

# Estimating population effects of risk factors - some examples, innovations and limitations

**John Morton**

**Senior Lecturer in Veterinary Epidemiology and  
Biometry**

**University of Queensland**

**With assistance of Garry Anderson and Lisa Boden,  
University of Melbourne**

**The most important factors...**







# Retained Foetal Membranes

Retained foetal membranes		Incidence of RFM		Not pregnant	
		No	Yes	Pregnant	Not pregnant
Retained foetal membranes	No	21352	95.8%	7927	13425
	Yes	932	4.2%	452	480
		22284		8379	13905



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		No.	Incidence of RFM	Not pregnant	Pregnant	Proportion not pregnant	Risk ratio	Population Attributable Risk	Population Attributable Fraction
Retained foetal membranes	No	12925	58.0%	4798	8127	0.37	1.31	0.05	11.4%
	Yes	9359	42.0%	4539	4820	0.48			
		22284		9337	12947	0.42			

PAR & PAF depend on:

- Strength of association and
- Frequency of exposure

## PAF

The proportion of the risk of disease in the population:

- that is attributable to exposure, and
- that would be avoided if exposure was removed (or if effects of exposure were eliminated).

<b>Exposure</b>		<b>PAR</b>	<b>PAF</b>
Calving to MSD intervals less than 74 days		0.10	27.2%
Low milk protein%		0.05	14.0%
Low herd average milk volume		0.02	6.1%
Age - 2 and 3 years	<b>RR=1.08-1.11</b>	0.01	3.4%
Low ovulation detection probability		0.01	3.2%
Age - over 7 years		0.01	2.8%
High milk fat yield	<b>RR=1.07-1.11</b>	0.01	1.9%
Low milk fat yield		0.01	1.7%
Low positive predictive value for oestrus diagnoses		0.01	1.7%
Dystocia	<b>RR=1.16</b>	0.00	1.0%
Retained foetal membranes		0.00	1.2%
Cows not pregnant at the end of mating in previous years		0.00	1.0%
Twin calving		0.00	0.4%
Vaginal discharge	<b>RR=1.15-1.43</b>	0.00	0.2%
Lame in first 6 weeks after MSD		0.00	0.1%
Oestrus without insemination in first 3 weeks after MSD		0.00	0.1%



## Exposure

## PAF

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Race type (steeple rel. to hurdle)	30.8%
Starts in 14 days prior ( $\geq 1$ rel. to 0)	24.1%
Racecourse location (city rel. to country)	16.5%
Jump starts in career prior ( $> 10$ rel. to less)	14.3%
Flat starts in 60 days prior ( $> 3$ rel. to less)	14.2%
Hurdle starts in 60 days prior ( $> 3$ rel. to less)	13.2%
Flat starts in career prior ( $> 30$ rel. to less)	12.2%
Steeple starts in 60 days prior ( $> 3$ rel. to less)	10.5%

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# PAR/PAF limitations

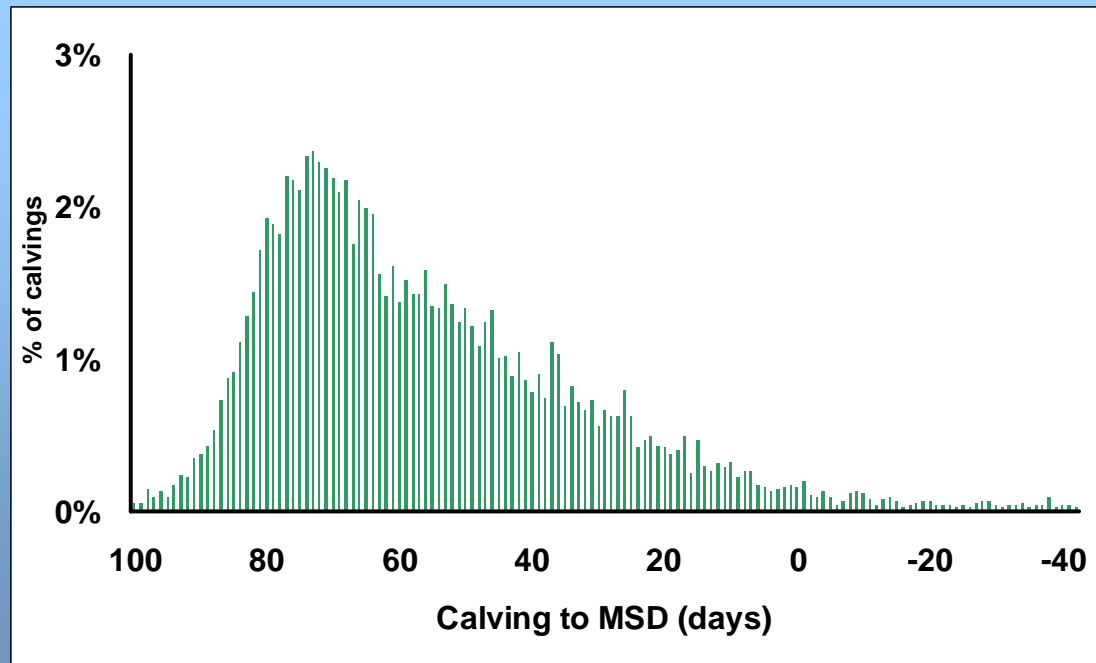
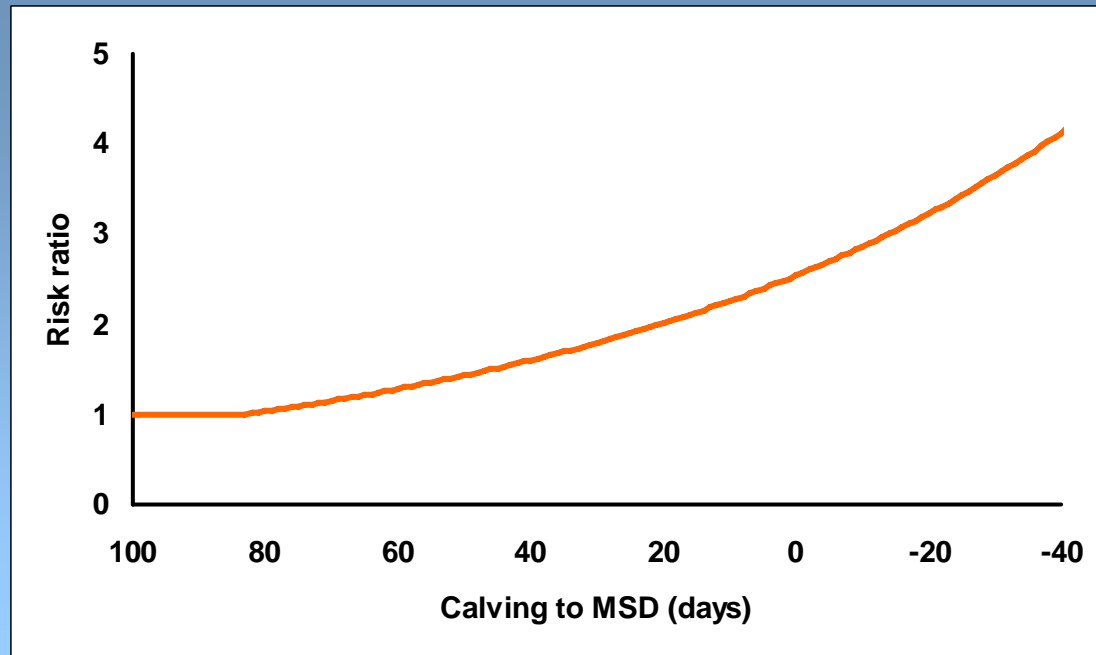
1. Non-causal relationships
2. Biased estimates of:
  - Strength of association
  - Frequency of exposure
3. Direct versus total effect estimated
4. Describes maximum impact of intervention
5. Clustering not addressed
6. Distribution of herd-level PARs/PAFs more relevant than pooled estimates
7. External validity
8. Consequent effects of interventions

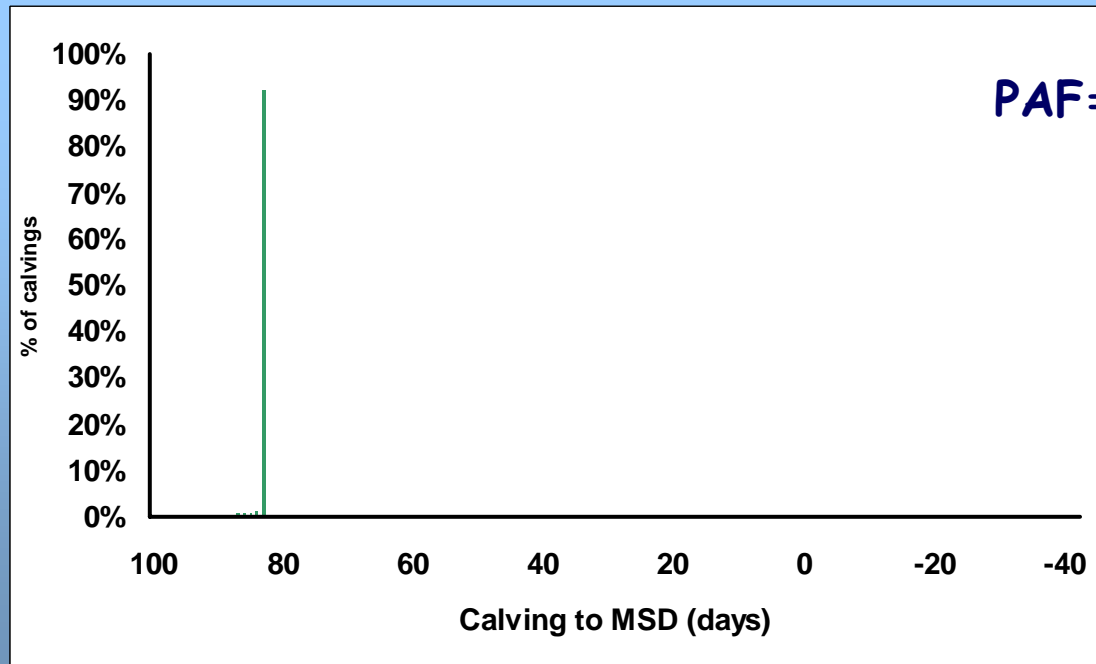
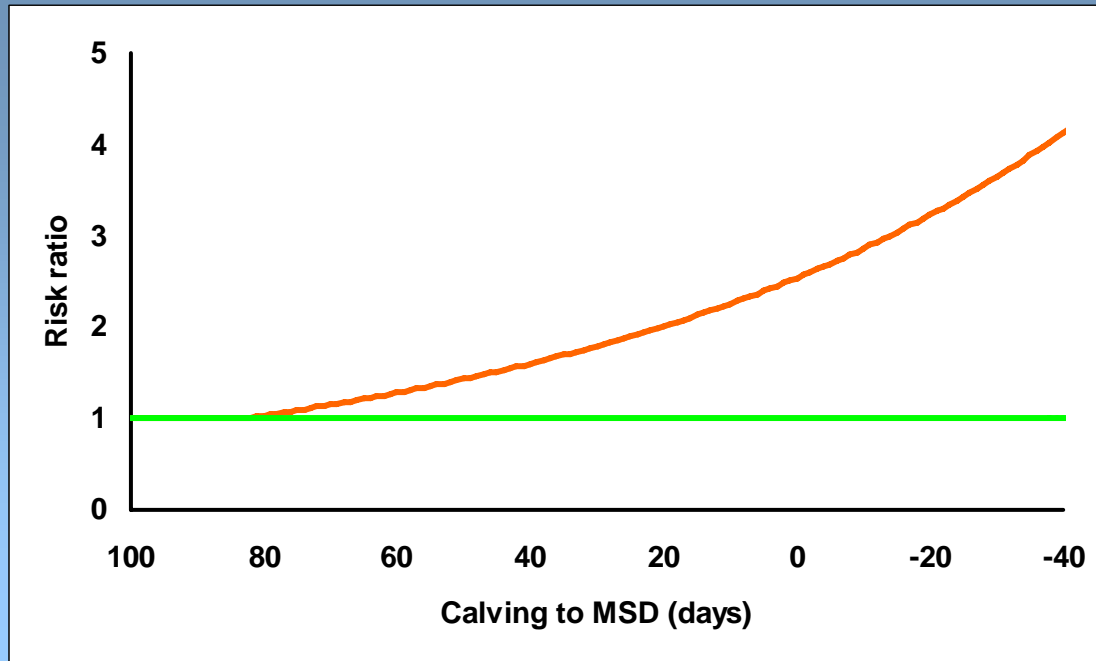
# Direct versus total effect



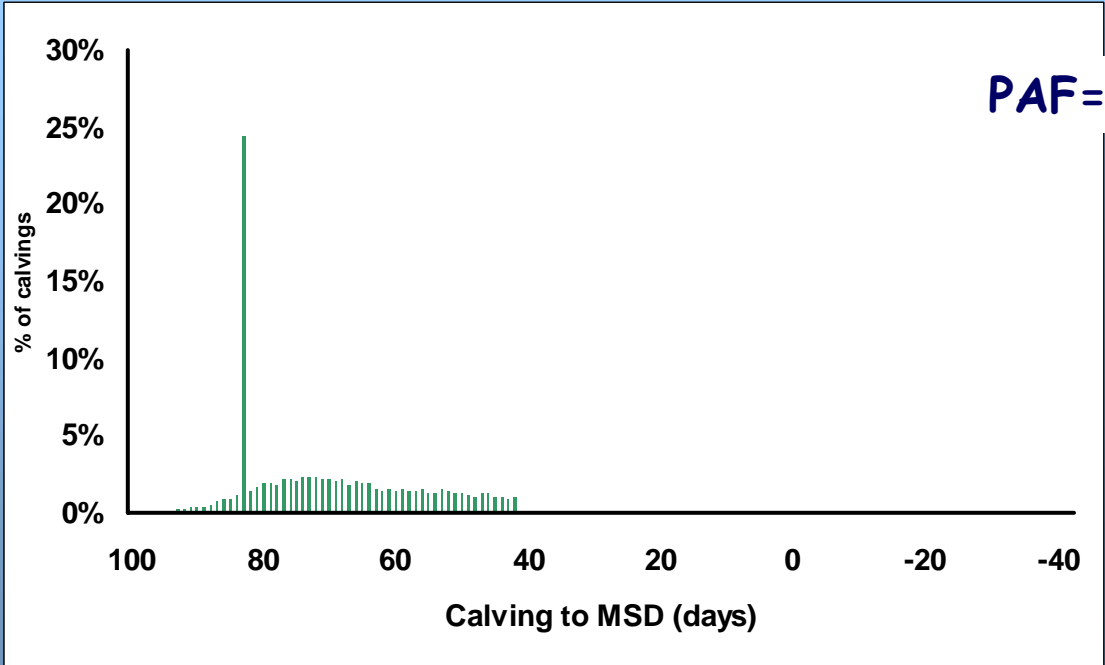
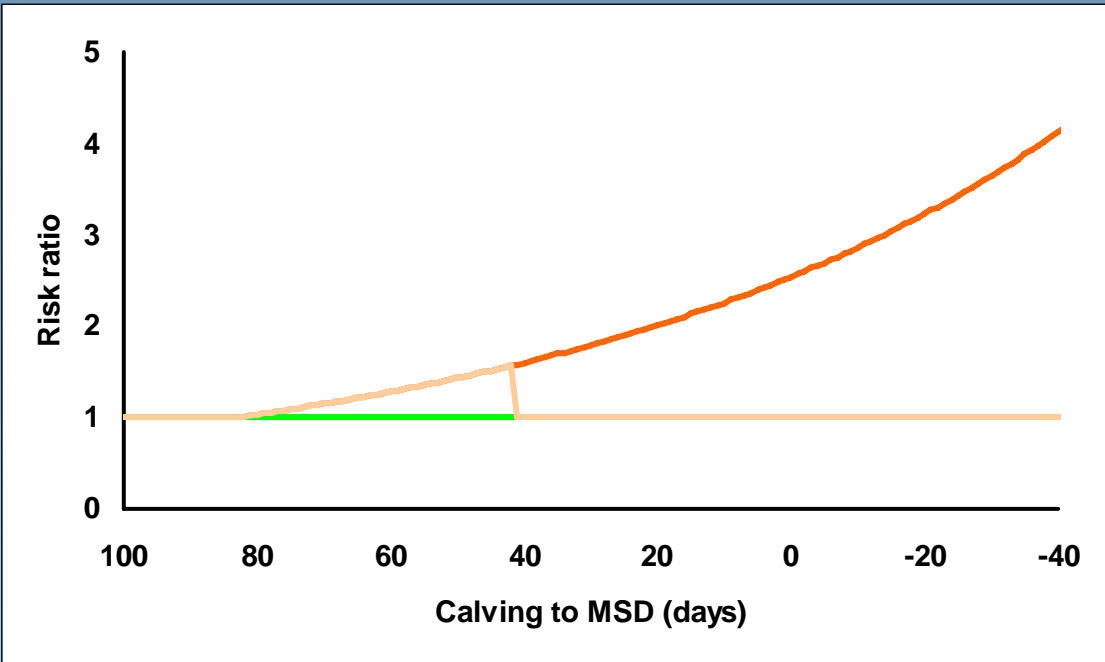
**PARs/PAFs for  
altered calving to  
mating start date  
distribution/risk**



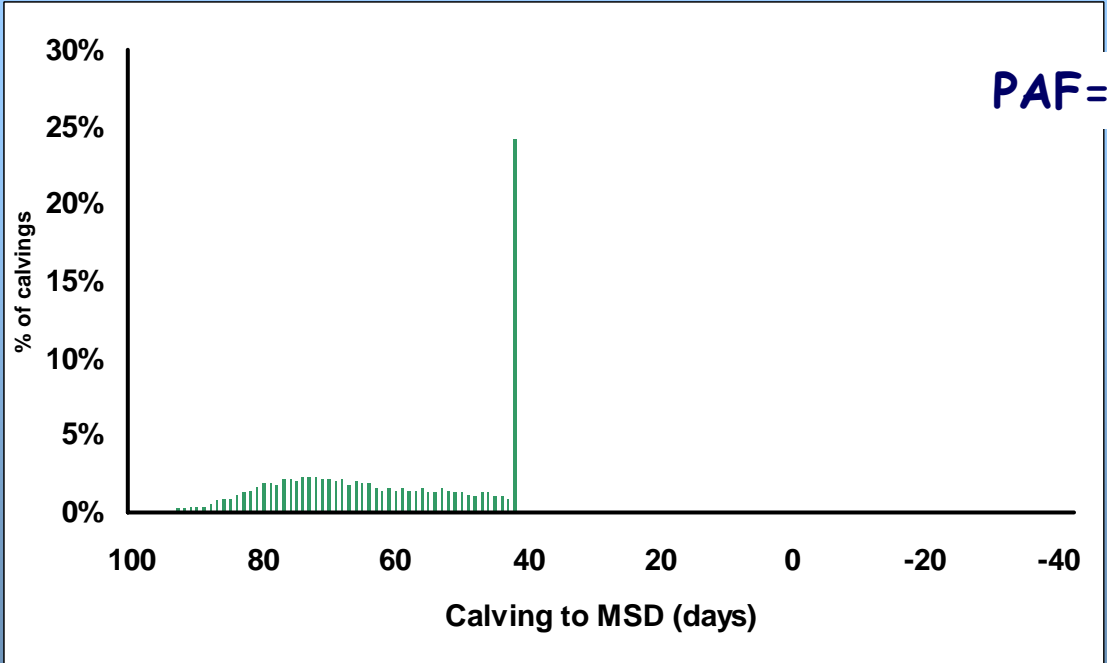
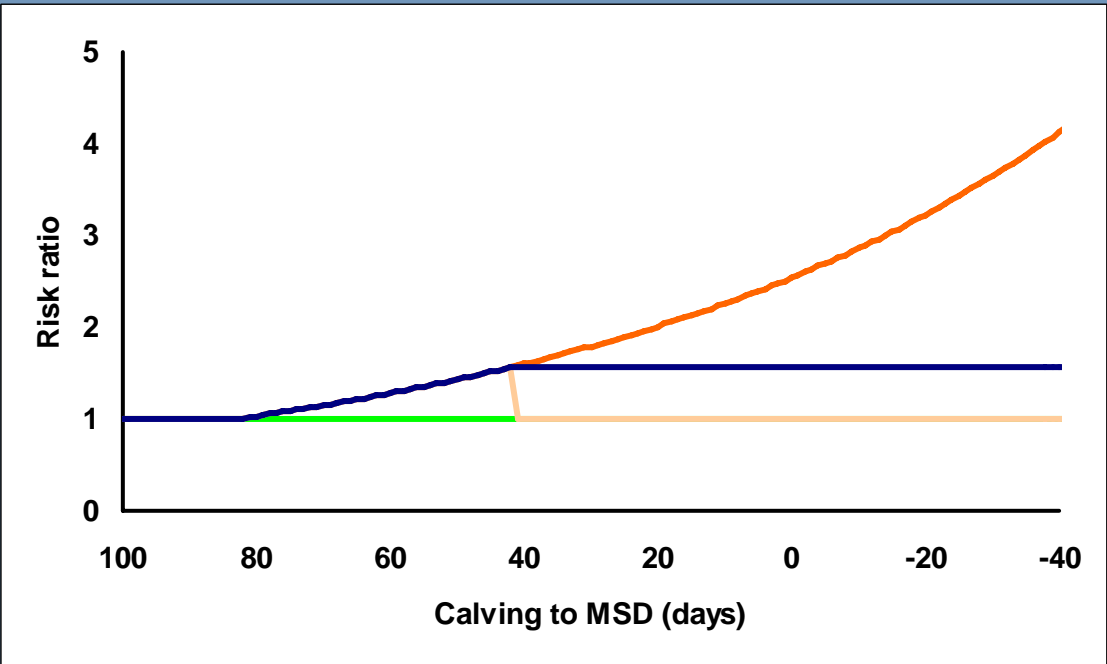




PAF=30.2%



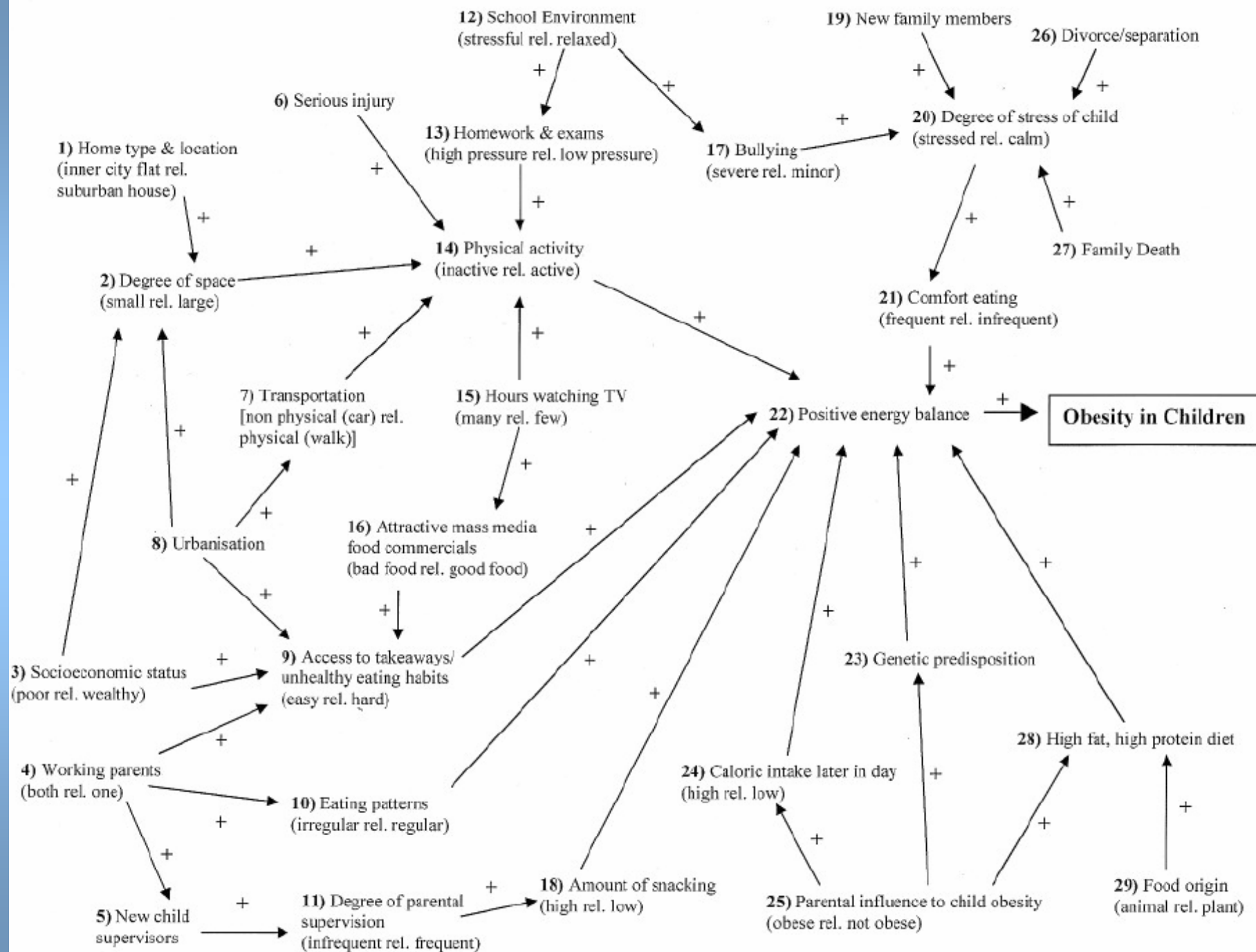
PAF=19.4%



**PAF= 5.5%**

# PAR/PAF - Conclusions

1. Handle with care
2. Can lead to improved decisions




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# PM

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Mark Colvin presents PM Monday to Friday from 5:10pm on Radio National and 6:10pm on ABC Local Radio. Join Mark for the latest current affairs, wrapping the major stories of each week.



## Transcript

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PRINT FRIENDLY EMAIL STORY

### Abbott launches childhood obesity strategy

PM - Friday, 3 February, 2006 18:30:00

Reporter: Nick McKenzie

MARK COLVIN: The Federal Government and the Opposition were both fighting on the political battleground of health today and both had the problem of childhood obesity in their sights.

This morning, Tony Abbott unveiled a \$6 million campaign to encourage children to exercise for at least an hour a day.

And this afternoon, the Labor leader Kim Beazley released his policy blueprint on children's health, including pledges to improve areas like prevention and early intervention.

Nick McKenzie reports.

NICK MCKENZIE: The Health Minister Tony Abbott chose a Sydney primary school this morning to launch a \$6 million initiative to tackle childhood obesity.

TONY ABBOTT: If we don't do something about it, we will eventually become the first generation in modern history that has a lower life expectancy than our parents. So if we want to keep living longer, better lives, we've got to tackle the obesity crisis.

NICK MCKENZIE: The Federal Government's "Get Moving" campaign is aimed at encouraging children to exercise for at least an hour each day.

Asked if he would support a ban on junk food advertising during children's television programming, Tony Abbott said the onus was on the advertising industry to act responsibly and in line with existing regulations.

TONY ABBOTT: The last thing I was to do is start dictating the menu in every Australian home, dictating what appears on every Australian television program, but I do need to think we need to be more conscious of what we put in our mouth, more conscious of the amount of time we waste looking at television and sitting in front of the computer.

NICK MCKENZIE: A few hours after Tony Abbott spoke to the media in Sydney, Kim Beazley was outlining Labor's approach to children's health, along with an accusation that the Federal Government's announcement had been cobbled together to try and steal Labor's thunder.

Labor says its 'Goals for Aussie Kids' blueprint is a broad national strategy aimed at providing greater health support for babies, children and teenagers.

Mr Beazley says it will include the screening of all newborn infants for metabolic disorders and hearing problems, a national campaign to tackle childhood obesity and more help for young people to deal with mental health and


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