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Medical Research Institute

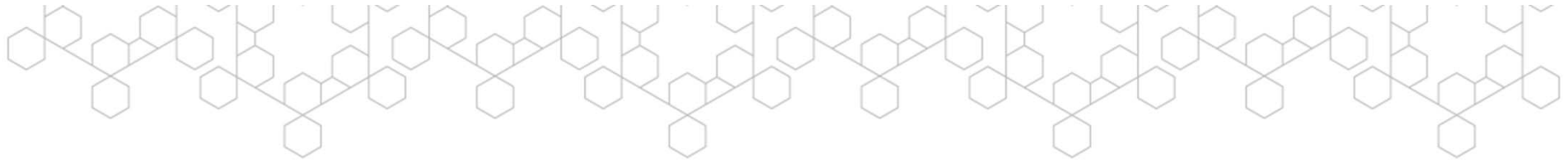
# Health economics of skin cancer

Louisa Gordon

[louisa.gordon@qimrberghofer.edu.au](mailto:louisa.gordon@qimrberghofer.edu.au)



Sunscreen Summit QIMRB 19 Mar 2018



## Outline

- **Cost burden of skin cancer**
- **Investment in skin cancer prevention**
- **Evidence for primary prevention cost-effectiveness**
- **The market for sunscreen**



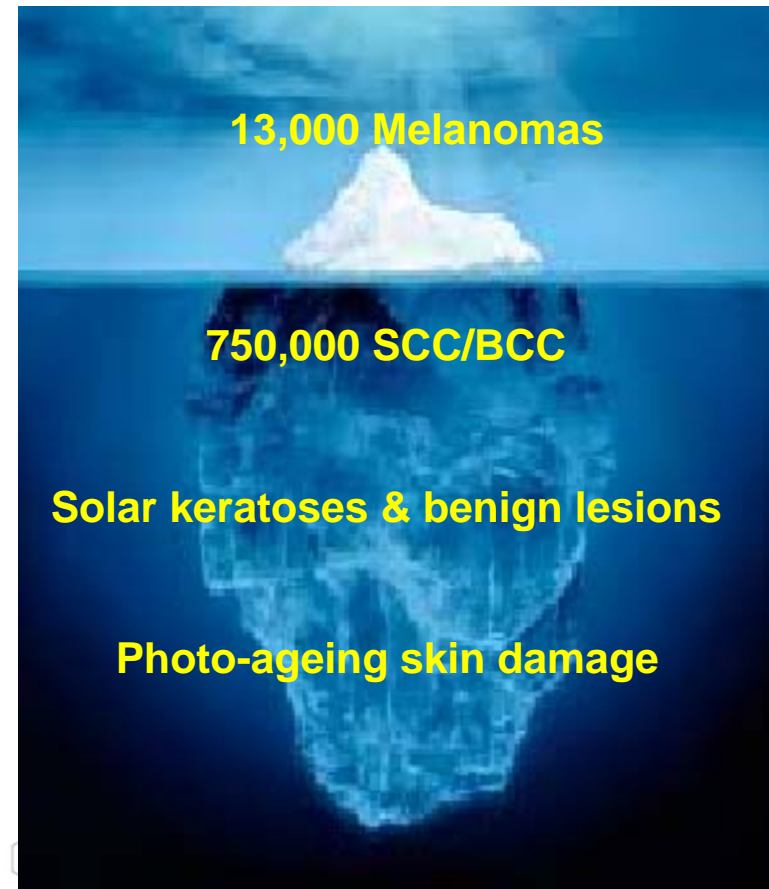
# The full burden of UV sun-damaged skin

## MEDICARE pays for:

biopsy, histopathology,  
surgical excision, cryotherapy,  
multiple GP & specialist visits,  
curettage, topical creams (via PBS)  
radiotherapy, chemotherapy, scans  
skin flaps/grafting, Mohs surgery,  
Immunotherapies (melanoma)

## OTHER:

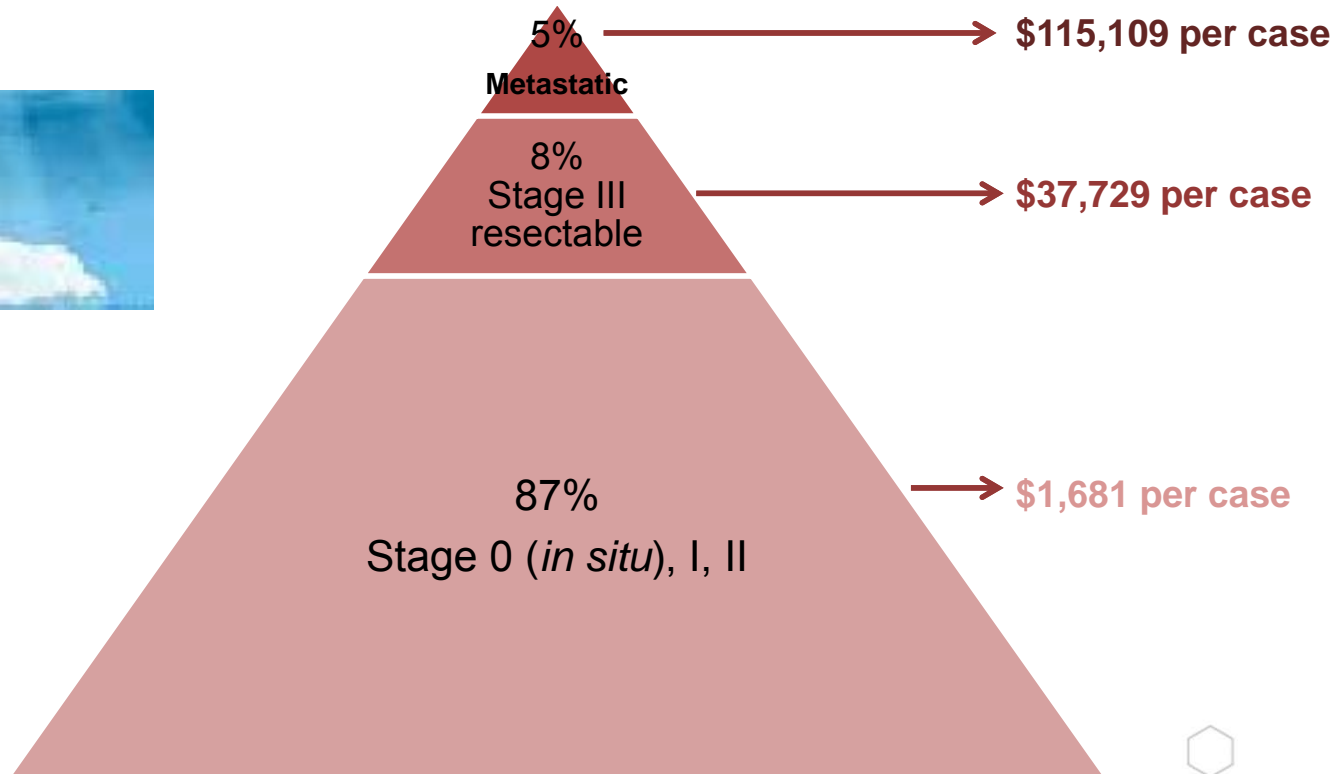
photodynamic therapy,  
hydroxy-acid peels,  
dermabrasion,  
interferon-alpha therapy



# Health system costs of melanoma

Cost for diagnosis & treatment of all new cases of melanomas per year

= **\$201 million**



## New medicines for advanced melanoma

Name	Brand	PBAC Decision	2016 cost
Ipilimumab	Yervoy <sup>®</sup>	Approved Nov 2012	\$24.9 million
Dabrafenib	Tafinlar <sup>®</sup>	Approved 2013	\$50.8 million
Trametinib	Mekinist <sup>®</sup>	Approved: June 2015	\$50.4 million
Pembrolizumab	Keytruda <sup>®</sup>	Approved: June 2015	\$119.0 million
Nivolumab	Opdivo <sup>®</sup>	Approved: May 2016	\$3.9 million
Vemurafenib	Zelboraf <sup>®</sup>	Approved: March 2016	\$925,693

**Adverse events: add ~\$10,000 per patient**

# Health system costs of keratinocyte (or non-melanoma) skin cancers

Cost for treatment of basal cell carcinomas and squamous cell carcinomas

= **\$703 million**

Total no. of excisions for  
BCC/SCC in 2016 = 626,759



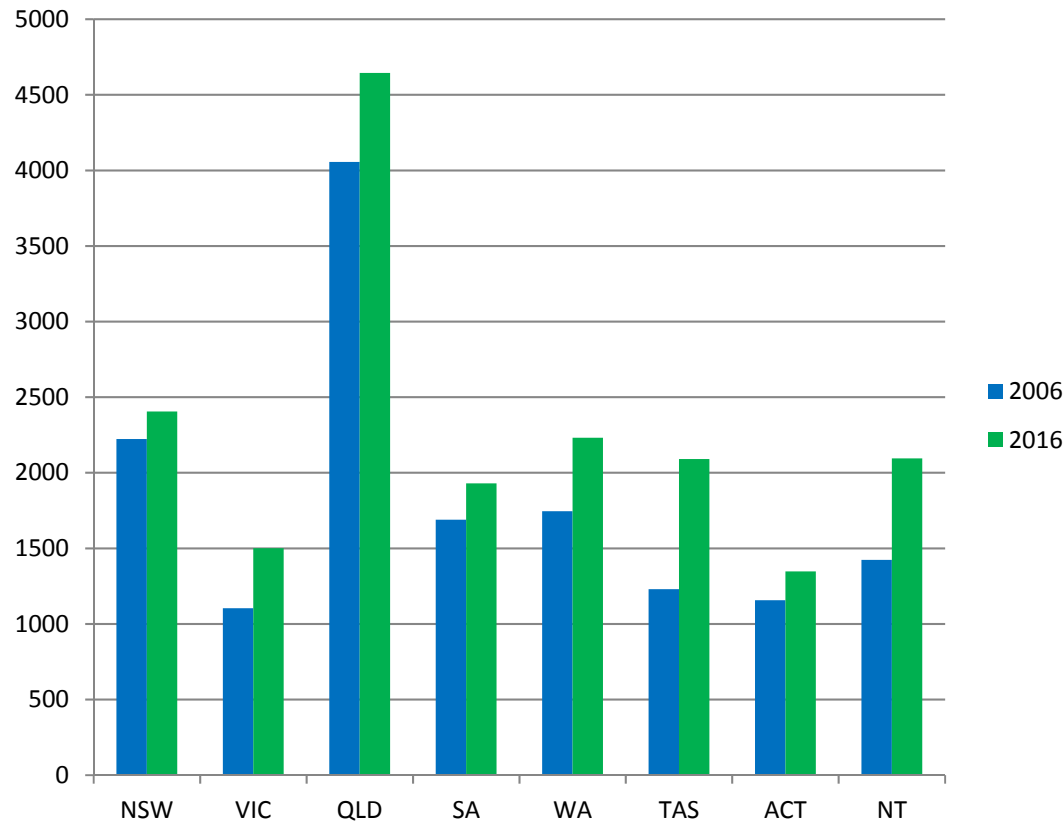
**12,053 excisions  
per week**

**301 per business  
hour**

Fransen M, Karahalios A, Sharma N, English DR, Giles GG, Sinclair RD. [Non-melanoma skin cancer in Australia](#). Med J Aust 2012 Nov 19;197(10):565-8

# Number of excisions of BCC/SCC per 100,000 persons

(MBS items 31255 to 31290)

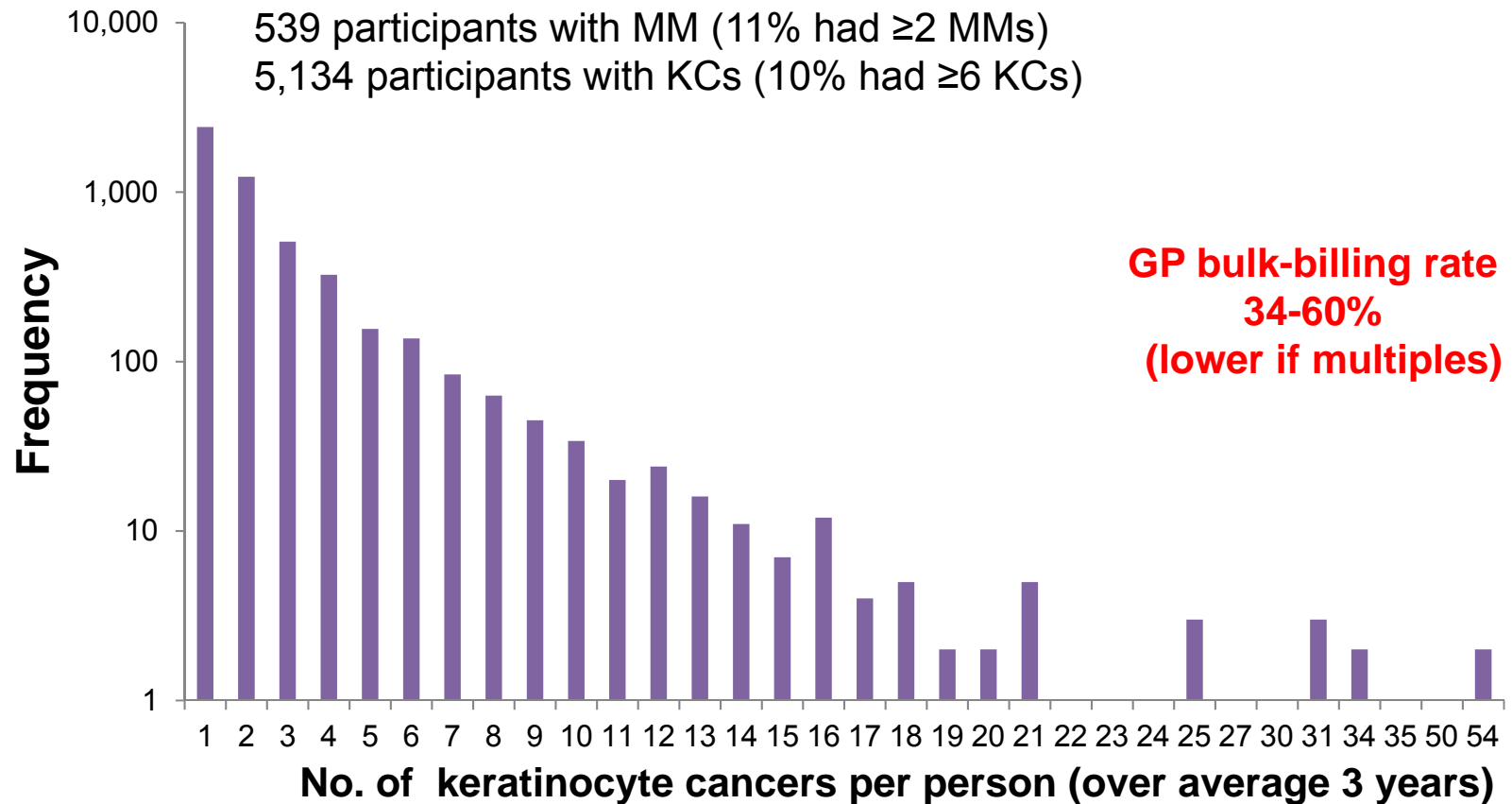


Total in 2006 = 2168

Total in 2016 = 2552

**18%  
increase**

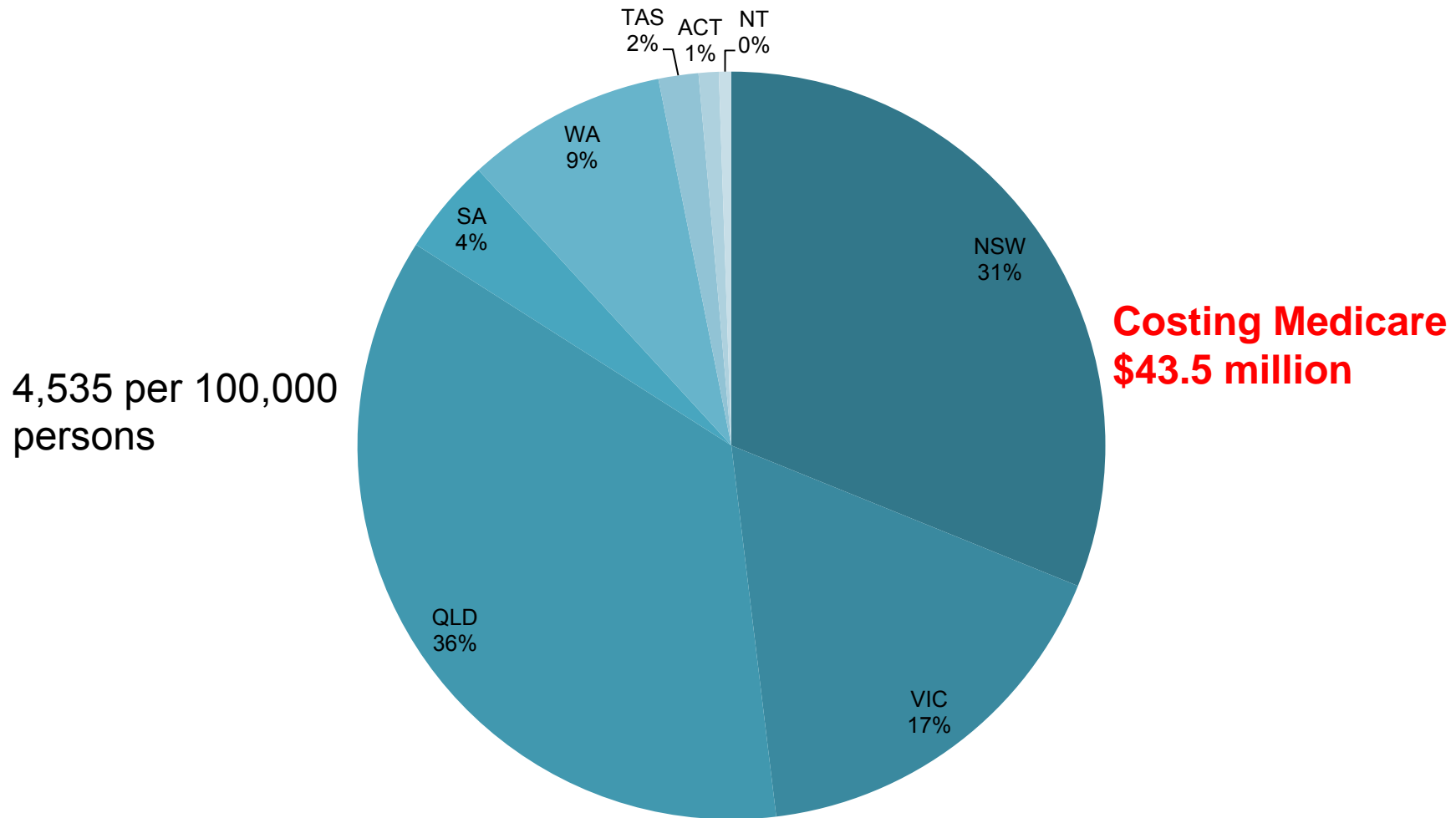
## High burden in individuals with multiple skin cancers



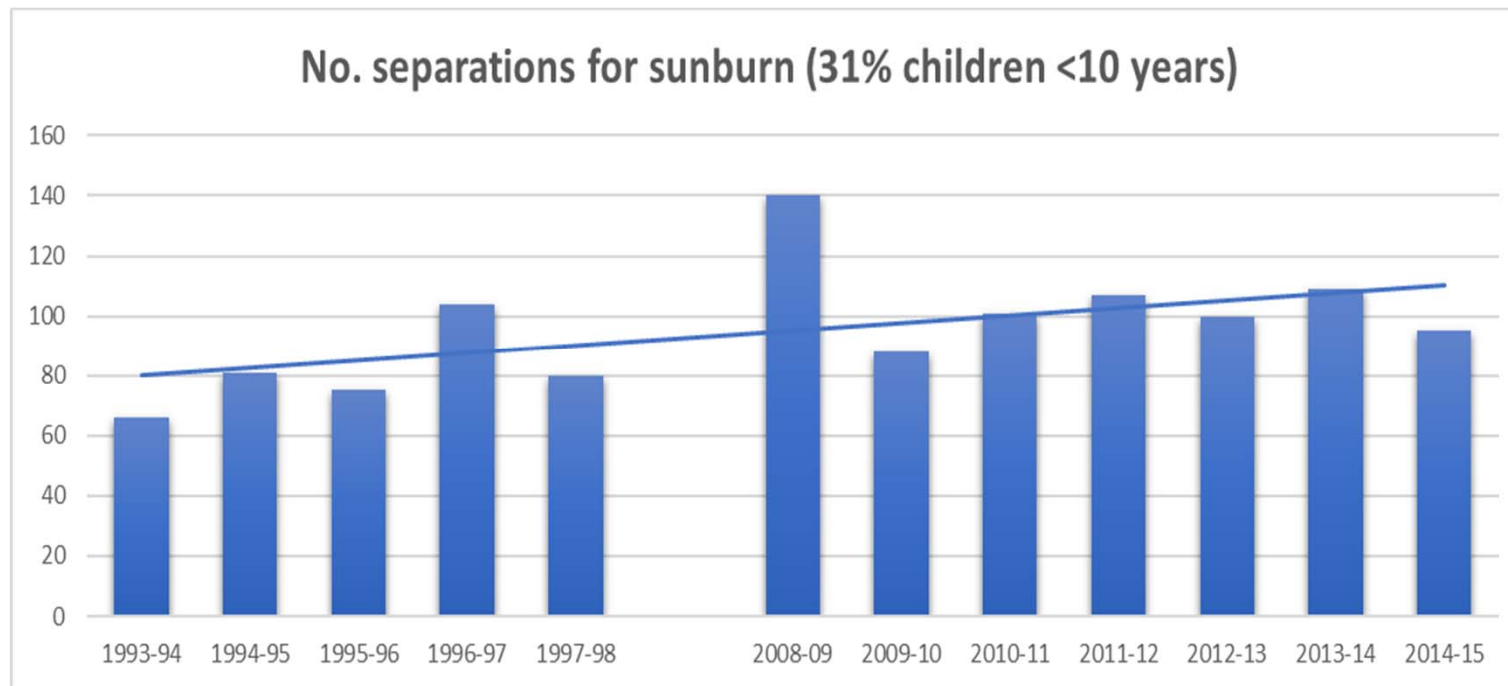
Source: Gordon LG et al. *Multiplicity of skin cancers in Queensland and their cost burden to government and patients.* ANZJPH 2018; 42(1):86-91.



**Biopsy (MBS item 30071) - total in 2017 = 1.2 million**



## Hospitalisations for sunburn



Source: Hospital Morbidity Data Cubes online  
ICD-9-CM codes 692.71, 692.76, 696.77 & ICD-10-AM L55



## How much do we invest in skin cancer prevention?

Australia & NZ	Funding
Australian Government 2006-07 National Skin Cancer Awareness Campaign	<b>\$21 million</b>
VicHealth on SunSmart over 25 years Vic Govt 2013-15	<b>\$16 million</b> <b>\$14 million</b>
CINSW 2007-2011 Dark Side Tanning & Wes Bonney campaigns	<b>\$15.6 million</b>
NSW & Qld 1998-2006 SunSmart, WA over long term	\$0.08 pp \$0.90 pp
Vic DoH, Cancer Councils - shade creation grants	<b>\$5 million</b>
Cancer Council Australia 2014 shade creation, <i>EFTPOS Giveback</i>	<b>\$1 million</b>
NZ Cancer Society in 2007/2008 on multi component, multi-media campaign	<b>NZ \$2 million</b>
2018 Cancer Council WA – SunSmart	<b>\$825,000</b>

**No national funding on skin cancer prevention for a decade**

## Evidence for the cost-effectiveness of primary prevention

Study	Intervention	Results	Cost-effective?
Cristofolini 1992	Health campaign (Italy)	\$400 per life year saved, RoI \$3.80	YES
Garrantini 1996	Educational campaign (Italy)	US\$3357 per life year saved	YES
Kyle 2008	School-based program (US)	Cost savings \$12m, RoI \$2-\$4	YES
Hirst 2009	Solaria regulation (Aus)	Cost saving \$9.9m	YES
Shih 2009	SunSmart – multifaceted (Aus)	Cost saving \$180m, RoI \$2.32	YES
Gordon 2009	Sunscreen – SCC/BCC (Aus)	Cost saving \$88K for n=812	YES
Hirst 2012	Sunscreen – Melanoma (Aus)	\$40,890 per QALY	YES
Shih 2015	SunSmart – Victoria (Aus)	Cost saving RoI \$3.20 / 36c Prev vs \$9 Tx	YES
Perez 2015	Mass-media – NSW (Aus)	Cost saving RoI \$3.85	YES
Pil 2015	Prim/sec prevention (Belgium)	Cost saving / cost effective	YES

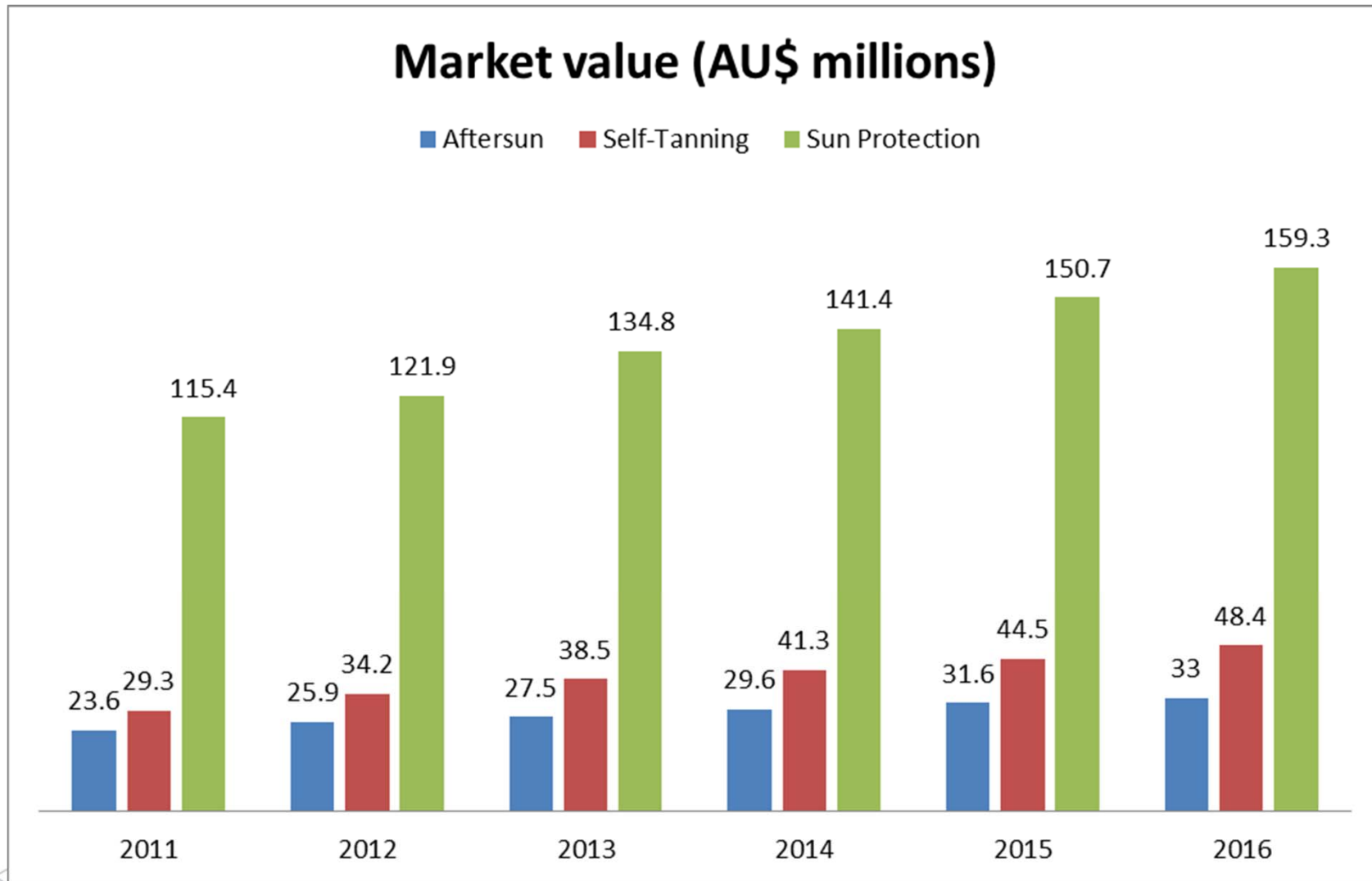
Source: Gordon & Rowell 2015 Euro J Can Prev, Perez 2015, Pil 2015

## Evidence for the cost-effectiveness of secondary prevention

Study	Intervention	Results
Girgis 1996 (Aus)	Screening persons over 50 yrs by GP every 2 years	\$12,137 per LYS(1996)
Freedberg 1999 (US)	Screening high-risk by dermatologist , 1 time screen	\$39,600 per LYS(1996)
Beddingfield 2003 (US)	Screening 1-time	\$51,481 per LYS
Losina 2007 (US)	Screening general population	\$80,700 per QALY
Gordon 2017 (Aus)	Self skin check program for men over 50 years	Dominated
Watts 2017 (Aus)	Specialised surveillance in high risk melanoma patients	Dominating – win win

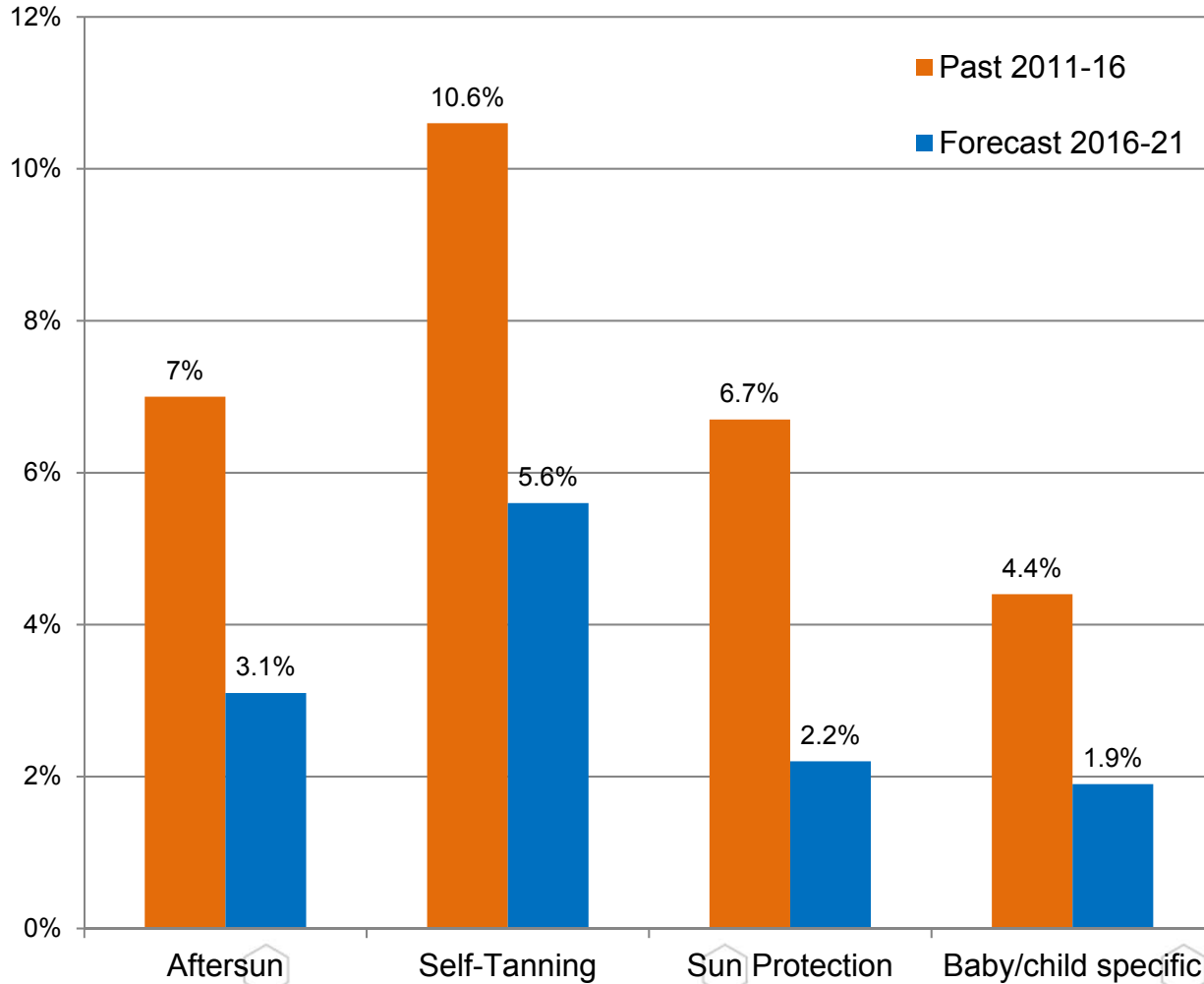
Source: Gordon & Rowell 2015 Euro J Can Prev

# The market for sunscreen



# 'Sun care' products

## Average growth % in value



Source: Sun Care in Australia Euromonitor International May 2017



## Sunscreen market – other points

- Sunscreen products had double digit **growth** in 2013 when SPF50+ approved by TGA
- Self-tanning products fastest growing category - ‘Bondi Sands’ was 2016 leader - **dark self-tanning** products are popular
- Manufacturers are investing in new **product innovation** – offering convenience, moisture and light feel.
- **Mass brands** represent 89% retail sales– supermarkets, discount pharmacies
- Unit prices may increase following **ban on animal testing** July 2017

Source: Sun Care in Australia Euromonitor International May 2017





# Conclusions

- **Treatment spending** far exceeds prevention investment
- Skin cancer prevention is **highly cost-effective**
- Australian sunscreen **market data** reveals a strong switch to self-tanning behaviours
- Sunscreen promotion offers a strong case for benefits and cost-savings at the **population level** (and is more important than shifting the tip of the iceberg)

**Thank you for listening**



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