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# Costs of Production (CoP)

Produced for the CRC for Premium Quality Wool undergraduate program by;  
Andrew Patterson, Patterson Rural Business Management.



# Importance of CoP

- **production efficiency**
  - recognition of “high cost processes”
  - comparison with similar farms
    - BENCHMARKING
  - enhance profitability
    - pasture, breeding, management
- **recognising target price**
  - price setting, “price making”
    - MARKETING

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# CoP & Agricultural Products

- use has been restricted until recently
  - improved recording, accounting
- influence of other enterprises
  - cropping, livestock
- seasonal effects of inputs
  - e.g. fertiliser levels
- farmers have been “price takers”
- lack of marketing strategies
  - forward contracts, futures
  - immediate requirement

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# Definitions

- **Woolmark CoP**
  - total costs attributable to wool production only
  - variable (direct), pasture, fixed, labour
- **Breakeven price (BEP)**
  - price required to cover total CoP after allowing for sheep trading (0% return on capital)
- **Target price (TP)**
  - $\text{BEP} + \text{return on invested capital}$

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# Benchmarking Standards

- Identified by ZAC's in 1996
- Wool Industry Benchmarking Review
  - review of benchmarking programs
  - principles of benchmarking
- Benchmarking in the Wool Industry
  - method to benchmark wool enterprises
- Standard Manual produced in 1999
  - agreed to by major benchmarking providers
  - see Major References

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# Benchmarking Principles

- Differences are small between enterprises
- Each enterprise has a unique index of resources for optimum performance
- Differences in capital health must be ignored
- Unstable or in-transition enterprises are unreliable
- Benchmarking is useful between years

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# Variable & Pasture Costs

- Variable - all allocated to wool, e.g.
  - shearing, crutching
  - animal health
  - supplementary feed
  - exclude other enterprises variable costs
- Pasture
  - fertiliser, chemicals, seed
  - allocation on ratio of area grazed for wool

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# Fixed Costs

- Fixed or Overhead cost allocation between enterprises :
  - shire rates, repairs to water supply & fences - area grazed
  - administration & insurance - gross income
  - depreciation, fuel & oil and repairs to plant & equipment - hours of use
  - general electricity, vehicle fuel, repairs and registrations - labour input
  - interest - exclude from benchmarking

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# Labour Costs

- Permanent Labour (total)
  - time on wool - all included
  - time on other enterprises - all excluded
  - time on general farm work
- To allocate general farm work, multiply the general time by:  
**$$\left[ \frac{\text{time on wool}}{\text{total time} - \text{general time}} \right]$$**
- Time is then converted to cost
- Non-specific casual labour is treated in the same way as general permanent labour
- Include family labour at the standard benchmarking owner / operator rate



# Costs Allocation to Enterprises

## Area grazed for wool production

→ Enterprise DSE ratio calculation

wool sheep DSE (1)

total DSE

Effective Farm Area - Area Cropped\* = Area Grazed

• Area Grazed (2)

Effective Area

\* Area cropped includes an adjustment for stubble grazing

→ Ratio of Area Grazed for Wool

(1) \* (2)

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# Woolmark CoP

- costs allocated according to the proportion of gross income (%G.I.) generated from wool
- does not consider finance costs
  - no interest or lease costs
- imputed costs & inventory are used
  - owner operator allowance
  - stock value
  - fodder

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# Breakeven Price

**$$[\text{Total CoP} - \text{Sheep Trading Profit (Loss)}] / \text{Total kg}$$**

- **Sheep Trading Profit (Loss)**

**Income from Sales**

**- Cost of Purchases**

**+ Closing value of sheep**

**- Opening value of sheep**

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# Target Price

**Breakeven Price + Return on Invested Capital / kg**

- Return on invested capital**

**Total assets**

**- Total liabilities**

**= Equity**

**\* Desired return on Equity (%)**

**= Return on Equity**

**\* % of farm area used by wool**

**= Return on equity relevant to wool enterprise**

**/ Total Production (kg)**

**= Return on Equity per kg**

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# Application & Results

- **South West Victorian Monitor Farm Project**
  - comparative analysis of grazing farms
  - 1997-8 data for 40 farms (not all farms in data)
  - running since 1970
- **Other projects**
  - regional basis
  - consultant based, e.g.:
    - Patterson Rural Business Management
    - McKinnon Project
    - Mick Boyce & Co. , Cooma
    - Holmes & Sackett
    - Hassell's
  - now standardised (see Refs)

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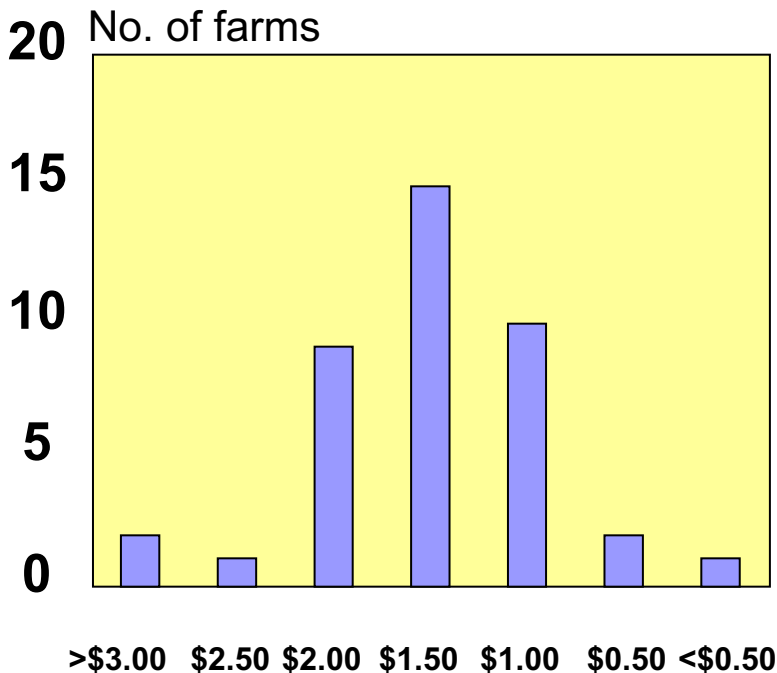
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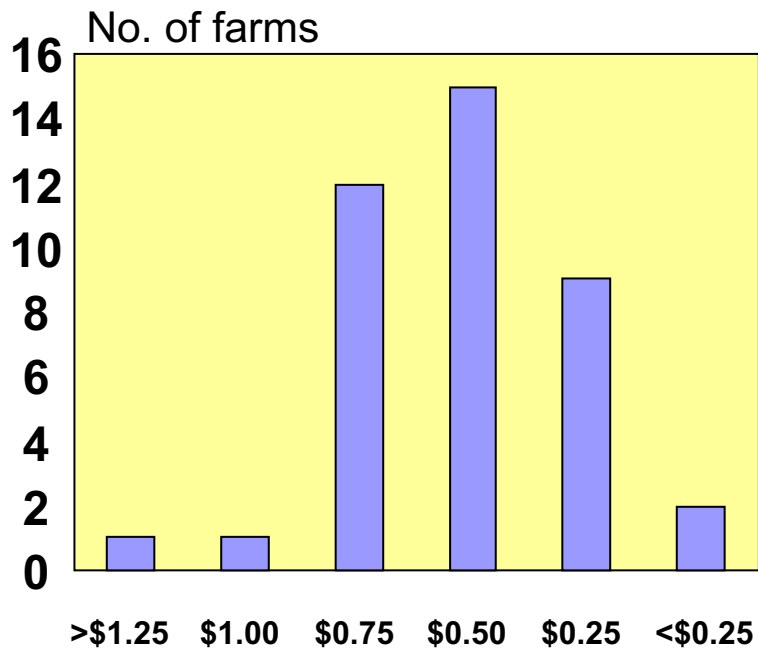


# Variable & Pasture Costs

## Variable Costs per kg greasy wool



## Pasture Costs per kg greasy wool



top 20% (ranked on Return on Assets)

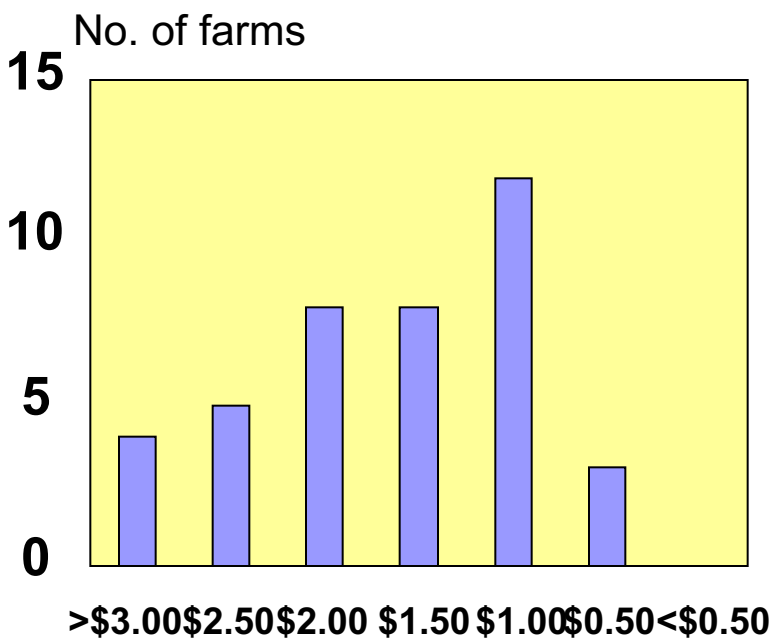
**\$1.48**

**\$0.53**

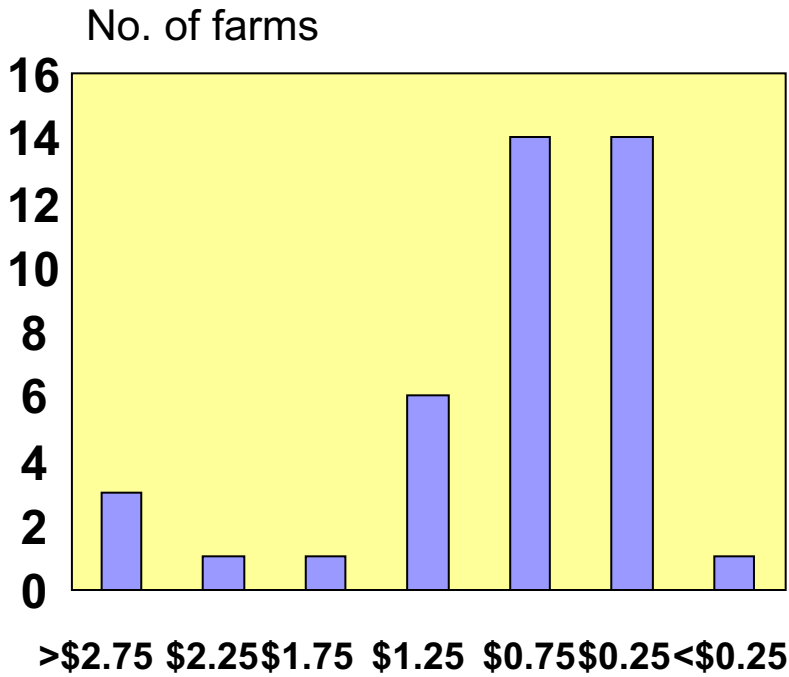


# Fixed & Labour Costs

## Overhead Costs per kg greasy wool



## Permanent Labour Costs per kg greasy wool



top 20% (ranked on Return on Assets)

\$1.46

\$0.82



# Woolmark CoP

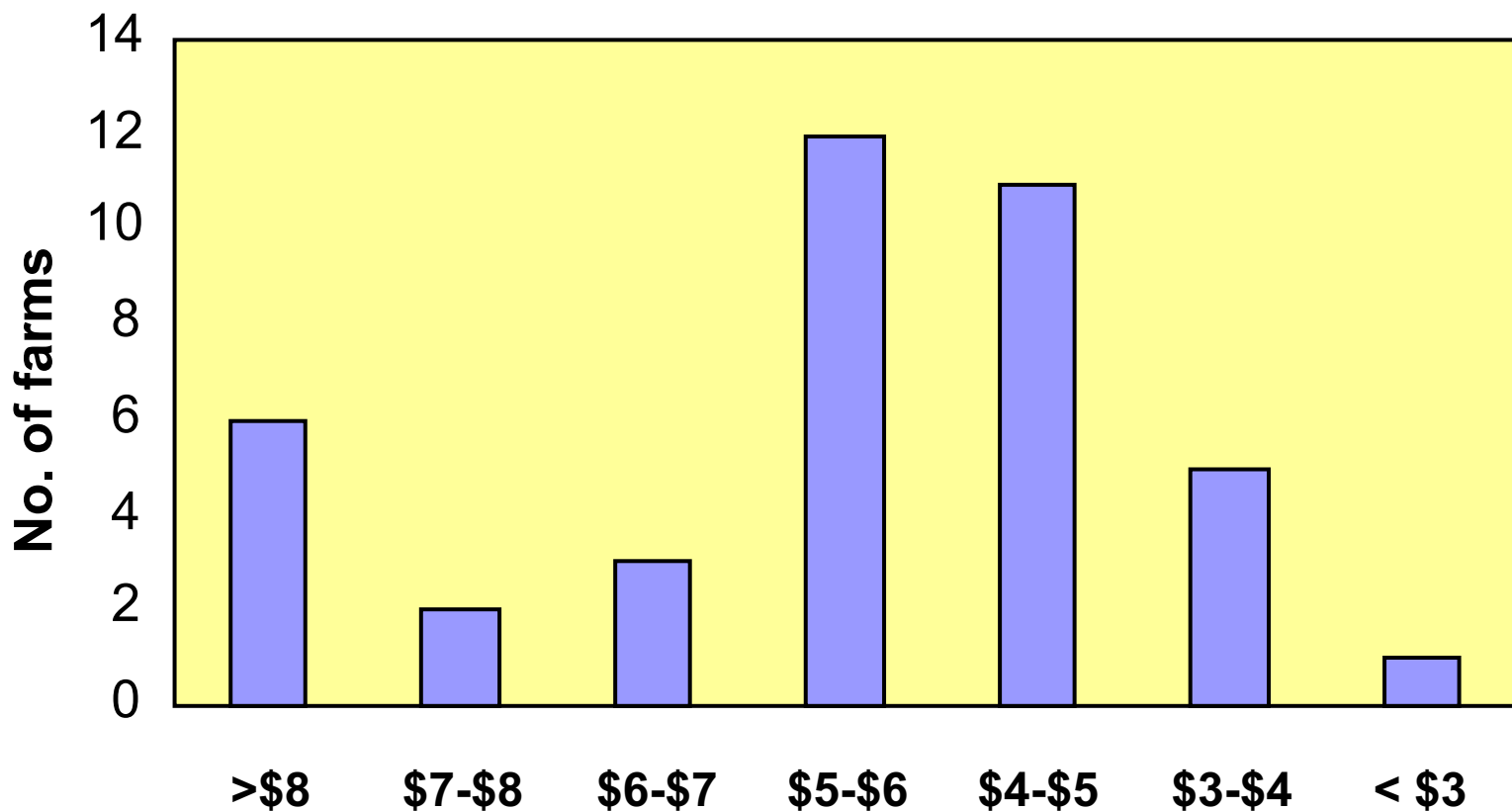


**top 20%**

**\$4.29**



# Breakeven Price



• top 20%

\$3.98





# Summary

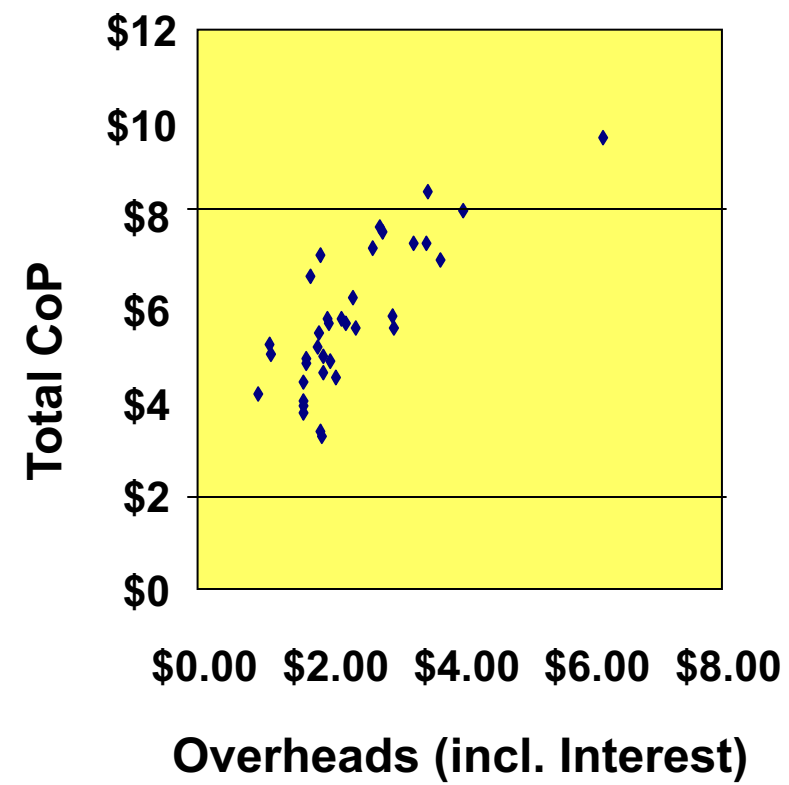
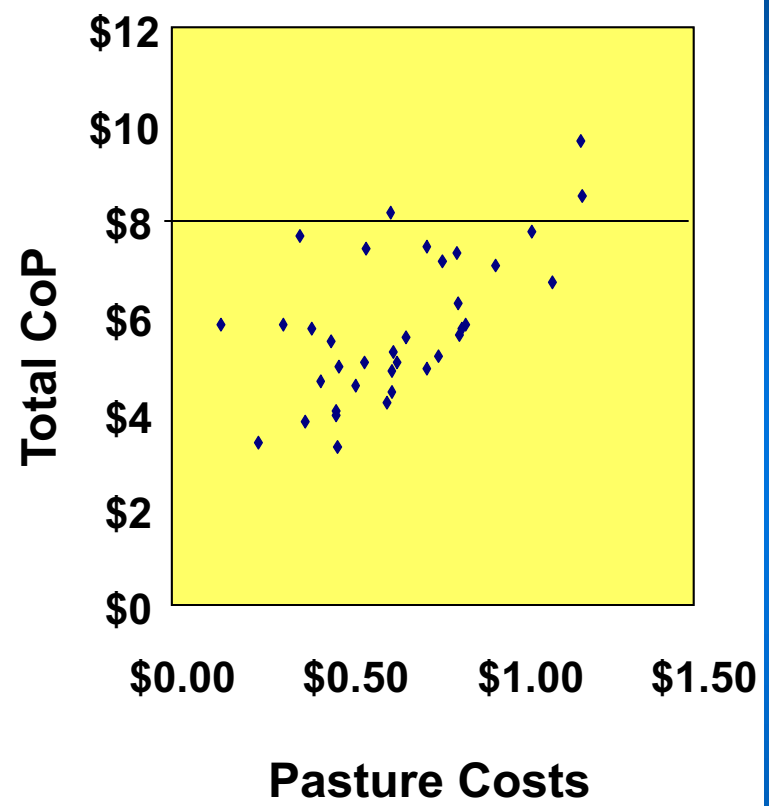
	Pasture	Variable	Overhead	Labour	WM CoP
Average	\$0.65	\$1.77	\$1.99	\$1.11	\$5.52
Highest	\$1.62	\$3.28	\$5.28	\$3.11	\$9.19
Lowest	\$0.10	\$0.16	\$0.91	\$0.00	\$3.09
Top 20 %	\$0.53	\$1.48	\$1.46	\$0.82	\$4.29

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# Regression: pasture & overheads

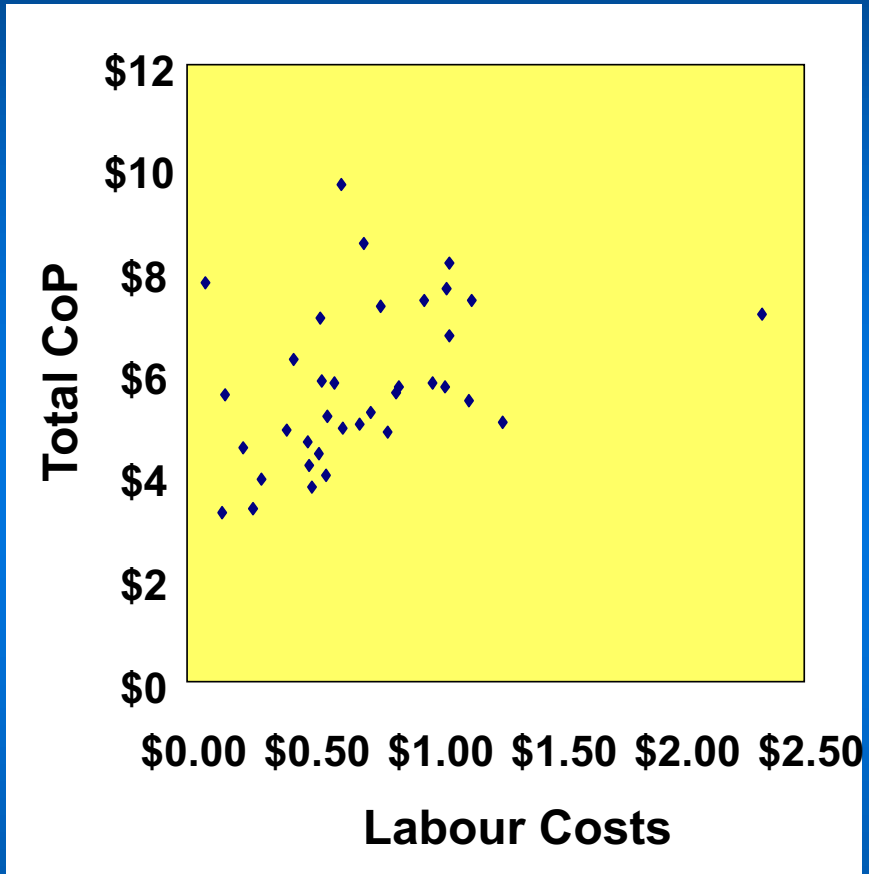
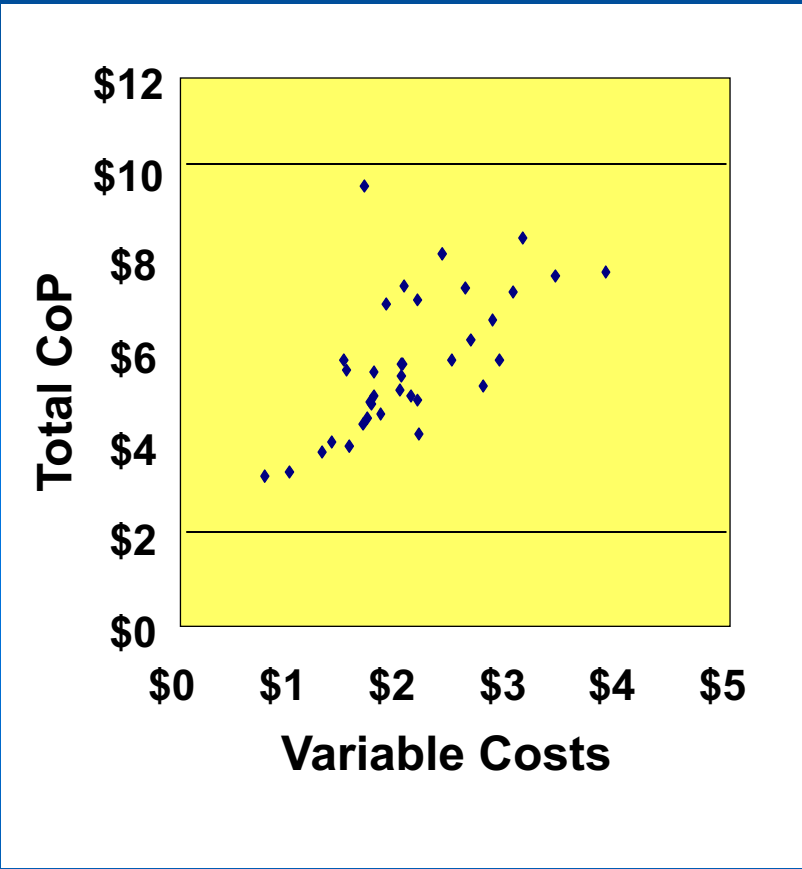


1996-7 data



# Regression: variable & labour

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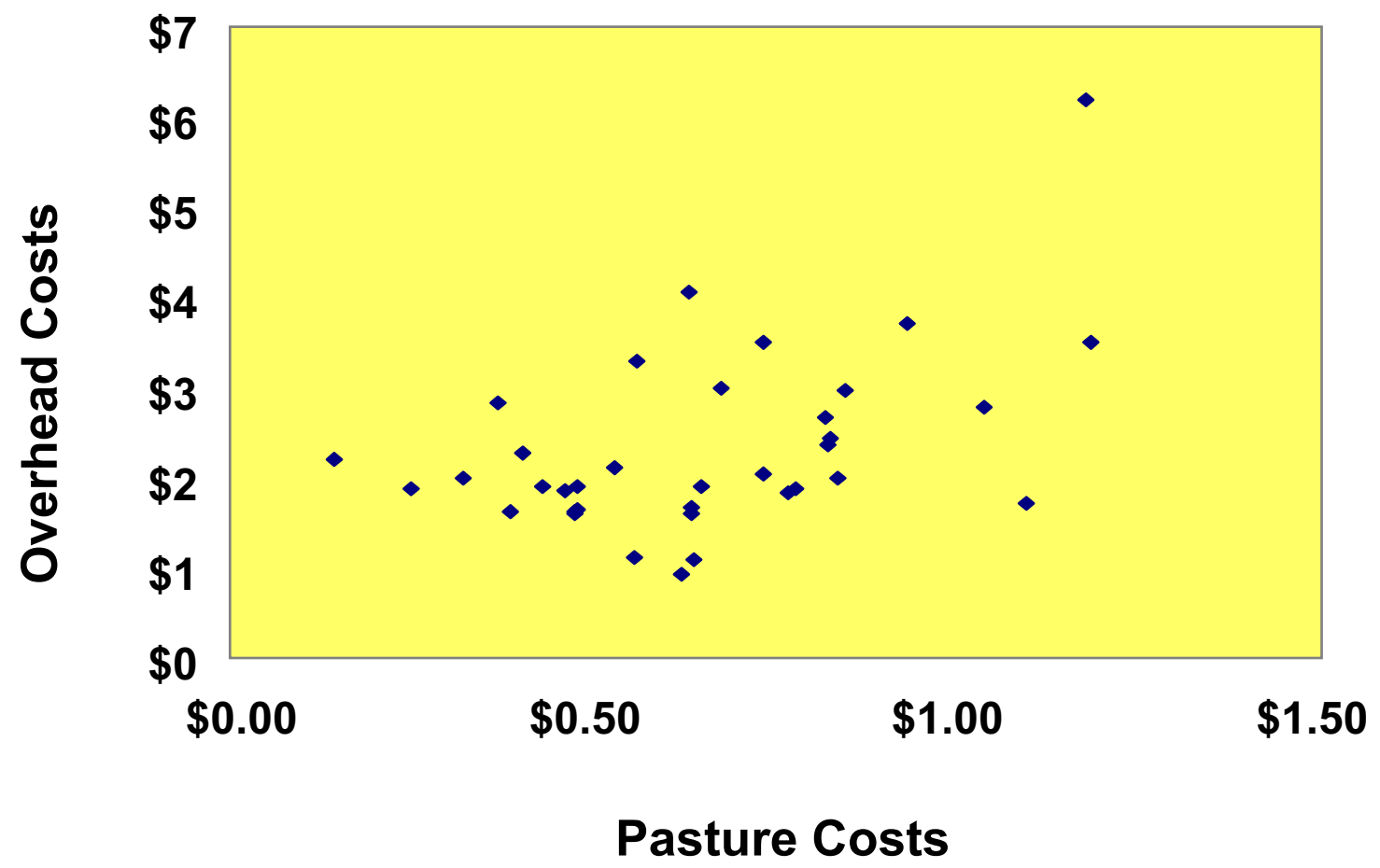


1996-7 data



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# Interaction



1996-7 data



# Total CoP vs. Breakeven Price



1996-7 data



# Regression Summary

	P	V	O	L	Total CoP	Breakeven
Pasture (P)		0.76	0.235	0.001	0.370	0.128
Variable (V)	0.76		0.019	0.051	0.401	0.165
Overhead (O)	0.235	0.019		0.000	0.632	0.435
Labour (L)	0.001	0.051	0.000		0.144	0.139
<b>Total CoP</b>						<b>0.592</b>

**1996-7 data**



# Major References

- **Woolmark Company (1999), Benchmarking the Wool Enterprise**
  - **contacts:**
    - Scott Williams (Woolmark Co.)
    - 03 9341 9111
    - or
    - Rural Direct
- **Patterson, Andrew (1997), Assessing Your Costs of Production, Access to the Experts Wool Marketing, CRC for PQW**

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