

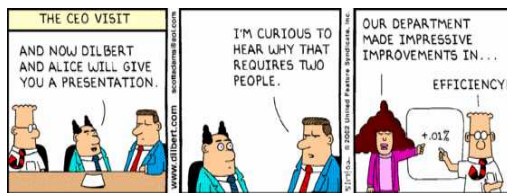
## An Investigation of the efficiency of TAFE Institutes

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## Concept of Efficiency

- The ratio of the useful output to the total input in any system.

## (In-) efficiency of presentations



## Data Envelopment Analysis

- Mathematical technique that measures the efficiencies of decision making units (institutes, in this case), where there are multiple inputs and outputs
- Utilises linear programming methodology

## Strength and limitations of DEA

- **Strengths**
  - ▶ Suitable for multiple inputs and outputs
  - ▶ Does not need an algebraic relationship between variables
  - ▶ Provides various analytical information

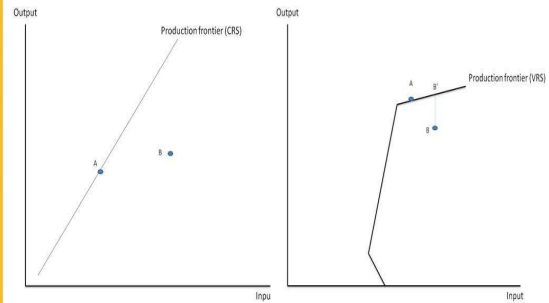
## Strength and limitations of DEA

- **Limitations**
  - ▶ Always identifies at least one efficient unit
  - ▶ Possible influence of outliers
  - ▶ Difficult to account for environmental influences
  - ▶ Will not necessarily capture all variables that account for differences in efficiencies
  - ▶ Cannot compare across different studies

## Types of efficiency

- CRS efficiency
- VRS efficiency
- Scale efficiency

## Constant v Variable Returns to Scale



## DEA Variables (from 2007)

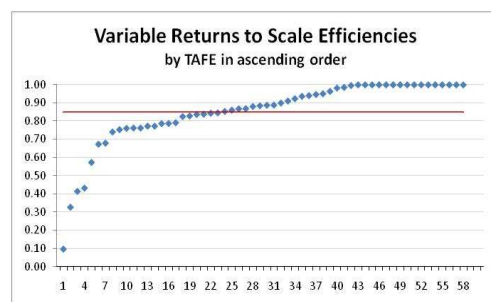
### Input

- Expenditure on salaries and related
- Other expenditure (excl. capital cost)

### Output

- Full year training equivalents (trades)
- Full year training equivalents (non-trade)

## DEA Findings



## Predictors of Efficiency

- Interested in seeing if other quality and environmental variables relate to efficiency

## Quality Variables

- % Satisfied with training
- % Achieved main goal
- % Would recommend institute
- % Employed before versus after
- Load pass rate

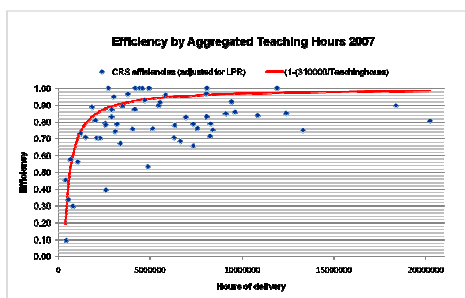
## Environmental Variables

- Remoteness indicator
- Overseas students
- NESB
- No post school/no year 12
- Part-time status
- Disability
- Average hours
- % Apprentices and trainees

## Regression

Variable	Parameter Estimate	Standard Error	t Value	Pr> t	Standardized Estimate
% Remoteness indicator	-0.1233	0.0276	-4.46	<.0001	-0.6959
% Overseas students	-0.0009	0.0083	0.11	0.9115	0.0161
% Achieved main goal	0.0043	0.0039	1.11	0.2732	0.1708
% Employed after v before	-0.0051	0.0077	-0.66	0.5095	-0.0876
% Satisfied with training	0.0067	0.0082	0.82	0.4173	0.0902
% Would recommend institution	0.0175	0.0130	1.34	0.1870	0.1997
% English second language	0.0027	0.0029	0.91	0.3697	0.1444
% No post school quals / no yr 12	0.0015	0.0020	0.75	0.4569	0.1017
% with disability	-0.0142	0.0099	-1.44	0.1573	-0.1892
% Part time students	0.0066	0.0117	0.57	0.5744	0.2396
% Apprentices	0.0002	0.0033	-0.09	0.9311	-0.0118
Load pass rate	0.0045	0.0035	1.30	0.2015	0.1593
Average hours	0.0012	0.0010	1.18	0.2425	0.4932
Intercept	-2.8933	2.1497	-1.35	0.1852	

## Economy of Scale Issues



## Conclusion

- Size matters
- There is a point beyond which size has only a limited impact on efficiency
- The remoteness indicator is a negative predictor of efficiency
- Relative efficiency is quite high overall

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