_Resource_O	-0.04	-0.08	-0.03	0.05	0.12
D_P_Aff	0.03	-0.17	-0.16	0.04	0.25
D_FRL	0.09	0.01	0.02	0.00	-0.25
D_P_Disad	0.05	0.08	0.05	0.04	-0.22
n	<b>83</b>	<b>76</b>	<b>101</b>	<b>58</b>	<b>56</b>



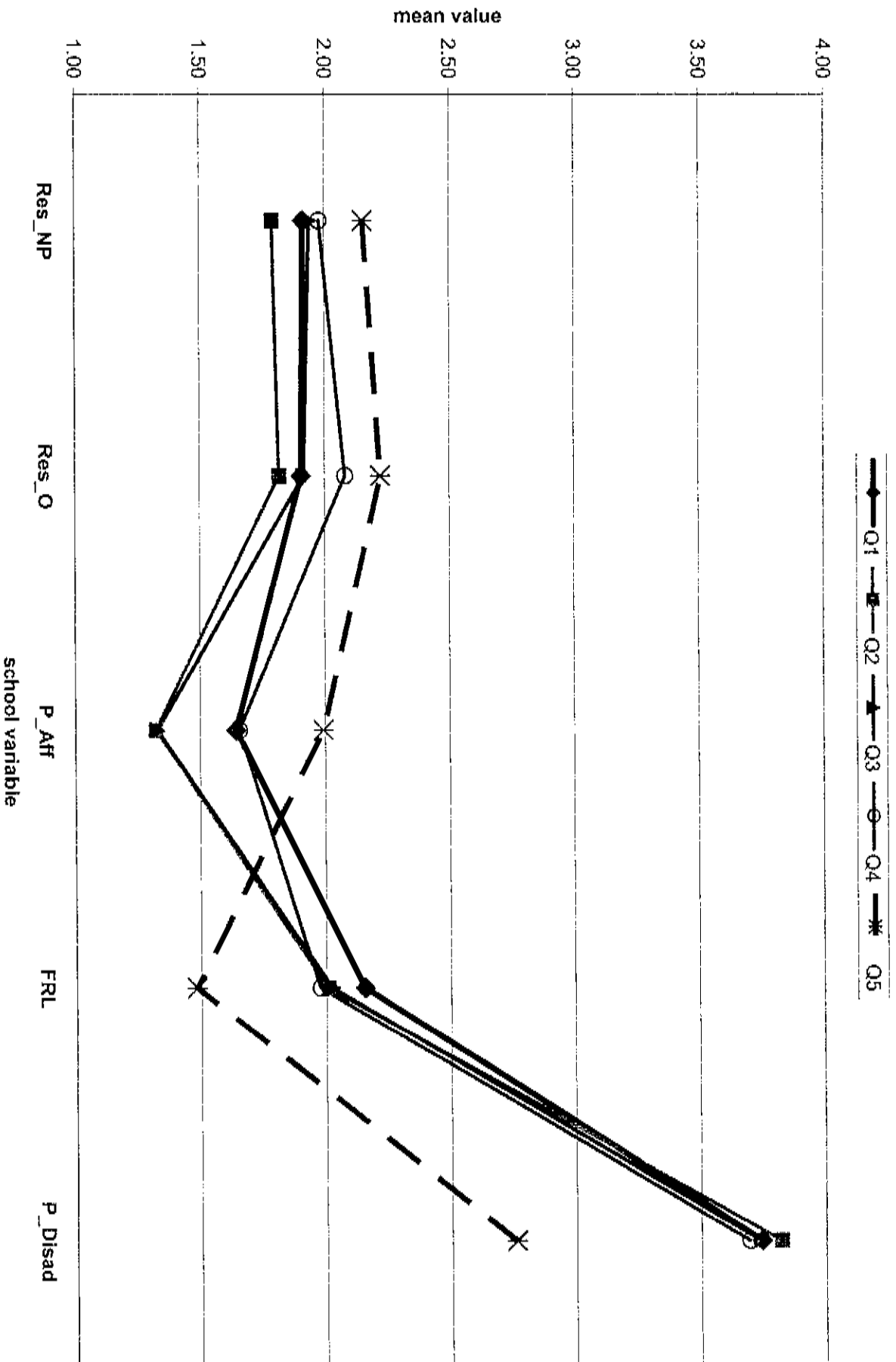
# Means by quintiles Q1 V Q5



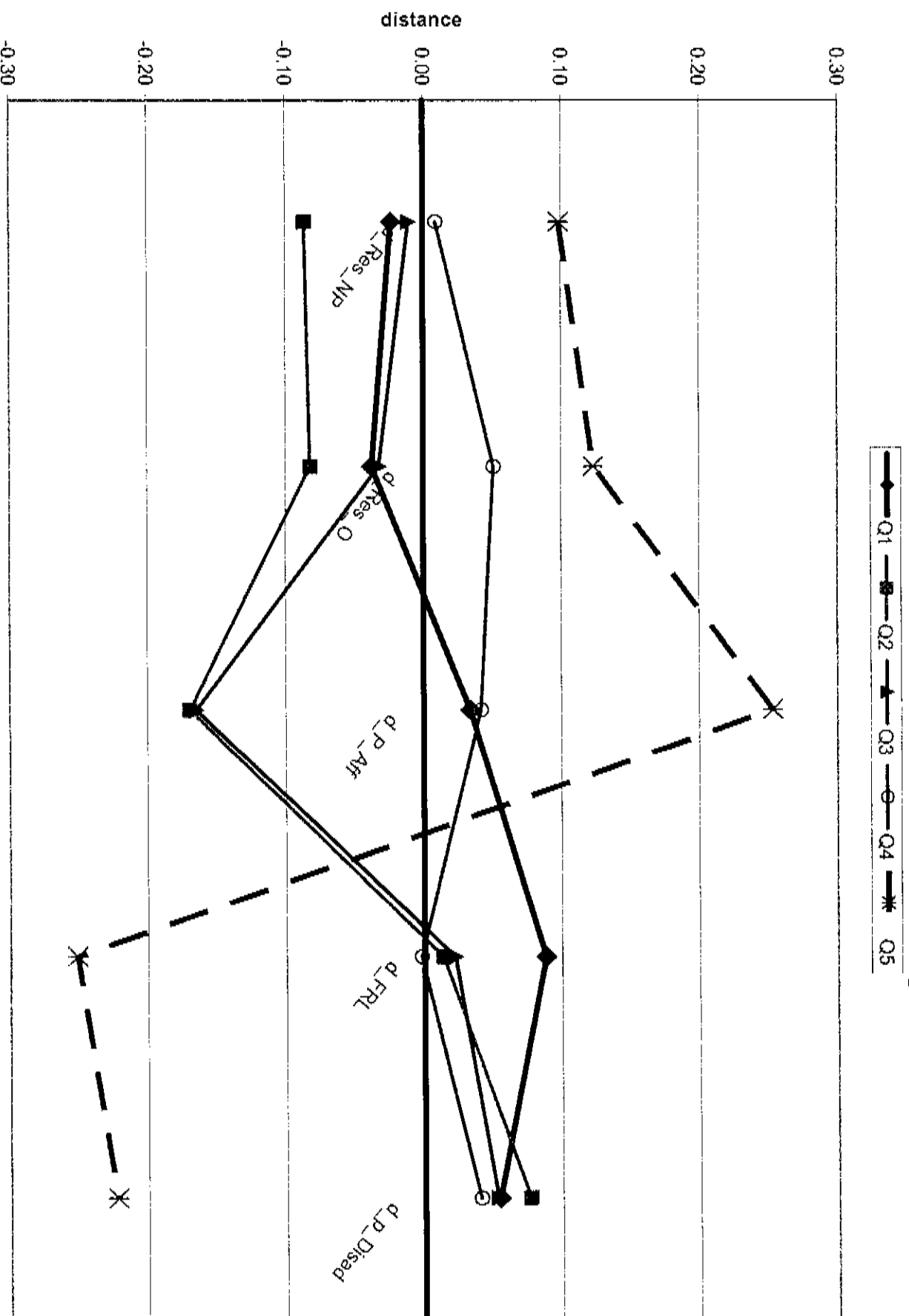
# Distance from national mean Q1 V Q5



# Means by quintiles 1 to 5



# Distance from national mean by Quintile



## **Cross Tabulations**

- **Resources**
  - **3 categories – Low, Medium and High**
  - **Calculated the % of schools in each category**
- **Proportion advantage and disadvantage learners**
  - **Between 0 – 10%**
  - **Between 11 – 25%**
  - **Between 26-50%**
  - **More than 50%**
- **Free & reduced lunch**
  - **None, Some & All**

# School quintile ranking and resource overall

% within QUINTILE

QUINTILE	Resource_Overall				Total
	Low	Medium	High		
1	30.9%	44.2%	24.8%	100.0%	
2	37.9%	41.9%	20.2%	100.0%	
3	23.5%	57.0%	19.5%	100.0%	
4	17.7%	55.6%	26.6%	100.0%	
5	15.8%	46.0%	38.2%	100.0%	
Total	27.6%	48.2%	24.2%	100.0%	

## School quintile ranking and resource non-personnel

	% within QUINTILE			
	Resource_NP			
	Low	Medium	High	Total
QUINTILE 1	41.1%	26.4%	32.5%	100.0%
2	42.3%	36.2%	21.4%	100.0%
3	35.4%	35.3%	29.3%	100.0%
4	28.6%	44.9%	26.5%	100.0%
5	18.4%	47.9%	33.7%	100.0%
Total	36.2%	35.0%	28.8%	100.0%

# School quintile ranking and proportion disadvantaged learners

%	within QUINTILE				Total
	Prop Disadvantaged				
	MORE				
	0-10%	11-25%	26-50%	THAN 50%	Total
QUINTILE 1	.6%	5.2%	13.6%	80.6%	100.0%
2	.1%	4.9%	8.2%	86.9%	100.0%
3	3.2%	3.8%	9.2%	83.9%	100.0%
4	3.3%	1.6%	17.4%	77.7%	100.0%
5	26.0%	15.6%	15.7%	42.7%	100.0%
Total	4.3%	5.6%	11.9%	78.2%	100.0%



## School quintile ranking and proportion affluent learners

% within QUINTILE

QUINTIL	Prop Affluent				Total
	0-10%	11-25%	26-50%	THAN 50%	
1	65.7%	11.5%	11.0%	11.8%	100.0%
2	79.9%	12.8%	2.8%	4.4%	100.0%
3	80.9%	9.8%	5.3%	4.0%	100.0%
4	57.4%	22.6%	10.1%	9.8%	100.0%
5	54.2%	7.3%	22.4%	16.2%	100.0%
Total	70.8%	11.8%	8.9%	8.4%	100.0%

MORE

# Conclusion

- **Quintile system is effective in identifying schools at the extremes – i.e. Q1 and Q5**
- **Schools in the middle are often incorrectly identified**
- **Need to review financial implications**
- **Provide more accurate and effective models or methods of classification or update current classifications**

## **Options for way forward**

- Explore alternative quintile classification based on:
  - Learner population in schools
  - Resources in schools
- Create 3 categories:
  - Low – include Q1, Q2 & Q3
  - Medium – Q4
  - High – Q5
- Implications for different options need to be investigated

**THANK YOU**

**Would appreciate comments and suggestions**

**[akanjee@hsrc.ac.za](mailto:akanjee@hsrc.ac.za)**