

# Improving the development of an effective beach safety intervention through an observational study of risky beach behaviour

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## The issue of beach safety

- Drowning is a preventable adverse health outcome
- Around 10 percent of drownings (around 60 per year) occur on Australian surf beaches while people are enjoying recreation
- Effort to enhance beach safety by authorities like Surf Life Saving Australia with surf patrols and *Swim between the Flags* campaigns



## Survey of knowledge of beach safety

- Science of the Surf survey of people on beaches during summer 2006/07 showed:
  - Almost all Australian beachgoers (90%) know that swimming 'between the flags' is the safest place to swim.
  - A significant percentage of beachgoers (36%) cannot identify an ocean rip even though many think they can.
  - Despite this, a significant percentage of beachgoers choose to swim outside the patrolled (flagged) area.
- Why?

## Aim of study

- To examine the reasons for choice of location to swim in safe or risky beach locations.  
*Why do they make risky swimming choices?*
- To examine the characteristics of swimmers who choose to swim in safe or risky beach locations.  
*Who swims in risky places?*

## Method

- Beachgoers interviewed on beaches in Sydney region over two weekends during summer, 2009.
- Interviewers observed person swimming in:
  - patrolled area (safe)
  - unpatrolled area but no rip (less safe)
  - unpatrolled area in rip (very risky)
- approached and invited to participate in 10 minute interview.



## Method

- Interview included questions on:
  - reasons for location of place to swim,
  - beach safety activities,
  - knowledge of beach hazards,
  - demographics.
- Analysis of characteristics of beachgoers broken into categories of beach location choice (safe, less safe, risky).

## Results

- Complete surveys from 1027 respondents
- Response rates high (around 90%)

Where were respondents swimming?

	Patrolled (Safe)	Unpatrolled not in rip (Less safe)	Unpatrolled in rip (Risky)	Total
%	40.5	34.6	24.9	100.0
n	416	355	256	1027

## Why are you swimming there?

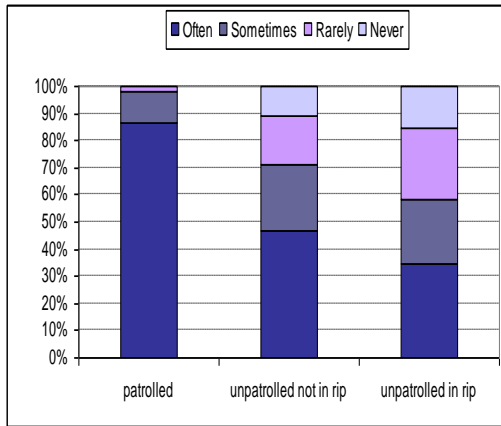
Why this beach?

Patrolled	Unpatrolled not in rip	Unpatrolled in rip
<b>Convenience</b> (60.8%) Usual place (22.6%) Friends/family (8.7%)	<b>Convenience</b> (54.4%) Usual place (23.4%) Activities (surf) (13.5%)	<b>Convenience</b> (56.3%) Usual place (16.4%) Activities (surf) (10.6%)
Safe (6.7%)	Safe (3.7%)	Safe (0.8%)

Why this section of the beach?

Patrolled	Unpatrolled not in rip	Unpatrolled in rip
<b>Safe</b> (68.5%) Convenience (23.8%) Usual place (11.3%)	<b>Convenience</b> (40.8%) Usual place (20.3%) Safe (19.7%) Not crowded (14.7%)	<b>Convenience</b> (50.0%) Short distance (21.5%) Usual place (16.4%)
		Safe (5.5%)

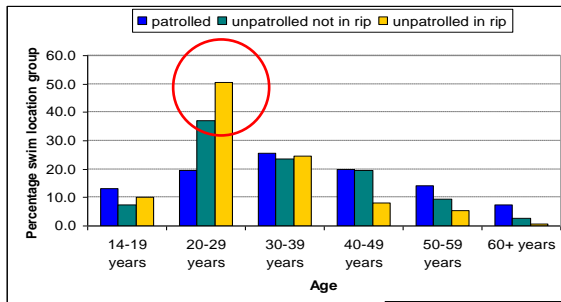
## Frequency of swimming in patrolled areas



### Why not?

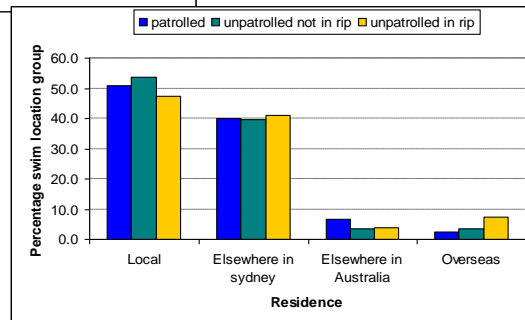
- Too crowded  
(Not in rip-54%, In rip-44%)
- Not convenient  
(Not in rip-25%, In rip-32%)

## Characteristics of swim groups

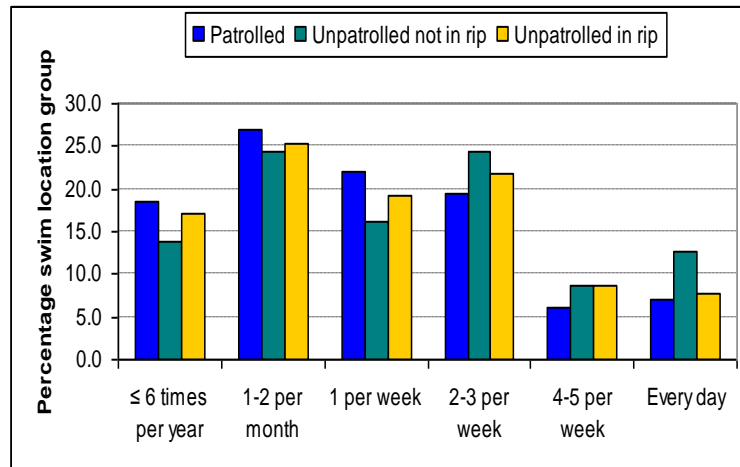


\* Significant differences in Age and location of Residence between swim groups.  
( $X^2=102.4$ ,  $p<0.0001$ )

No difference in gender between swim groups



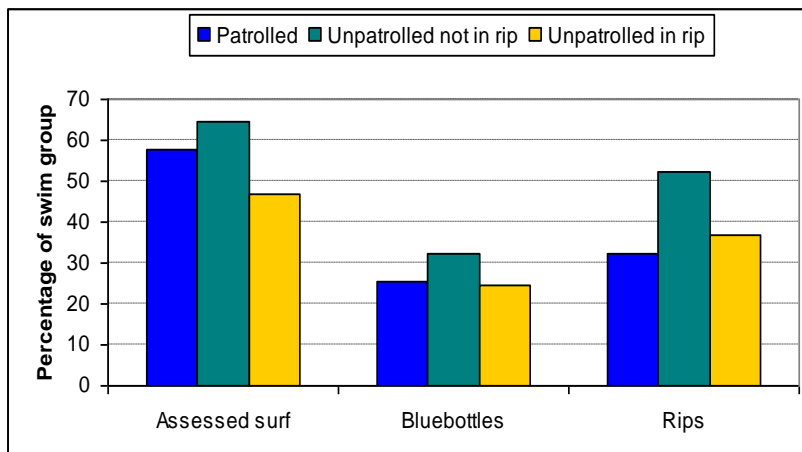
## Behaviour: Frequency of swimming at the beach



( $\chi^2=31.6$ ,  $p<0.01$ )

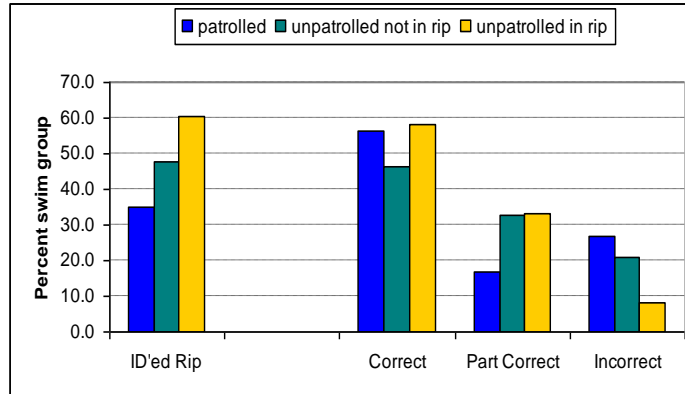
## Behaviour: Did you check before swimming...?

Percentage of swim group reporting that they checked for hazard



## Beach safety knowledge

Percent reporting a rip on the beach and percent who reported rip and judged correctly, part correct and incorrect



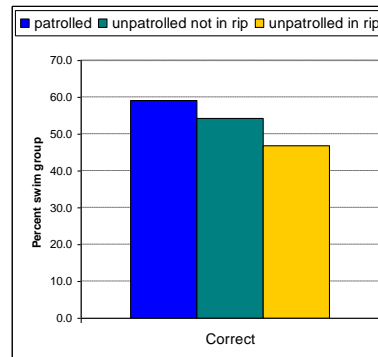
( $\chi^2=24.1$ ,  $p<0.001$ )

## Beach safety knowledge

Is there a rip on this beach? Where?



Percent correctly identifying rip by swim group



( $\chi^2=9.4$ ,  $p<0.009$ )

## Predictors of correct rip identification (photo)

Predictor variables	OR	95% CI	P value
<b>Age</b>	0.97	0.88-1.08	0.63
<b>Gender:</b>			
Female *	1.00		
Male	1.58	1.21-2.05	<0.001
<b>Swim group</b>			
Patrolled*	1.0		
Unpatrolled not in rip	0.58	0.41-0.82	<0.001
Unpatrolled in rip	0.76	0.56-1.04	<0.08
<b>Frequency of swimming at beach:</b>	1.14	1.05-1.23	<0.001
<b>Where do you live?:</b>			
Local resident*	1.0		
Elsewhere in Sydney	0.66	0.49-0.90	<0.001
Elsewhere in Australia	1.27	0.67-2.44	0.47
International	0.54	0.26-1.12	0.10
<b>Rating of safety on this beach:</b>	1.01	0.98-1.04	0.43

## Conclusions

- Swimming outside patrolled areas is risky
- Understanding who and why people make risky swimming choices can help to design better interventions for specific groups of beachgoers

## Conclusions 2

- Why do people swim in risky locations?
  - Utility-related reasons (convenience, usual place, avoid crowds)
  - Lack of knowledge of the risk of rips
- Who swims in risky locations?
  - 20-29 years
  - Live elsewhere in Sydney (or Internationals)
  - Less regular swimmers
  - Less likely to assess beach hazards
  - Less able to identify rips

## Final Conclusion

- Specific intervention would be worthwhile for beachgoers who swim outside patrolled areas.
- Study defines who should be targeted to be most effective

