

## RETENTION, PARTICIPATION AND ENGAGEMENT: MAPPING THE ATTAINMENTS OF 15-17 YEAR OLDS IN WESTERN AUSTRALIA 2006-2008.

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### 1.0. ABSTRACT

This paper examines the implementation of legislation to raise the leaving age in Western Australia from the perspective of creating and using evidence based systems to identify and provide services for young people at risk of disengaging from education, training and/or employment. The paper is presented in two parts. The first provides an overview of aims expressed and evaluation processes used during the early implementation phase of the raised leaving age legislation. The second part takes a closer look at the data sources and techniques used to measure system performance with respect to retention, participation and engagement among 15-17 year olds affected by the legislation. The paper concludes by presenting a mapping tool developed by WA's Participation Directorate to identify more exactly what young people have done, are doing and may be attempting to do regarding the education, training and/or employment options available to them under the legislation. Known as the 'NEET Project' (for Not engaged in Education, Employment and Training) the mapping of students at risk has provided a useful way of refining system-level views youth at risk.

### 2.0. INTRODUCTION

The *Acts Amendment (Higher School Leaving Age and Related Provisions) Act 2005* passed by the Western Australian parliament in November 2005 raised the leaving age for young people in two stages: To the end of the 16<sup>th</sup> year of age in 2006; and to the end of the 17<sup>th</sup> year in 2008. The legislation specifies that all young people in Western Australia must either attend school full time or undertake a range of other approved education, training and/or employment options.

A new branch of the Department of Education and Training called the Participation Directorate was established with a five year lifespan (2006-2010) to implement the Raised Leaving Age (RLA) initiative. The Participation Directorate was formed as a cross sectoral, multi-agency body (i.e. involving public and private schools, TAFEWA colleges and private RTOs, community organisations and employers). The Directorate is responsible to the Minister for Education and Training through a body called the Cross Sectoral Governance Group, which involves senior officers from the public and private education and training sectors.

Since inception, the Participation Directorate has undertaken a range of measures to develop more flexible and improved pathways for young people between schools, VET, universities and employment. With a budget of approximately \$187 million, key achievements of the Directorate include: Deployment of 100 field based workers (Managers Participation and Participation Coordinators) throughout Western Australia (WA) to support young people to make successful transitions from school into further education, training and employment; development of an Education and Training Participation Plan (ETPP) planning process which in 2008 has involved over 1,000 participants across WA who developed over 130 education and training programs to engage those young people affected by the legislation; a Participation Management Database (PMD), which records Notices of Arrangements (NoAs) logged by students accessing options other than full time schooling (n.b. the PMD processed 3 253 NoAs in 2006 and 4 040 NoAs in 2007. At 31 August 2008, the PMD has processed 12,607 NoAs, anticipating the total for 2008 to exceed 14 000); and perhaps most importantly, a research and development (R&D) framework to produce a comprehensive Statewide map identifying young people not engaged in education, training and employment.

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As with the wide-ranging nature of the work of the Directorate (e.g. transition brokerage/career development, policy, planning, inter/intra agency liaison, resource allocation, communications, data collection, collation and dissemination) the R&D framework is by nature eclectic in scope and purpose. A major challenge for the framework has been to reconcile the large, disparate data sets associated with measuring and evaluating the success or otherwise of the RLA initiative as well as on building reliable analyses by which to progress the initiative toward sustainability following the five year (2006-200) RLA implementation period\*. Indeed, it was this requirement for consistency and reliability of information and methodologies concerning disengagement by young people from education, training and/or employment that led officers to develop their own context specific instrument which is the subject of this paper.

### 3.0. THE NEET SURVEY

#### 3.1. Purpose

The focus of this paper concerns what has become a central component of the R&D framework called the 'NEET (i.e. Not engaged in Education, Employment and/or Training) Survey'. A broad statement of principles covering the NEET survey can be found at Appendix A. The specific purpose of the NEET Survey is to answer key questions arising with respect to the significant proportion of young people who are at risk of disengaging from education, training and/or employment. These questions include:

- **Why?** Students disengage. In this respect, the NEET Survey enables Participation Directorate staff at Central and District Offices to gather data to develop profiles regarding specific student populations at risk of disengaging from education, training and/or employment;
- **Who?** Are the young people at risk of disengagement from education, training and/or employment. The Survey does not seek to capture all students – just those at risk of disengagement. In broad terms, it was found that in 2006, students targeted (i.e. those with 1990 and 1991 birthdates or Years 10 and 11 students) numbered approximately 7,500. In 2007 (focussing only on one year cohort, the Year 10's or 1992 birthdates) almost 4,500 young people were identified. (At the time of writing, the 2008 NEET Survey is ongoing);
- **Where?** The young people at risk of disengagement are located;
- **How?** The processes of disengagement occur and what can be done to ameliorate disengagement in specific contexts; and
- **So What?** The Survey fundamentally serves as a tool which assists staff with planning, policy formulation and resource allocation at the system and district levels. The information collected subsequently informs Directorate staff regarding what to focus on when developing and refining the overall Strategic Framework, Operational/Business Plans and in particular, the ETPPs.

With these questions in view, the paper looks at the evolution of NEET Survey instrument and the ways resulting data has been used to assist students at risk of disengagement.

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\*Note that the difficulties alluded to here with respect to reconciling disparate data sets have been treated in a refereed paper delivered to the Australian Association for Research in Education (AARE) Adelaide Conference 2006 entitled: *From retention to participation: Reconceptualising student involvement in education, training and employment* by Reynolds, P.S., Ansell, D. Cavanagh, R.F. & Dellar, G.. Located at [aare.edu.au/conferencepapers/](http://aare.edu.au/conferencepapers/)

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### 3.2. Instrument

The NEET Survey is intended to develop profiles regarding specific student populations at risk of disengaging from education, training and/or employment. These profiles serve to inform decision making at the DET system and district levels enabling appropriate adjustments to be made to the Directorate's Strategic Framework, Operational/Business Plans and the Education and Training Participation Plans (ETPPs).

The NEET Survey instrument is a Microsoft Access database which is provided to Managers Participation (MPs) in all 14 of WA's education districts at the beginning of term three. Those responsible for the data collection process are the MPs and Participation Coordinators (PCs) in individual districts, as well as Student Services Managers, Coordinators and related personnel in targeted individual schools and public and private Registered Training Organisations (RTOs) and Community organisations.

Students targeted in the collection process are those judged to be at risk of disengagement from education, training and/or employment. Data collection takes place during a six week period in term three which coincides with the DET Schools Census, the DET Attendance Audit as well as forms a key collection point for PMD Notices of Arrangements data.

MPs and PCs are provided with a NEET Software Package and Users Manual before the end of the July school holidays to use in the data collection process. Teleconferences are conducted to enable District staff to ask questions and address any difficulties. Collection processes are intended to be completed by Week 6 of Term Three.

Student details for Government school students are preloaded into the software from the Student Information System/Student Information Database (SIS/SIDs) in use at all of these places to facilitate collections. Details for students in non-Government schools are entered manually. MPs/PCs reach student details by selecting from a list of preloaded names and arrive at the personal details sheet seen below:

Figure 1

After checking these details are correct, the collector moves onto the next sheet' by clicking the 'Factors' tab adjacent to 'Personal' (see below):

Figure 2

The completed surveys are returned to central office in a comma separated value (csv) file where they are collated and loaded into the PMD analysis system from which descriptive profiles can be extracted. All student names are removed at this stage.

### 3.3. Collation and analysis of data

Four main forms of collation and analysis are performed on data collected from the NEET Survey.

- Using the PMD software to produce basic descriptions and district profiles
- Using SPSS discriminant function analysis (DFA)
- Producing charts matching socio-economic data with DFA
- Producing geographical maps

#### 3.3.1. Descriptions of profiles and Frequencies

The first form of collation and analysis is descriptive, whereby data is configured within and extracted from the PMD ('mondrial' or 'cube') analysis software via a series of measures and filters indicating frequencies. Summaries such as the one shown below by district (extending to individual school and suburb if required) can thus be obtained:

**Table 1**

NEET Variable	Descriptor	Number	Percent	
DET Education District	Regional	District A	140	3.4
		District B	276	6.7
		District C	87	2.1
		District D	311	7.6
		District E	176	4.3
		District G	636	15.5
		District H	98	2.4
		District I	141	3.4
		District J	110	2.7
		Metropolitan	District K	508
	District L		436	10.6
	District M		641	15.5

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	District N	135	3.3
	District O	417	10.1
Age (years)	13	12	0.3
	14	47	1.2
	15	3526	85.7
	16	433	10.5
	17	10	0.2
	18	2	.1
Sex	Male	2366	57.6
	Female	1740	42.3
	Missing	6	0.1
Aboriginality	Yes	850	20.7
	No	3262	79.3
English Second Language	Yes	224	5.4
	No	3888	94.6
Lives Independently	Yes	85	2.1
	No	4027	97.9
Transiency Issues	Yes	544	13.2
	No	3568	86.8
Parenting (or pregnant)	Yes	33	0.8
	No	4079	99.2

A fuller range of possible configurations that may be obtained from the 'cube' tool can be viewed at Appendix B.

### 3.3.2. Discriminant function analysis

The second form of analysis employed SPSS to determine discriminant function scores between variables. This was introduced owing to the technical adequacy/ utility of NEET data. A variable was regarded as technically adequate/useful if it met these criteria: Firstly, there were relatively few cases with missing values/not applicable for variables where the information required is regarded as applying to all cases. When the proportion of cases with missing values, or is rated as 'not applicable', is high for a variable and the information being sought is regarded as applying to all cases, there may be confusion about what type of information is being asked for. Secondly, there were no logical inconsistencies in the scores provided for the variable. For example, no student should be classified as both a 'positive stayer' and a 'positive leaver' as these variables are intended to be mutually exclusive. Thirdly, there was reasonable variation in the scores for the variable. 'Useful' variables are those that correlate with other variables. There must be sufficient variation in the scores for a given variable to enable the association between that variable and other variables to be examined. For example, there are no students with 'group relationship issues'. (This variable therefore has no potential explanatory power). And finally, in the present case, a useful variable was considered one that informed the allocation of NEET funding to DET districts (i.e., can be used to discriminate between students at different levels of risk of disengagement from education/training across districts).

Thus, a useful variable was deemed one that could be used to discriminate between students at different levels of risk of disengagement from education/training across DET districts. Discriminant Function Analysis (DFA) is a statistical procedure used to classify cases into one of two groups. In so doing it discards variables which do not contribute to predicting group membership. Dichotomies, 'dummy variables', and ordinal variables with at least 5 categories are commonly used as predictor variables.<sup>1</sup> If DFA is effective the classification of cases will yield a high percentage correct.<sup>2</sup>

<sup>1</sup> Regression analysis is used with numerical variables. The majority of the variables in the NEET data collection are dichotomous variables (with 'ordinal' properties), i.e., 'has a behavioural problem' or 'does not have a behavioural problem'. The solution is to use dummy variables, e.g., assign 'zero' to cases coded as 'has a behaviour problem' and assign 'one' to cases coded as 'does not have a behaviour problem'.

<sup>2</sup> <http://www2.chass.ncsu.edu/garson/pa765/discrim.htm>

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What is meant by 'different levels of risk of disengagement from education/training'? Put differently, what variable can be used to define at least two groups of students who differ in their risk of disengagement from education/training? School attendance is a generally agreed indicator of this type of risk. The measure of 'school attendance' used in this analysis was obtained from a different data collection using an audit process thereby ensuring independence from the NEET collection. Two groups were identified for the purpose of conducting a DFA (a) students attending 60% or more of the time, and (b) students attending less than 60% of the time. A DFA was conducted to determine which NEET variables contribute to predicting group membership, including how many cases are correctly classified using these variables as predictors. DFA uses regression analysis to calculate a weight for individual predictor variables which when applied to these variables produces a 'formula' referred to as the 'discriminant function'. A score for each student on this 'discriminant function' can be calculated.

Table 2 presents the NEET variables which predict student attendance, i.e., whether a student attends 60% or more of the time, or less than 60% of the time based on the DFA.

**Table 2**  
NEET variables predicting student attendance in the 2007 collection

Aboriginality	Yes	850	20.7
	No	3262	79.3
Education Support	Yes	194	4.7
	No	3918	95.3
Family Relationship Issues	Yes	1350	32.8
	No	2762	67.2
Sex	Male	2366	57.6
	Female	1740	42.3
	Missing	6	0.1
Health Issues	Yes	1028	25.0
	No	3084	75.0
Multiple Issues	Yes	1332	32.4
	No	2780	67.6
Motivation Issues	Yes	1872	45.5
	No	2240	54.5
Transiency Issues	Yes	544	13.2
	No	3568	86.8
Academic Issues	Level 2 or lower	1216	29.6
	Above Level 2	2896	70.4

As shown in Table 2, nine of the 19 potential predictor variables ('risk of disengagement, 'type of stayer' and 'type of leaver' were excluded from the DFA) were significant predictors of 'school attendance' (re-coded as '60% or more' and 'less than 60%' attendance).

Table 3 shows the number (and %) of cases correctly and incorrectly classified based on the DFA using the predictor variables (Table 2).

**Table 3**  
No. (%) of cases correctly and incorrectly classified based on the DFA

			Predicted Group Membership		Total
			1.00	2.00	
Original	Count	60 vs less than 60			
		1.00	2020	631	2651
		2.00	489	722	1211
		Ungrouped cases	190	54	244
	%	1.00	76.2	23.8	100.0
		2.00	40.4	59.6	100.0
Ungrouped cases		77.9	22.1	100.0	

a. 71.0% of original grouped cases correctly classified.

As shown in Table 3, 76.2% of cases were correctly classified as 'attending 60% or more', and 59.6% of cases were correctly classified as 'attending less than 60%'. 40.4% of cases were incorrectly classified as 'attending 60% or more'. 23.8% of cases were incorrectly classified as 'attending less than 60%'. The overall percent of cases correctly classified as either 'attending 60% or more' or 'attending less than 60%' was 71.0% using the following predictor variables:

- Aboriginality
- Education Support
- Family Relationship Issues
- Sex
- Health Issues
- Multiple Issues
- Motivation Issues
- Transiency Issues, and
- Academic Issues.

That is, these variables can be used to discriminate between students at different levels of risk of disengagement from education/training.

The extent to which there are (statistically) significant differences between DET Districts using these predictor variables is examined next using 'analysis of variance' (ANOVA). ANOVA is a statistical procedure which can be used to determine whether mean scores differ between groups. T-tests can be used to determine which groups differ from one another. The 'groups' in question are DET Districts. The question of interest is whether these Districts differ from one another using discriminant function scores calculated using NEET variables which predict student attendance (Table 2).

Table 4 presents the mean score (and standard deviation) on the discriminant function for each DET District.

**Table 4**  
Mean score (and standard deviation) on the  
discriminant function for each DET District

**Report**

Discriminant Scores from Function 1 for Analysis 1

District	Mean	N	Std. Deviation
District A	.3216511	140	.82687860
District B	.0885669	275	.77637891
District C	-.0046417	641	1.09946481
District D	.5077196	87	.78415607
District E	.1869260	508	.91304901
District G	-.2664869	310	1.43221654
District H	-1.10934	176	1.05099276
District I	.2772503	636	1.09019403
District J	.3851510	135	.71944167
District K	-.2842715	98	1.03203734
District L	-.7396604	140	1.31574851
District M	-.0527773	436	1.10365537
District N	.3367400	110	.63559499
District O	.1463882	414	.80995735
Total	.0241689	4106	1.08341525

The question arises therefore, as to whether the discriminant function scores be used to inform funding decisions to DET Districts? A minimum requirement is that significant differences exist between Districts on the discriminant function.

Table 5 presents the mean scores (and 95% confidence intervals for these means) on the discriminant function when Districts with similar mean scores are combined. The following Districts were combined to examine whether significant differences exist between Districts on the discriminant function.

**Table 5**  
Mean scores (and 95% confidence intervals) on the discriminant function  
when Districts with similar mean scores are combined

**Descriptives**

DFScores CAttend 60 plus vs less 60

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1.00	316	-.9455582	1.18802863	.06683183	-1.0770514	-.8140650	-3.58668	1.17798
2.00	408	-.2707587	1.34582147	.06662809	-.4017369	-.1397805	-3.58668	1.66527
3.00	1766	.0333943	.99570938	.02369394	-.0130768	.0798655	-3.58668	1.86810
4.00	1616	.2781740	.94743903	.02356843	.2319461	.3244019	-3.58668	1.86810
Total	4106	.0241689	1.08341525	.01690774	-.0089794	.0573172	-3.58668	1.86810

As shown in Table 5 the 95% confidence intervals for the means of the combined DET Districts do not overlap suggesting there are statistically significant differences in the mean scores for the



discriminant function. This was confirmed using ANOVA as shown in Table 6 and follow-up post-hoc multiple comparisons using the Bonferroni statistic as shown in Table 7.

**Table 6**

ANOVA for the discriminant function when Districts with similar mean scores are combined

**ANOVA**

DFScores CAttend 60 plus vs less 60

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	437.058	3	145.686	136.397	.000
Within Groups	4381.344	4102	1.068		
Total	4818.402	4105			

**Table 7**

Post hoc multiple comparisons using the Bonferroni statistic when Districts with similar mean scores are combined

**Multiple Comparisons**

Dependent Variable: DFScores CAttend 60 plus vs less 60

Bonferroni

(I) dismap2	(J) dismap2	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1.00	2.00	-.67479952*	.07744645	.000	-.8792223	-.4703767
	3.00	-.97895255*	.06312586	.000	-1.1455756	-.8123295
	4.00	-1.2237322*	.06356897	.000	-1.3915249	-1.0559395
2.00	1.00	.67479952*	.07744645	.000	.4703767	.8792223
	3.00	-.30415303*	.05676886	.000	-.4539966	-.1543095
	4.00	-.54893267*	.05726119	.000	-.7000757	-.3977896
3.00	1.00	.97895255*	.06312586	.000	.8123295	1.1455756
	2.00	.30415303*	.05676886	.000	.1543095	.4539966
	4.00	-.24477964*	.03557760	.000	-.3386881	-.1508712
4.00	1.00	1.22373219*	.06356897	.000	1.0559395	1.3915249
	2.00	.54893267*	.05726119	.000	.3977896	.7000757
	3.00	.24477964*	.03557760	.000	.1508712	.3386881

\*. The mean difference is significant at the .05 level.

As shown in Table 7, when DET Districts were combined to examine whether significant differences exist between Districts on the discriminant function significant differences in the mean scores are apparent. This confirms that the nine variables from the 2007 NEET data collection used to create the discriminant function (Aboriginality, Education Support, Family Relationship Issues, Sex, Health Issues, Multiple Issues, Motivation Issues, Transiency Issues, and Academic Issues) are capable of revealing differences between DET Districts.

### 3.3.2.1. District mapping to inform funding allocation decisions based on the results of DFA

Although differences can be demonstrated between DET Districts using means scores on the discriminant function, it is unclear whether there is sufficient homogeneity in the distributions on the discriminant function to recommend specific cut-off points for guide funding allocation decisions. Based on the upper bound estimate for the two groups with the highest risk of disengagement the cut-off point would be  $-.81$ , i.e., students with discriminant function scores of less than  $-.81$  would be given the highest priority for funding. The charts illustrated at Appendix C have been prepared to examine this.

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Table 8 presents the number of students in each District when the cut-off of  $-.81$  on the discriminant function is adopted. These students would be considered the group with the highest risk factor profile (Category 1). The total number of NEET students in this group is 801 (19.5%).

**Table 8**  
No. of students in Category 1 in each District

	No students	Total NEET students
District A	12	140
District B	31	275
District C	125	641
District D	6	87
District E	74	508
District G	108	310
District H	106	176
District I	100	636
District J	10	135
District K	27	98
District L	60	140
District N	86	436
District O	5	110
	51	414
<b>Total</b>	<b>801</b>	<b>4106</b>

Table 9 shows the risk profile for Category 1 NEET students for each of the variables used to generate the discriminant function scores.

**Table 9**  
Risk profile for Category 1 NEET students

Aboriginality	Yes	529	66.0
Education Support	Yes	360	4.5
Family Relationship Issues	Yes	526	65.7
Sex	Male	376	46.9
Health Issues	Yes	396	49.4
Multiple Issues	Yes	637	79.5
Motivation Issues	Yes	560	69.9
Transiency Issues	Yes	481	60.0

Academic Issues	Level 2 or lower	389	48.6
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Table 10 presents the number of students in each District when the students' scores on the discriminant function fall between -.81 and -.14. These students would be considered the group with the second highest risk factor profile (Category 2). The total number of NEET students in this group is 641 (15.6%).

**Table 10**  
No. of students in Category 2 in each District

	No students	Total NEET students
District A	26	140
District B	52	275
District C	90	641
District D	11	87
District E	69	508
District G	34	310
District H	42	176
District I	78	636
District J	30	135
District L	16	98
District M	26	140
District N	79	436
District O	20	110
	68	414
<b>Total</b>	<b>641</b>	<b>4106</b>

Table 11 shows the risk profile for Category 2 NEET students for each of the variables used to generate the discriminant function scores.

**Table 11**  
Risk profile for Category 2 NEET students

Aboriginality	Yes	236	36.8
Education Support	Yes	18	2.8
Family Relationship Issues	Yes	326	50.9
Sex	Male	329	51.3
Health Issues	Yes	259	40.4
Multiple Issues	Yes	330	51.5
Motivation Issues	Yes	362	56.5

Transiency Issues	Yes	62	9.7
Academic Issues	Level 2 or lower	249	38.8

Table 12 presents the number of students in each District when the students' scores on the discriminant function fall between  $-.14$  and  $.08$ . These students would be considered the group with the third highest risk factor profile (Category 3). The total number of NEET students in this group is 312 (7.6%).

**Table 12**  
No. of students in Category 3 in each District

	No students	Total NEET students
District A	12	140
District B	33	275
District C	35	641
District D	3	87
District E	46	508
District G	9	310
District H	12	176
District J	41	636
District K	4	135
District L	8	98
District M	23	140
District N	28	436
District O	13	110
	45	414
Total	312	4106

Table 13 shows the risk profile for Category 3 NEET students for each of the variables used to generate the discriminant function scores.

**Table 13**  
Risk profile for Category 3 NEET students

Aboriginality	Yes	83	26.6
Education Support	Yes	10	3.2
Family Relationship Issues	Yes	126	40.4
Sex	Male	214	68.6
Health Issues	Yes	73	23.4

Multiple Issues	Yes	173	55.4
Motivation Issues	Yes	164	52.6
Transiency Issues	Yes	0	0
Academic Issues	Level 2 or lower	84	26.9

Table 14 presents the number of students in each District when the students' scores on the discriminant function is greater than .08. These students would be considered the group with the lowest risk factor profile of the four groups (Category 4). The total number of NEET students in this group is 2352 (57.3%).

**Table 14**  
No. of students in Category 4 in each District

	No students	Total NEET students
District A	90	140
District B	159	275
District C	391	641
District D	67	87
District E	319	508
District G	159	310
District H	16	176
District I		
District J	417	636
District K	91	135
District L	47	98
District M	31	140
District N	243	436
District O	72	110
	250	414
<b>Total</b>	<b>2352</b>	<b>4106</b>

Table 15 shows the risk profile for Category 4 NEET students for each of the variables used to generate the discriminant function scores.

**Table 15**  
Risk profile for Category 4 NEET students

Aboriginality	Yes	1	0
Education Support	Yes	130	5.5
Family Relationship Issues	Yes	370	15.7
Sex	Male	1447	61.5

Health Issues	Yes	299	12.7
Multiple Issues	Yes	192	8.2
Motivation Issues	Yes	785	33.4
Transiency Issues	Yes	0	0
Academic Issues	Level 2 or lower	493	21.0

Table 16 presents the percent of students in each District for each of the risk categories.

**Table 16**  
% of students in each risk category for each District

	Risk Category			
	1	2	3	4
District A	8.57	18.57	8.57	64.28
District B	11.27	18.91	12.00	57.82
District C	19.50	14.04	5.46	61.00
District D	6.90	12.64	3.45	77.01
District E	14.57	13.58	9.06	62.79
District G	34.84	10.96	2.90	51.29
District H	60.22	23.86	6.82	9.09
District I	15.72	12.26	6.45	65.56
District J	7.41	22.22	2.96	67.41
District K	27.55	16.32	8.16	47.96
District L	42.86	18.57	16.42	22.14
District M	19.72	18.12	6.42	55.73
District N	4.55	18.18	11.82	65.45
District O	12.32	16.42	10.87	60.39

Table 17 presents the overall profile of these different risk group in terms of the variables used to generate the discriminant function scores for each student.

**Table 17**  
Overall profile for students assigned to different categories of risk

	Risk Category			
	1	2	3	4
% NEET Students	19.5	15.6	7.6	57.3
% Indigenous	66.0	36.8	26.6	0.0

% Ed Support	4.5	2.8	3.2	5.5
% Family Issues	65.7	50.9	40.4	15.7
% Male	46.9	51.3	68.6	61.5
% Health Issues	49.4	40.4	23.4	12.7
% Multiple Issues	79.5	51.5	55.4	8.2
% Motivation Issues	69.9	56.5	52.6	33.4
% Transiency Issues	60.0	9.7	0.0	0.0
% Academic Issues	48.6	38.8	26.9	21.0

As shown in Table 17 approximately 35% of NEET students fall into the two highest risk categories. As also shown, with the exception of Ed Supp and Sex, the percent of cases for each risk factor decreases predictably across the risk categories. For example, the percent of Indigenous students decreases from 66.0% for Category 1 students to 0% for Category 4 students. Similarly, the percent of students with Multiple Issues decreases from 79.5% for Category 1 students to 8.2% for Category 4 students.

Five main conclusions were drawn from the Discriminant function score analysis with respect to funding. These were:

- The definition of each NEET variable should be reviewed to ensure these variables have high inter-rater reliability. For example, raters' should be clear about the constellation of health issues define a 'health problem'.
- The software used for the NEET collection should be reviewed to ensure variables cannot be assigned codes which are logically inconsistent with other variables. For example, the software should not allow a student cannot be coded as a 'leaver' and as a 'stayer'. Similarly the software should not allow a student to be coded as having 'multiple problems' if that student has not been coded as having problems on at least two other relevant variables.
- All NEET variables should be reviewed with a view to reducing the total number to be included in the annual collection. Variables where high inter-rater reliability cannot be guaranteed should be dropped from the collection. Further, variables which are not likely to be useful for discriminating between students at different levels of risk of disengagement should also be dropped from the collection.
- The results of the discriminant analysis discussed in the present report should be used to review the current funding allocation model. Two maps should be produced to reveal differences between Districts according to the four categories of risk identified. One map should show differences between the Districts in the number and percent of cases that fall into each risk category. The second map should show the risk profile of students for each District in terms of Aboriginality, Education Support, Family Relationship Issues, Sex, Health Issues, Multiple Issues, Motivation Issues, Transiency Issues, and Academic Issues.
- Consideration should be given to funding Districts based on the percent of cases in each risk category. Districts with a higher percentage of NEET students in the higher risk categories should be given more funding. The risk profile of students should also be considered here as some risk factors may be more difficult to address than others, e.g., addressing transiency issues.

### 3.3.3. Producing charts matching DFA analyses with other data sources

Whilst the team working on the NEET Survey analysis considered the DFA/DFS to hold promise as the basis for a funding instrument, the wide range of contextual issues influencing disengagement was also viewed as important. Consequently, a series of parallel analyses using related data was undertaken. Chief among these involved matching the DFS with socio-economic data for individual schools and districts. A sample of the products of this work can be viewed at Appendix D.

### 3.3.4. Geographic mapping

A fourth form of collation and analysis of results from the NEET survey involved geographic mapping of the data. Employing ARC-GIS software, a range of different configurations was created. These involved: Frequencies of NEET young people by postcodes; frequencies of indigenous NEET young people by post codes; mapping DFS-SEI correlations by postcodes; highlighting clusters of known NEET young people in relation to existing and proposed programs and related service provision, transport routes and so forth. An example of this geographic mapping work can be observed at Appendix E.

DRAFT



**APPENDIX A:  
BACKGROUND, PRINCIPLES AND GUIDELINES RELATING TO SUCCESSFUL RESPONSE  
AND INTERVENTION PROGRAMS AND THE PROFILING OF YOUNG PEOPLE NOT  
ENGAGED IN EDUCATION, EMPLOYMENT AND/OR TRAINING (NEET)**

***Definitions, contexts and scope***

- For the purposes of the current survey, 'NEET' youth can be defined broadly as young people not actually engaged in employment, education or training, and/or those at risk of disengagement from one or more of these activities.
- In a narrow technical sense, NEET youth may be said to constitute a subset of 'at risk' students, where the more extreme individual factors of disengagement (or their strong possibility) serve to differentiate NEET youth from other 'at risk' students.
- For the purposes of the current survey however, MPs and PCs engaged in the data collection process are requested to employ the broader definition for the term (i.e. young people not actually engaged in employment, education or training, and/or those considered at risk of disengagement from one or more of these activities).
- The actual target group of NEET young people in the 2008 survey is current Year 10's (i.e. predominantly, 1993 birthdates). These are the students who will become Year 11's in 2009.
- The estimated size of the group of young people comprising the NEET cohort in any year group is approximately 5-7 %. Currently in Western Australia, actually disengaged NEET youth constitute up to 10% of the 16-17 year-old student population. Between 4 and 6 % of students are considered as at risk of disengagement. In round figures, across WA this represents approximately 4000 students either disengaged or at risk of becoming so in any year group.
- This is not to say that NEET youth are spread evenly across districts in WA and that district collections may be expected to capture 5-7% of students. Regional variations in the level of risk are significant. With certain ethnic or socio-economic groups and/or in isolated and small rural communities, every young person may feasibly be considered at risk of becoming a NEET student. Similarly, in some communities, the availability of provision of education, training and employment opportunities, both existing and prospective, may be a key factor with respect to their levels of engagement and/or disengagement.
- Further, given that by definition, each NEET young person does not fit comfortably within standard education and training provisions, it is likely that individual cases are likely be very particular and personalised.
- In profiling for case analysis and strategic planning purposes therefore, NEET youth may be designated as a general category of student, although evidently, the more specified the category, the more useful. While analysis may commence at the category level, it therefore needs to become fine-grained and individualised.

***Principles and guidelines for collecting and using data from the NEET survey***

- The specificity of individual cases means that, in terms of programmatic and treatment responses, NEET cases must be individualised – that is to say, each NEET young person should be recognised and responded to separately (even if many individual cases do in fact fit defined categories).
- In practice therefore, an Individual Pathway Plan (or IPP) is essential for every NEET young person.

Reynolds, P.S., Ansell, D., & English, B. (2008). *Retention, participation and engagement: Mapping the attainments of 15-17 year olds in Western Australia 2006-2008*. Paper prepared for delivery at the Evaluation Conference, 10-12 September 2008. Sheraton Hotel, Perth.

- The profile categories comprising the NSP08 are not independent of each other. Many students exhibit behaviours or characteristics belonging to two or more categories. Thus, the categories should be seen as overlapping and interdependent.
- Early identification of risk consequently enables positive response, intervention and prevention. Research indicates that profiling needs to commence at the latest in Year 8, and arguably in senior primary years. In practical terms (and for the reason that the Participation Directorate's mandate and resourcing covers only those students affected by the raised leaving age legislation) in 2008 profiling of NEET youth is focused only on Year 10 students.
- For many NEET students, the school experience itself is identified as a contributing factor to the development of risk. A large part of the literature shows that schooling not only reveals problems, in some cases, it may well cause them.
- Flexibility of program and school response is crucial. That is to say, programs and strategies require the capacity to adapt to student needs, rather than requiring students to adapt to programs' structures and provisions. Similarly, when new programs are designed and created, they need to be purpose-built according to a defined clientele's profile. This flexibility requirement, enabling school responsiveness to defined needs, becomes crucial for youth at ages of 16 years and older, and contrasts with traditional schooling expectations that students will adapt to existing schooling provisions.
- Successful programs are likely to be built on flexible and responsive strategies. It does not follow that all successful strategies will necessarily be formalised into a distinct program. Successful strategies are usually individualised and may be profitable for the student even when a constituted program is not available.
- Successful intervention and response programs are very likely to be multifaceted. A combination of and collaboration between interdependent contributors and responses (people, agencies, programs, caregivers) is likely to be more successful than a single-focussed program into which a student is placed as a unilateral answer to a narrowly defined problem. Successful planning processes are very likely to be cross-sectoral and involve a number of agencies.
- Successful programs are also very likely to have response layers. A program may be designed to address directly a small range of NEET factors as a target. Within the program however, individualised and specialised elements of the program are more likely to be successful than undifferentiated group membership and response.
- Successful NEET programs are likely to be relatively small, with a low student-teacher ratio (suggested 1:8-12). Differential funding and staff – student ratios are very likely to be applied in successful programs.
- Factors to be considered in both assessing and responding to NEET youth include (but are not limited to) participation, retention, engagement, achievement, transition readiness and self-managing behaviours.

Thorough program and student profile maps should constitute a significant guide to effective program design

Source:

Participation Directorate, July, 2008. *NEET Student Profiling Software 2008 (NSP08) Users Guide*. Western Australian Department of Education and Training: Perth

Reynolds, P.S., Ansell, D., & English, B. (2008). *Retention, participation and engagement: Mapping the attainments of 15-17 year olds in Western Australia 2006-2008*. Paper prepared for delivery at the Evaluation Conference, 10-12 September 2008. Sheraton Hotel, Perth.

**APPENDIX B  
ANALYSIS – DESCRIPTIVE**

<b>Measures &amp; Filters</b>	<b>All Districts</b>	<b>District A</b>	<b>District B</b>	<b>District C</b>	<b>District E</b>	<b>District F</b>	<b>District G-O etc.</b>
<b>Measures</b>							
<b>Students</b>	4,144	140	276	643	87	508	
<b>Aboriginal</b>	850	16	19	98	12	39	
<b>ESL</b>	224		6	6	1	4	
<b>Current Alienation and Disengagement</b>	938	50	53	123	9	129	
<b>Risk of Disengagement</b>	1,667	50	127	306	18	250	
<b>Severe Risk of Disengagement</b>	769	28	84	128	5	91	
<b>Very Low Literacy, Academic Levels</b>	1,223	44	114	193	60	122	
<b>Learning Difficulties</b>	591	40	32	95	2	49	
<b>Physical Disability</b>	74		11	20		4	
<b>Education Support</b>	200	28	12	23	3	24	
<b>Pregnancy, Parenting, Single</b>	33			8		2	
<b>Gifted and Talented</b>	64		4	8		21	
<b>Poor Self-Motivation</b>	1,886	52	183	341	8	281	
<b>Possible Health / Wellbeing Issues</b>	1,034	38	64	190	15	109	
<b>Family Relationship Issues</b>	1,359	64	107	260	13	141	
<b>History of Transiency</b>	546	16	28	106	3	63	
<b>History of Behavioural Issues</b>	1,189	46	116	195	14	168	
<b>Student Living Independently</b>	85	6	4	12		8	
<b>Multiple Risk Factors</b>	1,341	28	100	161	11	182	

**Filters**

<b>Additional Support</b>							
<b>All Additional Supports</b>	4,144	140	276	643	87	508	
<b>Centrelink</b>	63		1	8		1	
<b>Education Assistant</b>	213	2	14	25	3	29	
<b>IPP</b>	157		33			3	
<b>Medical</b>	61		8	11		8	
<b>Not Applicable</b>	3,421	138	211	590	84	376	
<b>Outreach</b>	229		9	9		91	

<b>Attendance</b>							
<b>All Attendance Categories</b>	4,144	140	276	643	87	508	
<b>0-59% - At Risk - Severe</b>	1,215	54	65	168	15	180	
<b>60-79% - At Risk - Moderate</b>	957	20	69	207	13	158	

<b>80-89% - At Risk - Indicated</b>	773	4	81	95	19	84	
<b>90-100% - Regular</b>	938	16	56	134	37	76	
<b>Not Applicable</b>	261	46	5	39	3	10	

<b>Birth Year</b>							
<b>All Birth Years</b>	4,144	140	276	643	87	508	
<b>1989</b>	2		1				
<b>1990</b>	10		1	1			
<b>1991</b>	433	12	49	69	10	64	
<b>1992</b>	3,549	128	223	570	77	384	
<b>1993</b>	47		2	1		36	
<b>1994</b>	12					12	
<b>N/S</b>	91			2		12	

<b>Current Program</b>							
<b>All Current Programs</b>	4,144	140	276	643	87	508	
<b>Ed Support</b>	98		12	27	3	23	
<b>Mainstream</b>	2,719		218	502	70	349	
<b>Modified</b>	498	14	19	48	2	60	
<b>Not Applicable</b>	509	126	5	29	2	15	
<b>Special/Alternative</b>	320		22	37	10	61	

<b>Disengagement</b>							
<b>All Disengagements</b>	4,144	140	276	643	87	508	
<b>Current Alienation and Disengagement</b>	938	50	53	123	9	129	
<b>Not Applicable</b>	770	12	12	86	55	38	
<b>Risk of Disengagement</b>	1,667	50	127	306	18	250	
<b>Severe Disk of Disengagement</b>	769	28	84	128	5	91	

<b>Gender</b>							
<b>All Genders</b>	4,144	140	276	643	87	508	
<b>Female</b>	1,745	44	113	285	32	199	
<b>Male</b>	2,388	96	162	358	55	308	
<b>Unknown</b>	11		1			1	

<b>Other Education/Training</b>							
<b>All Other Education/Training</b>	4,144	140	276	643	87	508	
<b>Ed Support</b>	98		12	27	3	23	
<b>Mainstream</b>	2,719		218	502	70	349	
<b>Modified</b>	498	14	19	48	2	60	
<b>Not Applicable</b>	509	126	5	29	2	15	
<b>Special/Alternative</b>	320		22	37	10	61	

<b>Possible Difficulties</b>							
<b>All Possible Difficulties</b>	4,144	140	276	643	87	508	
<b>Combination (Form B) Best/Not Possible</b>	86	2		2		2	

<b>Locational Problems-No Access</b>	194	4	1	11	1	11	
<b>Locational Problems-Too Demanding</b>	476	2	1	26		117	
<b>Not Specified</b>	3,388	132	274	604	86	378	

<b>Possible Difficulties</b>							
<b>All Possible Difficulties</b>	4,144	140	276	643	87	508	
<b>Combination (Form B) Best/Not Possible</b>	86	2		2		2	
<b>Locational Problems-No Access</b>	194	4	1	11	1	11	
<b>Locational Problems-Too Demanding</b>	476	2	1	26		117	
<b>Not Specified</b>	3,388	132	274	604	86	378	

<b>Student Leaving</b>							
<b>All Student Leaving</b>	4,144	140	276	643	87	508	
<b>Circumstantial Leaver</b>	234		13	39	4	18	
<b>Discouraged Leaver</b>	448	2	36	91	6	38	
<b>Not Applicable</b>	2,810	138	191	390	75	357	
<b>Opportune Leaver</b>	317		28	98	2	37	
<b>Positive Leaver</b>	335		8	25		58	

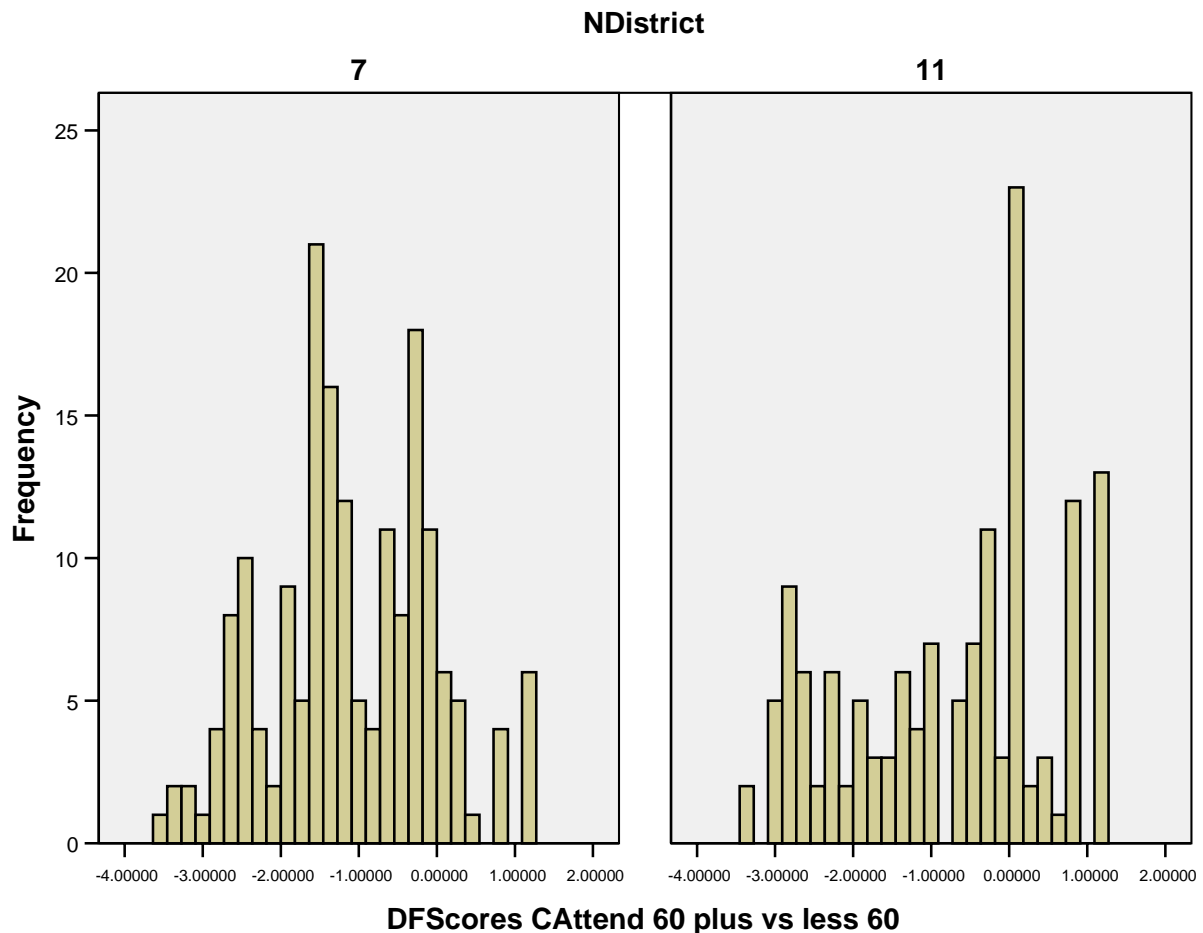
<b>Student Staying</b>							
<b>All Student Staying</b>	4,144	140	276	643	87	508	
<b>Discouraged Stayer</b>	425	10	32	89	1	45	
<b>Disengaged Stayer</b>	656	22	64	79	7	58	
<b>Not Applicable</b>	1,459	94	86	282	19	184	
<b>Positive Stayer</b>	736	2	24	67	49	49	
<b>Reluctant Stayer</b>	868	12	70	126	11	172	

## APPENDIX C DFS CHARTS

Chart 1 shows the distribution of scores for the two Districts with the (combined) lowest mean on the discriminant function, i.e., these two Districts have (in an overall sense) students with the highest risk of disengagement.

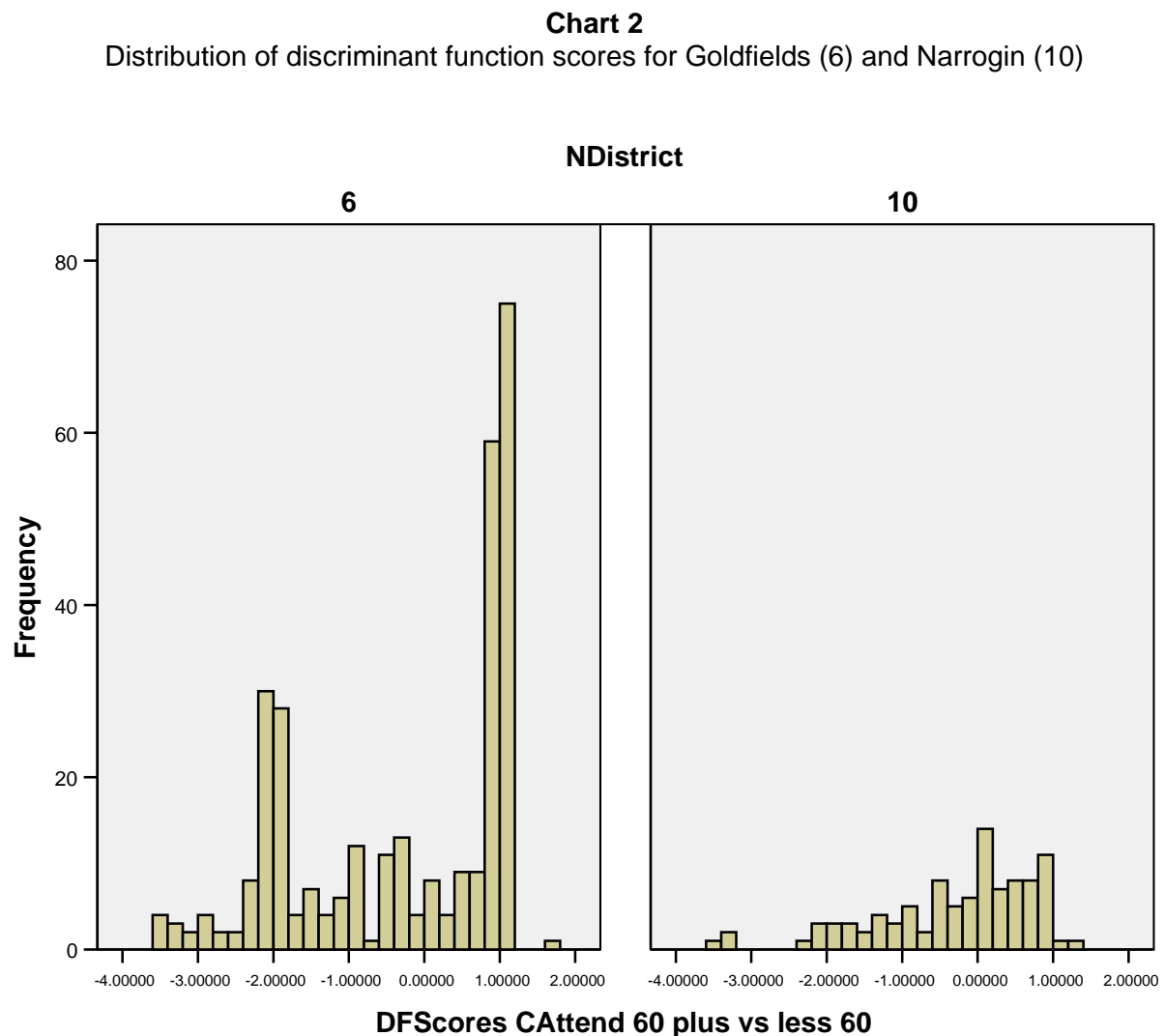
**Chart 1**

Distribution of discriminant function scores for Kimberley (7) and Pilbara (11)



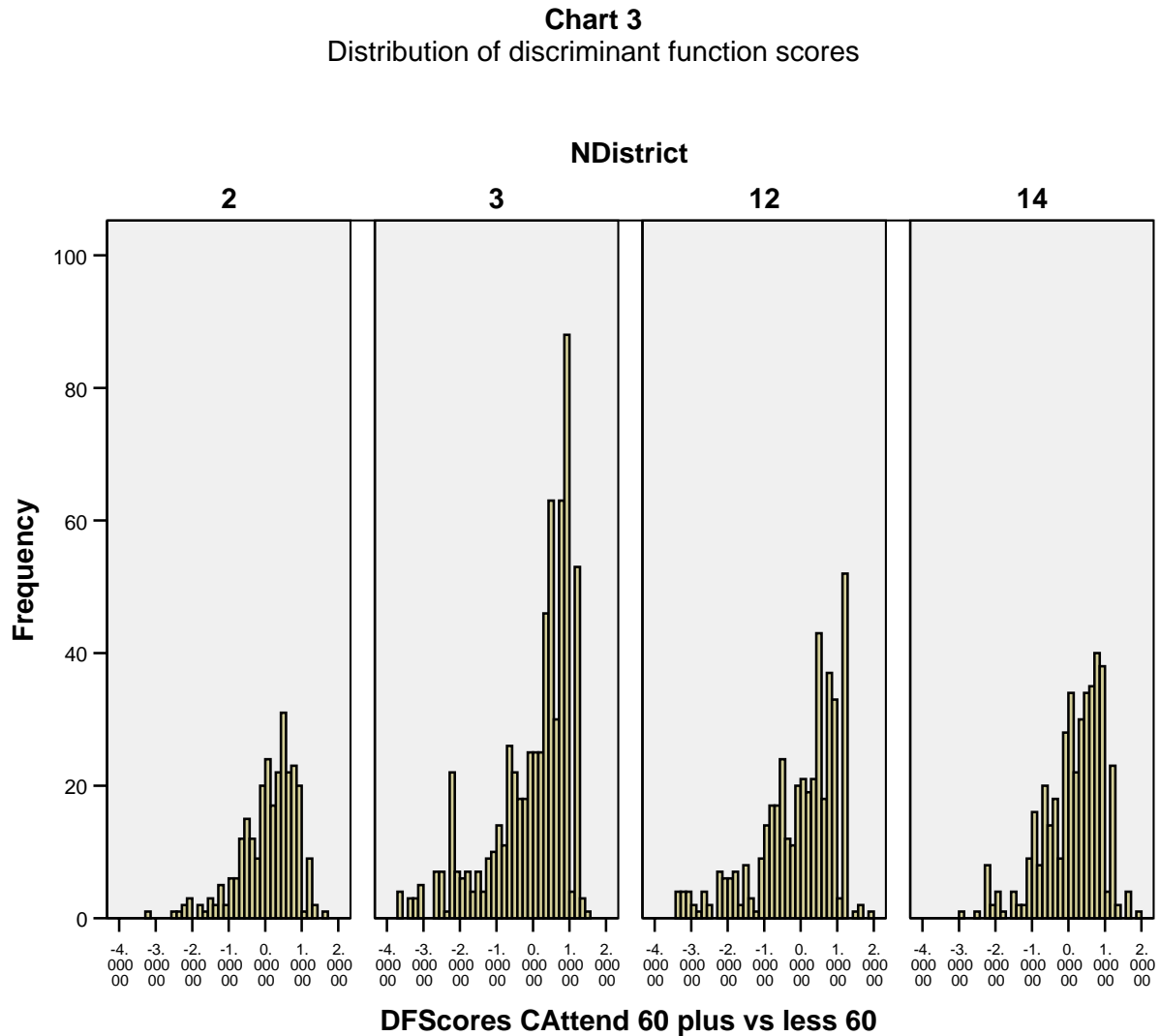
As indicated in Chart 1, scores for individual students range from -3.59 to 1.18. If a cut-off of -0.81 is adopted for defining students with the 'highest' risk of disengagement, approximately 30% of cases in these two Districts would be excluded, i.e., approximately 30% of students in the Kimberley and Pilbara Districts would not be rated as having the highest priority for funding.

Chart 2 shows the distribution of scores for the two Districts with the second lowest (combined) mean on the discriminant function, i.e., these two Districts have (in an overall sense) students with the second highest risk of disengagement.



As indicated in Chart 2, scores for individual students range from -3.59 to 1.67. If a cut-off of -0.81 is adopted for defining students with the 'highest' risk of disengagement, approximately 50% of cases in these two Districts would be excluded, i.e., there are approximately 50% of students in these Districts who would be regarded as having the highest priority for funding.

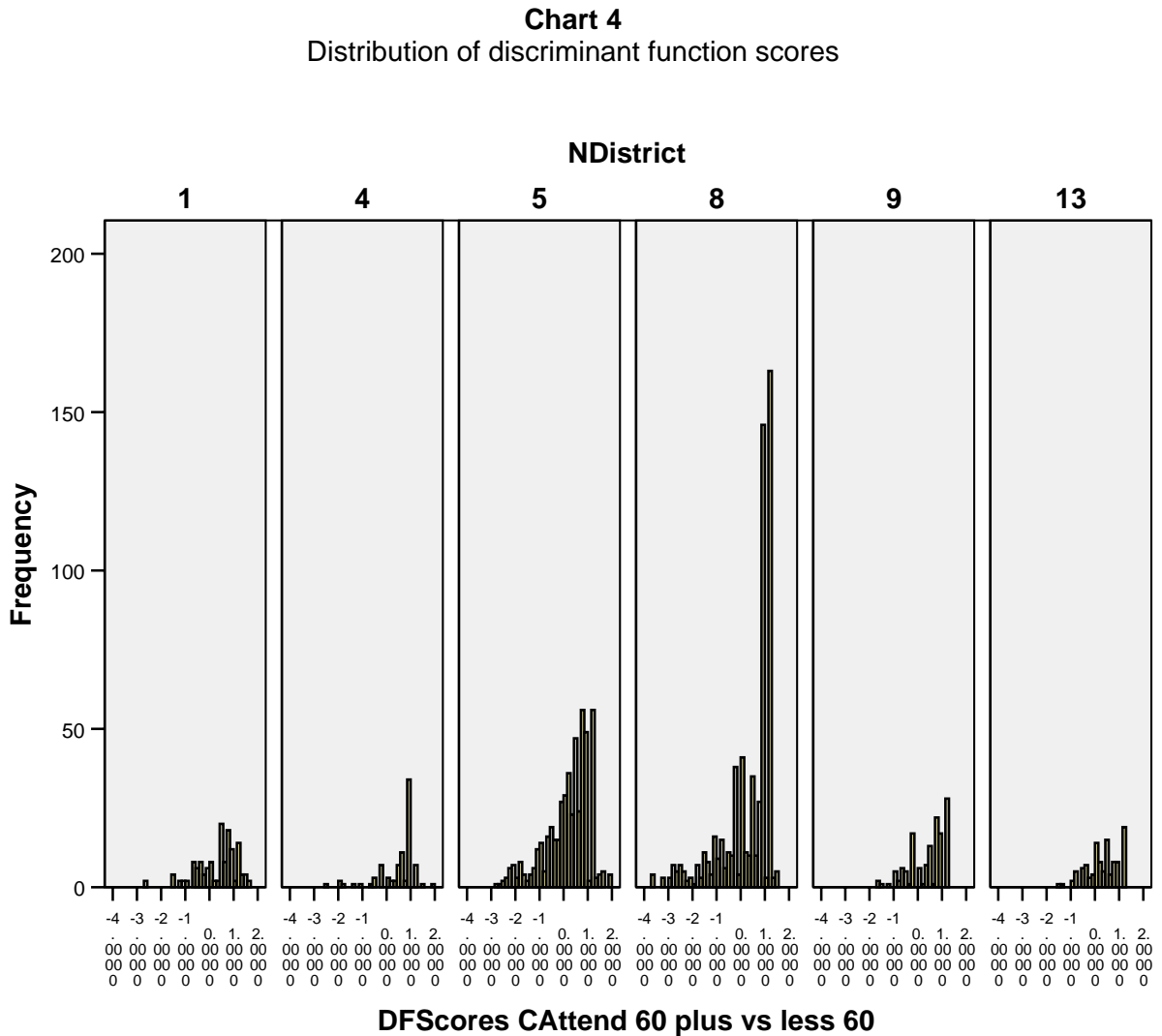
Chart 3 shows the distribution of scores for the four Districts with the third lowest (combined) mean on the discriminant function, i.e., these four Districts have (in an overall sense) students with the third highest risk of disengagement.



As indicated in Chart 3, scores for individual students range from -3.59 to 1.87. If a cut-off of -0.81 is adopted for defining students with the 'highest' risk of disengagement, approximately 70% of cases in these two Districts would be excluded, i.e., there are approximately 30% of students in these Districts who would be regarded as having the highest priority for funding.

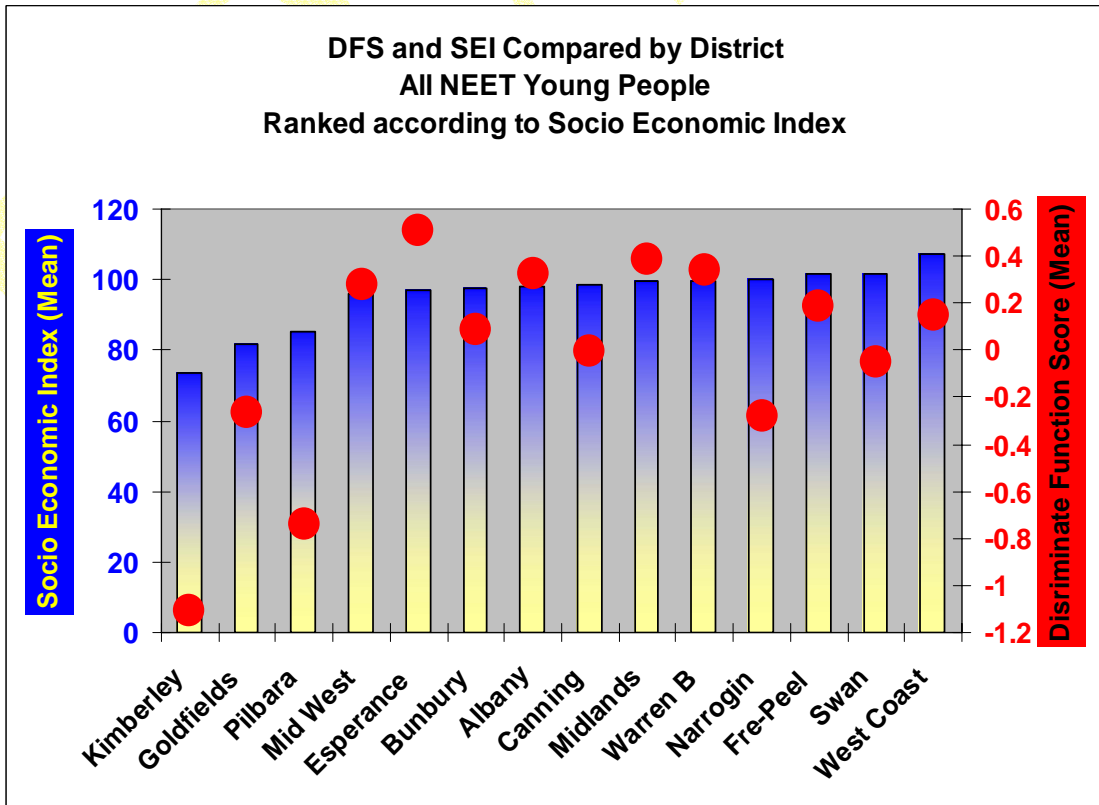
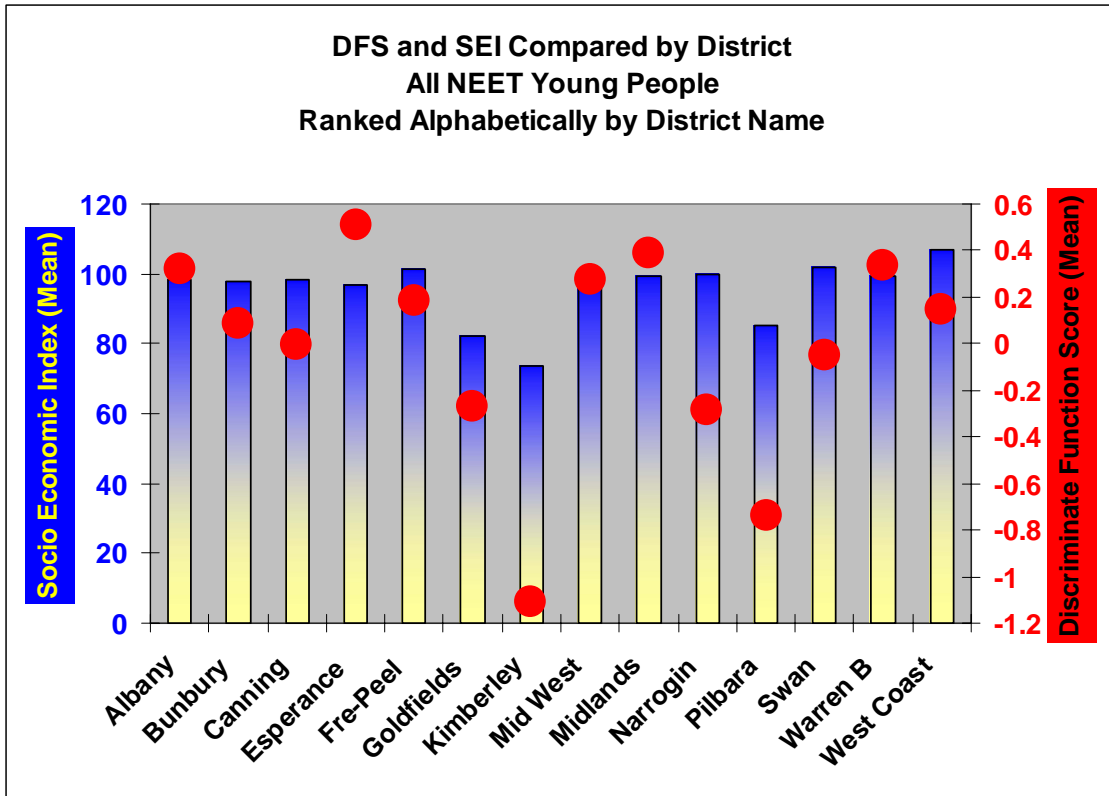


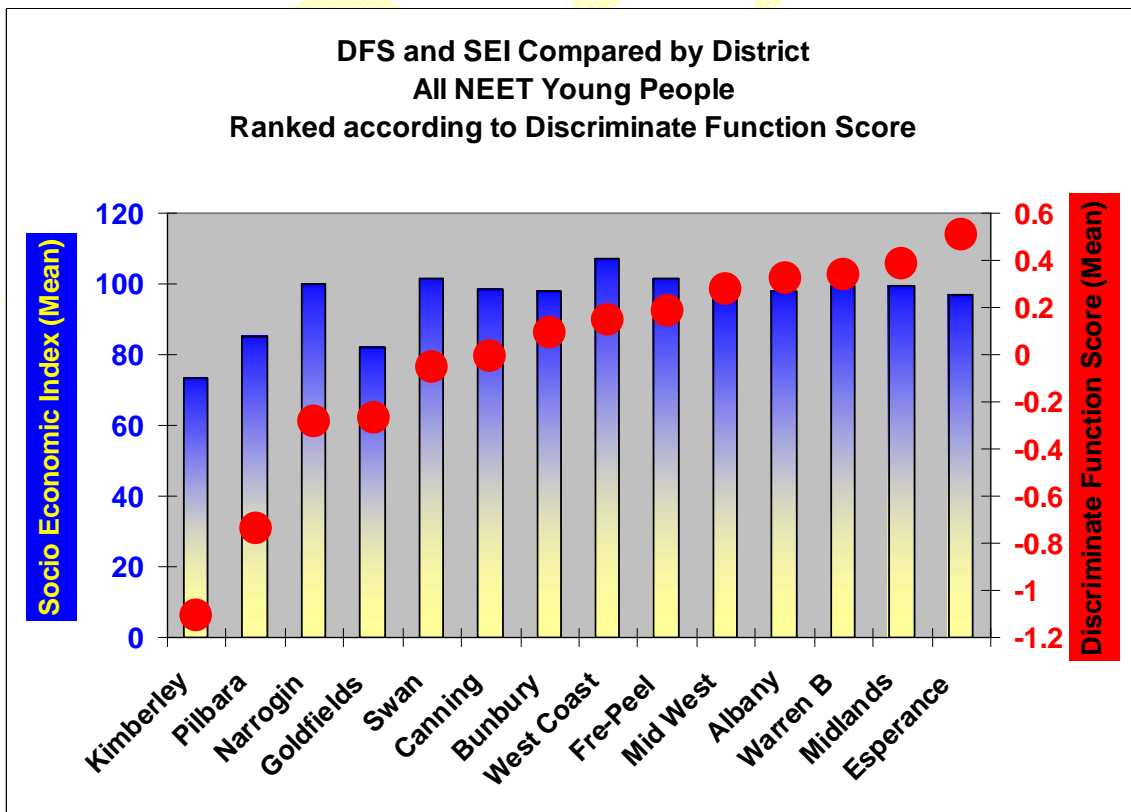
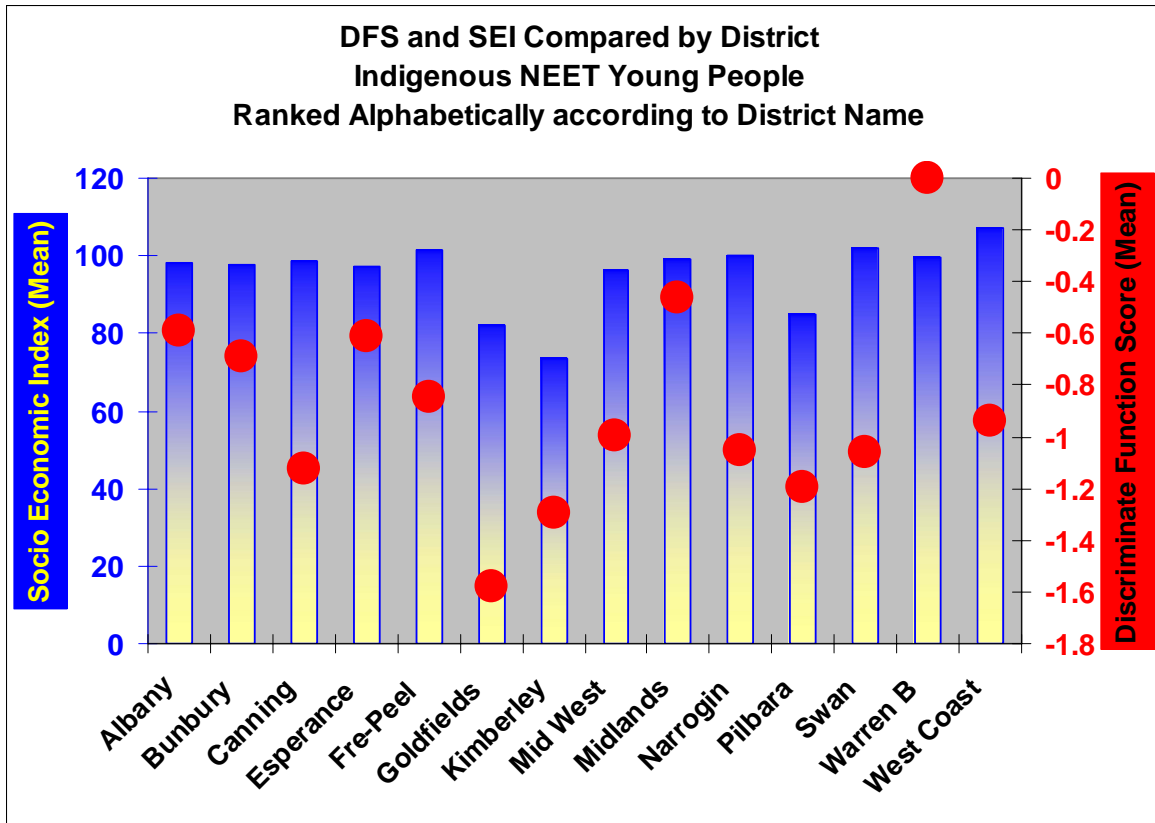
Chart 4 shows the distribution of scores for the six Districts with the highest (combined) mean on the discriminant function, i.e., these six Districts have (in an overall sense) students with the lowest risk of disengagement.



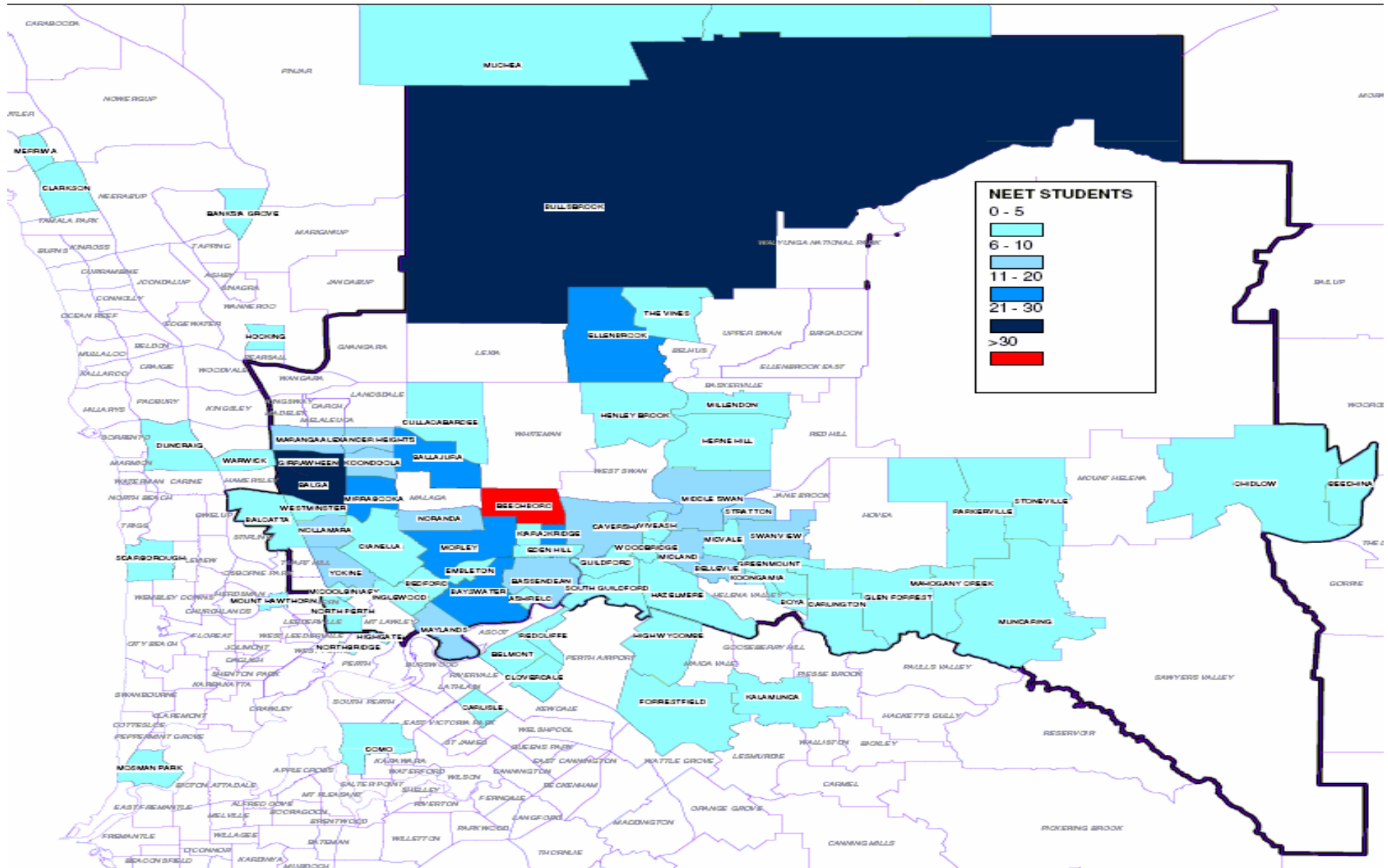
As indicated in Chart 4, scores for individual students range from -3.59 to 1.87. If a cut-off of -0.81 is adopted for defining students with the 'highest' risk of disengagement, approximately 20% of cases in these two Districts would be excluded, i.e., there are approximately 20% of students in these Districts who would be regarded as having the highest priority for funding. As also shown in this chart, many of these students are from the adjacent districts.

APPENDIX D  
CHARTS COMPARING SEI AND DFS





## APPENDIX E: GEOGRAPHICAL MAPPING



Reynolds, P.S., Ansell, D., & English, B. (2008). *Retention, participation and engagement: Mapping the attainments of 15-17 year olds in Western Australia 2006-2008*. Paper prepared for delivery at the Evaluation Conference, 10-12 September 2008. Sheraton Hotel, Perth.