Labour Market Outcomes of Vocational Education and Training (VET) for People with a Disability

Cain Polidano
(cainp@unimelb.edu.au)

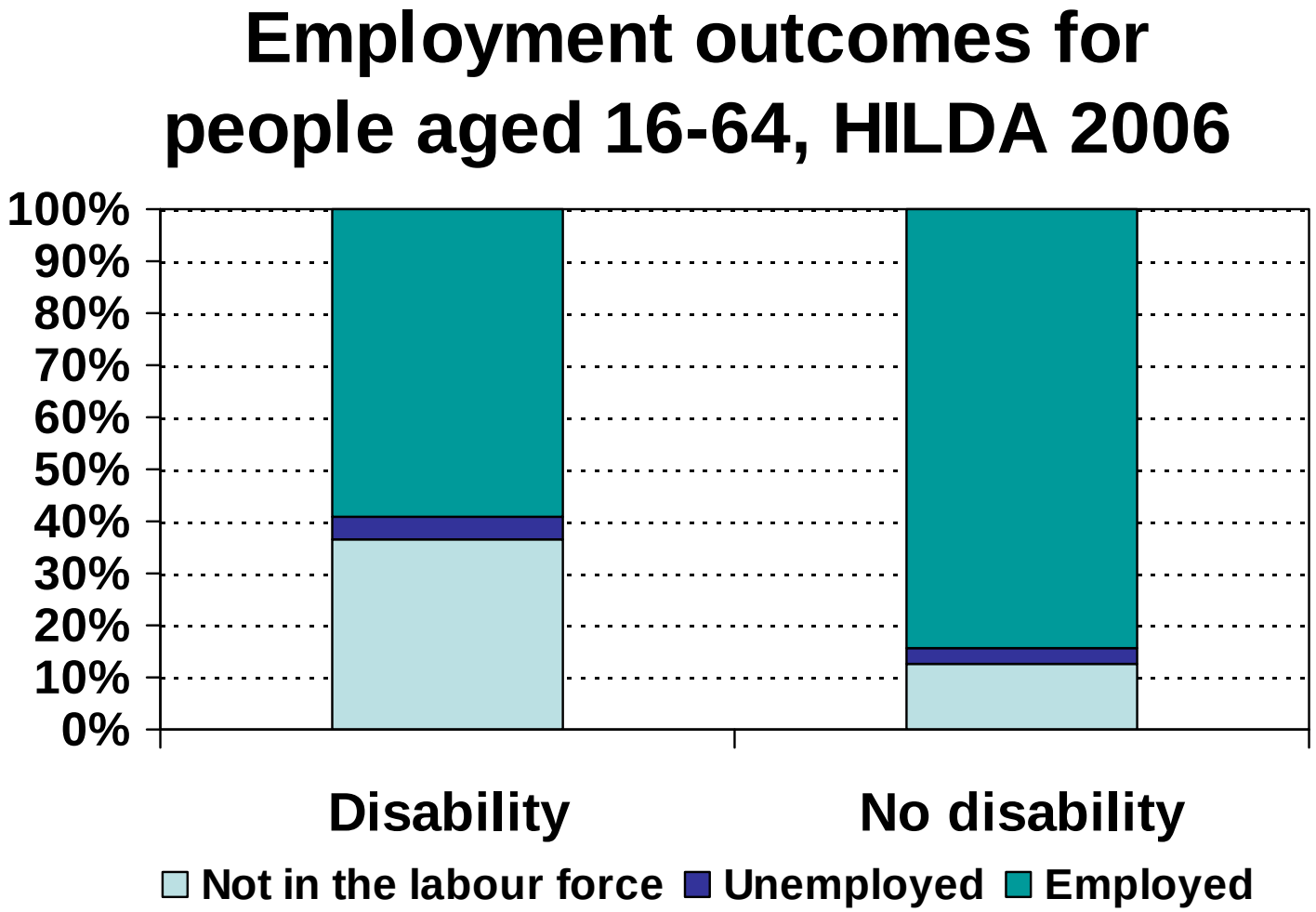
THE UNIVERSITY OF MELBOURNE

MELBOURNE INSTITUTE
of Applied Economic and Social Research

Introduction

- Disability is associated with poor labour market outcomes
- Demand and supply factors are to blame
  - Demand:
    - discrimination
    - costs of accommodating disability
  - Supply:
    - participation costs
    - perceived discrimination and low self-esteem
    - poor education
- Improving outcomes is central to the Government's 'social inclusion agenda'

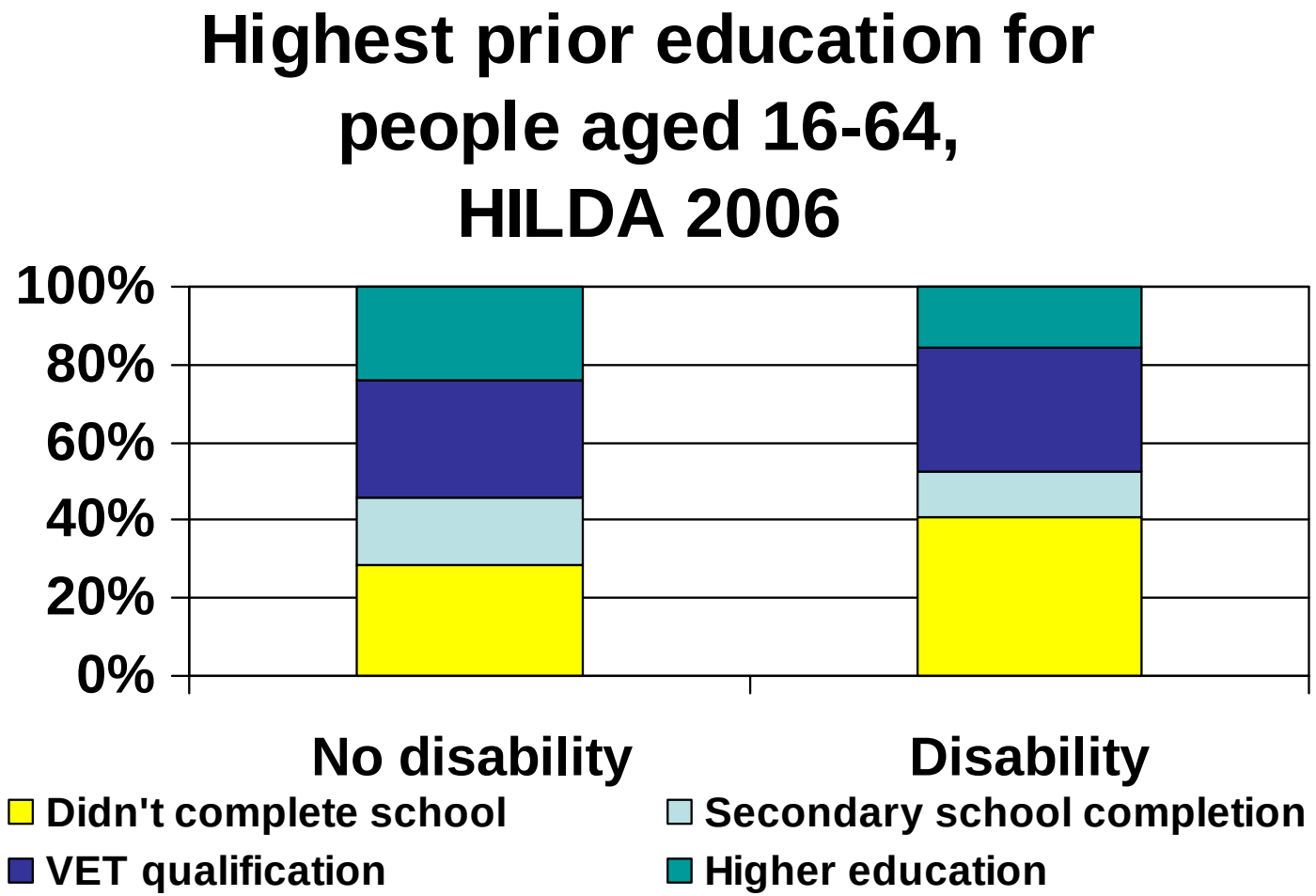
Introduction



Introduction

- Disability is associated with poor labour market outcomes
- Demand and supply factors are to blame
  - Demand:
    - discrimination
    - costs of accommodating disability
  - Supply:
    - participation costs
    - perceived discrimination and low self-esteem
    - poor education
- Improving outcomes is central to the Government's 'social inclusion agenda'

Introduction



Introduction

- Disability is associated with poor labour market outcomes
- Demand and supply factors are to blame
  - Demand:
    - discrimination
  - Supply:
    - participation costs
    - perceived discrimination and low self-esteem
    - poor educational outcomes
- Improving outcomes is central to the Government's 'social inclusion agenda'

Vocational education and training (VET)

- Large number of trade and non-trade courses
- Work placements are often a requirement
- Industry competancy standards
- Prior learning recognised
- Nationally recognised qualification
  - Certificate I&II
  - Certificate III&IV
  - Diploma or Advanced Diploma

Vocational education and training (VET)

- Large number of trade and non-trade courses
- Work placements are often a requirement
- Industry competancy standards
- Prior learning recognised
- Nationally recognised qualification
  - Certificate I&II
  - Certificate III&IV
  - Diploma or Advanced Diploma

Vocational education and training (VET)

- Large number of trade and non-trade courses
- Work placements are often a requirement
- Industry competancy standards
- Prior learning recognised
- Nationally recognised qualification
  - Certificate I&II
  - Certificate III&IV
  - Diploma or Advanced Diploma

Vocational education and training (VET)

- Large number of trade and non-trade courses
- Work placements are often a requirement
- Prior learning recognised
- Industry competancy standards
- Nationally recognised qualification
  - Certificate I&II
  - Certificate III&IV
  - Diploma or Advanced Diploma

Vocational education and training (VET)

- Highly accessible for people with a disability:
  - caters for various education backgrounds
  - wide range of courses available
  - flexible delivery modes
  - relatively low cost
- Possible employment benefits:
  - re-skill after disability onset
  - help signal ability not disability
  - improved ‘soft’ and ‘hard’ skills

Vocational education and training (VET)

- Highly accessible for people with a disability:
  - caters for various education backgrounds
  - wide range of courses available
  - flexible delivery modes
  - relatively low cost
- Possible employment benefits:
  - re-skill after disability onset
  - help signal ability not disability
  - improved ‘soft’ and ‘hard’ skills

Key research questions

- How does disability affect employment outcomes?
  - differences in disability type?
  - differences in age of onset?
  - state dependence?
- For people with a disability, what are the employment benefits of VET through time?
- For people with a disability, are there any barriers to participation and completion?

Key research questions

- How does disability affect employment outcomes?
  - differences in disability type?
  - differences in age of onset?
  - state dependence?
- For people with a disability, what are the employment benefits of VET through time?
- For people with a disability, are there any barriers to VET participation and completion?

Key research questions

- How does disability affect employment outcomes?
  - differences in disability type?
  - differences in age of onset?
  - state dependence?
- For people with a disability, what are the employment benefits of VET through time?
- For people with a disability, are there any barriers to VET participation and completion?

Data

- Household Income and Labour Dynamics Australia (HILDA) survey, 2001-06
- Sample
  - 16-64 years of age
  - Omit full-time students and full-time carers
  - 2 subsamples
    - *Disability:* report disability in *t* and *t*-1
    - *No disability:* no reported disability in *t* and *t*-1
  - Omit 2001 and use 2002-06 data

Data

- Household Income and Labour Dynamics Australia (HILDA) survey, 2001-06
- Sample
  - 16-64 years of age
  - Omit full-time students and full-time carers
  - 2 sub-samples
    - *Disability:* report disability in *t* and *t*-1
    - *No disability:* no reported disability in *t* and *t*-1
  - Omit 2001 and use 2002-06 unbalanced panel data

Data

- Disability
  - 3 characteristics: type, onset and severity
  - Missing type and onset data in 2002
- VET
  - Qualification in certificate I-IV, undefined certificate, diploma or advanced diploma
  - VET stock in initial period: highest prior education
  - VET flow: qualification since last interview
- Socio-demographics
  - Age, gender, region, etc.

Data

- Disability
  - 3 characteristics: type, onset and severity
  - Missing type and onset data in 2002
- VET
  - Qualification in certificate I-IV, undefined certificate, diploma or advanced diploma
  - VET stock: highest prior education in initial period
  - VET flow: qualification since last interview
- Socio-demographics
  - Age, gender, region, etc.

Data

- Disability
  - 3 characteristics: type, onset and severity
  - Missing data
- VET
  - Qualification in certificate I-IV, undefined certificate, diploma or advanced diploma
  - VET stock in initial period: highest prior education
  - VET flow: qualification since last interview
- Socio-demographics
  - Age, gender, region, etc.

Data

Sample sizes, HILDA 2002-06

	Avg. no. per wave	Total number
No disability	9,448	37,793
Disability	2,179	8,716
Sensory	155	621
Physical	805	3,218
Mental[1]	150	599
Other	321	1,282
Multiple	749	2,996

[1]Psychological or intellectual disability

Descriptive statistics

Employment status by disability type, HILDA 2002-06

	No disability	Disability				
	%	*Sensory* %	*Physical* %	*Mental* %	*Other* %	*Multiple* %
Employed	82	76	61	46	67	35
Unemployed	3	5	4	10	4	4
NLF	14	19	35	44	29	60
Total number	37,793	621	3,218	599	1,282	2,996

Descriptive statistics

Employment status by disability onset, HILDA 2002-06

	Child, 0-14 %	Youth, 15-24 %	Prime age adult, 25-44 %	Older adult, 45-64 %	Unknown %
Employed	50	57	64	61	54
Unemployed	5	3	2	3	5
NLF	44	40	33	36	41
Total number	3,591	603	427	72	4,023

Descriptive statistics

Employment rates after VET, *no disability*

		2003	2004	2005	2006
Flow of VET in…					
2003	No	80%	81%	84%	83%
	Yes	86%	88%	89%	91%
2004	No	-	80%	83%	83%
	Yes	-	82%	87%	88%
2005	No	-	-	83%	84%
	Yes	-	-	83%	86%
2006	No	-	-	-	83%
	Yes	-	-	-	86%

Descriptive statistics

Employment rates after VET, *disability*

		2003	2004	2005	2006
Flow of VET in…					
2003	No	53%	53%	54%	55%
	Yes	64%	71%	76%	75%
2004	No	-	53%	55%	55%
	Yes	-	67%	70%	70%
2005	No	-	-	54%	55%
	Yes	-	-	69%	73%
2006	No	-	-	-	55%
	Yes	-	-	-	67%

Descriptive statistics

Rates of participation and participation leading to a qualification, HILDA 2002-06

	Participation		Received qualification	
	No Disability %	Disability %	No Disability %	Disability %
Certificate I or II	1.9	1.9	65.5	60.3
Certificate III or IV	3.0	2.7	63.1	57.8
Cert. undefined	1.2	1.0	71.3	64.2
Dip or Adv. Dip.	1.3	0.7	47.5	45.2
All VET	7.4	6.3	63.0	59.5
Total number	37,793	8,716	2,778	553

Descriptive statistics

Changes in employment status

Disability

Status t-1	*NLF*	*Unemployed*	*Employed*
NLF	85%	4%	11%
Unemployed	32%	29%	39%
Employed	9%	2%	88%

No disability

Status t-1	*NLF*	*Unemployed*	*Employed*
NLF	70%	6%	24%
Unemployed	21%	25%	55%
Employed	5%	2%	94%

Modelling employment

- Employment modelled as a binary outcome: 1/0 employed
- Random effects dynamic probit model:

$$y_{it}^{*} = \alpha + x_{it}'\beta + \gamma y_{it-1} + u_i + \varepsilon_{it}$$

$$y_{it} = 1(y_{it}^{*} > 0)$$

- Potentially endogenous variables:
  - x_{it} likely to be correlated with u_i
  - y_{it-1}initial conditions problem

Modelling employment

- Employment modelled as a binary outcome: 1/0 employed
- Random effects dynamic probit model:

$$y_{it}^{*} = \alpha + x_{it}'\beta + \gamma y_{it-1} + u_i + \varepsilon_{it}$$

$$y_{it} = 1(y_{it}^{*} > 0)$$

- Potentially endogenous variables:
  - x_{it} likely to be correlated with u_i
  - y_{it-1} initial conditions problem

Modelling employment

- Employment modelled as a binary outcome: 1/0 employed
- Random effects dynamic probit model:

$$y_{it}^{*} = \alpha + x_{it}'\beta + \gamma y_{it-1} + u_i + \varepsilon_{it}$$

$$y_{it} = 1(y_{it}^{*} > 0)$$

- Potentially endogenous variables:
  - x_{it} likely to be correlated with u_i
  - y_{it-1} initial conditions problem

Modelling employment

- Follow Heckman (1981):

$$y_{it}^{*} = \alpha + x_{it}'\beta + \gamma y_{it-1} + u_i + \varepsilon_{it}$$

$$y_{i1}^{*} = \phi + z_{i1}'\lambda + \psi u_i + \varepsilon_{i1}$$

$$y_{i1} = 1(y_{i1}^{*} > 0),\ y_{it} = 1(y_{it}^{*} > 0)$$

  - Estimate using Greene (2007) shortcut in LIMDEP:
    - Transform the data and combine equations
    - Random parameters estimation
    - α, ϕ are mean intercepts, with the same random intercept term (random effect) u_i
    - Correlation between random effects is 1

Modelling employment

- Follow Heckman (1981):

$$y_{it}^{*} = \alpha + x_{it}'\beta + \gamma y_{it-1} + u_i + \varepsilon_{it}$$

$$y_{i1}^{*} = \phi + z_{i1}'\lambda + \psi u_i + \varepsilon_{i1}$$

$$y_{i1} = 1(y_{i1}^{*} > 0),\ y_{it} = 1(y_{it}^{*} > 0)$$

  - Estimate using Greene (2007) shortcut in LIMDEP:
    - Transform the data and combine equations
    - Random parameters estimation
    - α, ϕ are mean intercepts, with the same random intercept term (random effect) u_i
    - Correlation between random effects is 1

Modelling employment

- Greene (2007) shortcut:

$$y_{it}^{*} = d_{it}\phi + z_{it}'\lambda + d_{it}\tau u_i + f_{it}\alpha + x_{it}'\beta + \gamma y_{it-1} + f_{it}\sigma u_i + \varepsilon_{it}$$

$$d_{it} = 1(t=1);\ f_{it} = 1(t>1);$$

$$z_{it}\begin{cases} z_{it} \text{ if } t=1 \\ 0 \text{ if } t>1 \end{cases};\ y_{it-1}, x_{it}\begin{cases} y_{it-1}, x_{it} \text{ if } t>1 \\ 0 \text{ if } t=1 \end{cases};$$

$\tau, \sigma =$ scalors to be estimated, allows variance of intercepts to differ

Model specification – within sample

- Control for correlation between u_i and x_{it}
  - Include Mundlak (1978) corrections for time varying variables, including flow of VET
- Stock of VET
  - Highest prior education in initial period
- Flow of VET
  - VET, completed since last interview
  - VET *t*-1
  - VET *t*-2

Model specification – within sample

- Control for correlation between u_i and x_{it}
  - Include Mundlak (1978) corrections for time varying variables, including flow of VET
- Stock of VET
  - Highest prior education in initial period
- Flow of VET
  - VET, completed since last interview
  - VET *t*-1
  - VET *t*-2

Model specification – within sample

		Initial period equation	Within sample equation			
		t=1	t=2	t=3	t=4	t=5
VET stock	Highest education in initial period	✓	✓	✓	✓	✓
VET flow	VET	-	✓	✓	✓	✓
	VET t-1	-	0	✓	✓	✓
	VET t-2	-	0	0	✓	✓
Missing value dummies	VET t-1	-	1	0	0	0
	VET t-2	-	1	1	0	0

Marginal effects of employment

Disability type, t-1	m.e.	t-stat
Sensory	ref.	ref.
Physical	-0.033	-0.644
Mental	-0.172	-3.010**
Other	-0.007	-0.122
Multiple	-0.143	-2.694**
Extent of work limitation (0-10)	0.003	0.419
Disability onset, t-1		
Child (0-14)	ref.	ref.
Youth (15-24)	-0.007	-0.17
Prime age (25-44)	0.012	0.23
Older adult (45-64)	0.233	2.173**
Onset unknown	0.042	1.213

Marginal effects of employment

	Disability		No disability	
	m.e.	t-stat	m.e.	t-stat
Highest Education in initial period				
Higher education	0.16	4.412**	0.057	6.784**
VET	0.098	3.794**	0.031	5.538**
Completed secondary school	0.061	1.574	0.028	4.785**
Did not complete secondary school	ref.	ref.	ref.	ref.
Flow of VET				
Completed VET	0.177	2.425**	0.004	0.457
Completed VET, t-1	0.154	1.702*	0.005	0.447
Completed VET, t-2	0.206	1.51	-0.006	-0.437
Lagged VET missing value indicator				
Completed VET, t-1	0.046	1.363	0.003	0.779
Completed VET, t-2	-0.025	-0.828	0.016	3.699**
Employed t-1	0.513	19.846**	0.166	7.779**

Marginal effects of employment

	Disability		No disability	
State of residence	m.e.	t-stat	m.e.	t-stat
NSW	ref.	ref.	ref.	ref.
Victoria	-0.495	-2.193**	-0.003	-0.107
Queensland	-0.107	-0.356	0.007	0.405
Western Australia	-0.204	-0.191	0.013	0.434
Tasmania	0.367	2.261**	-0.08	-1.818*
South Australia	-0.105	-0.068	-0.08	-1.764*
ACT/Northern Territory	-0.036	-0.459	0.016	1.55
Live in rural area	-0.082	-0.79	-0.024	-2.118**
Live rent free	ref.	ref.	ref.	ref.
Own own home	0.069	0.565	0.024	1.651
Rent	0.062	0.508	0.035	2.396**
Index of socio-ec. Advantage (1-10)	0.038	2.342**	0.002	1.356

Marginal effects of employment

	Disability		No disability	
	m.e.	t-stat	m.e.	t-stat
Female	0.111	2.997**	-0.006	-1.096
Married	0.184	1.578	-0.009	-0.604
Married x Female	-0.017	-0.091	-0.001	-0.039
Dependent children less than 15	0.039	0.332	-0.006	-0.345
Female x Dependent children	-0.284	-1.517	-0.09	-3.851**
Age				
15-24	ref.	ref.	ref.	ref.
25-34	0.052	0.993	-0.045	-2.809**
35-44	0.015	0.315	-0.039	-1.941*
45-54	-0.112	-2.212**	-0.068	-2.731**
55-64	-0.385	-6.783**	-0.081	-2.723**

Conclusions and policy implications

- Being out of work has a large ‘scarring effect’ on the future employment prospects of people with a disability
  - early labour market success
  - rehabilitation is important
  - greater long-term impacts from a recession
- Adverse neighbourhood effects are severe
  - improving mobility is important
- VET provides short and longer-term employment benefits for people with a disability
  - address barriers to participation/completion

Conclusions and policy implications

- Being out of work has a large ‘scarring effect’ on the future employment prospects of people with a disability
  - early labour market success
  - rehabilitation is important
  - greater long-term impacts from a recession
- Adverse neighbourhood effects are severe
  - improving mobility is important
- VET provides short and longer-term employment benefits for people with a disability
  - address barriers to participation/completion

Conclusions and policy implications

- Being out of work has a large ‘scarring effect’ on the future employment prospects of people with a disability
  - early labour market success
  - rehabilitation is important
  - greater long-term impacts from a recession
- Adverse neighbourhood effects are severe
  - improving mobility is important
- VET provides short and longer-term employment benefits for people with a disability
  - address barriers to participation/completion