Elizabethectomy: Caesarian Sections in Elizabeth
Tilbrook, M. 1997

Abstract

This paper is a brief examination of possible explanations for the high rate of Caesarian sections performed on residents of the Elizabeth LGA by comparison to other LGAs within the Adelaide SD. Gawler and Salisbury have similar demographics, but while small-area variation factors work to much the same effect in those areas, there is an area of distinction - in Elizabeth the number of mothers in the age range 15-19 years is about twice the next highest LGA. Mothers having a child by Caesarian section generally need to have all subsequent births by the same process. It appears that in Elizabeth a critical mass has been reached.

Key Words: Caesarian section, Elizabeth, Women, Childbirth.

The Question

This report is a requirement for the topic Social Geography for semester one of 1997 at the Flinders University of South Australia, In short, the question can be phrased as (Hay 1997, p.7):

- A brief examination of possible explanations for the high rate of Caesarian sections performed on residents of the Elizabeth LGA by comparison to other LGAs within the Adelaide SD

Research for this Report is to be done collaboratively, but written individually. The other members of this research group are Hayley Riggs, Adam Blakely and Louise Cottell. The data for the Caesarian sections for this exercise are at Table 1. Note that the table is age/sex standardised, expressed per 100,000 of population, and by place of usual residence.

Table 1. Surgical procedure rates for Local Government Areas (LGAs) within the Adelaide Statistical Division, 1989-90.

<table>
<thead>
<tr>
<th>LGA</th>
<th>Total</th>
<th>Crude Rate</th>
<th>Std Rate</th>
<th>Deviation from ASD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elizabeth</td>
<td>344</td>
<td>11.46</td>
<td>11.66</td>
<td>132.36</td>
</tr>
<tr>
<td>Gawler</td>
<td>108</td>
<td>7.54</td>
<td>7.50</td>
<td>49.59</td>
</tr>
<tr>
<td>Salisbury</td>
<td>810</td>
<td>7.63</td>
<td>6.77</td>
<td>34.98</td>
</tr>
<tr>
<td>Munno Para</td>
<td>218</td>
<td>7.10</td>
<td>6.09</td>
<td>21.47</td>
</tr>
<tr>
<td>Pt Adelaide</td>
<td>224</td>
<td>5.72</td>
<td>5.84</td>
<td>16.39</td>
</tr>
<tr>
<td>Location</td>
<td>Cases</td>
<td>Rate 1</td>
<td>Rate 2</td>
<td>Rate 3</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td>East Torrens</td>
<td>30</td>
<td>4.75</td>
<td>5.75</td>
<td>14.58</td>
</tr>
<tr>
<td>Campbelltown</td>
<td>232</td>
<td>5.09</td>
<td>5.62</td>
<td>12.11</td>
</tr>
<tr>
<td>Willunga</td>
<td>64</td>
<td>5.53</td>
<td>5.62</td>
<td>11.93</td>
</tr>
<tr>
<td>Enfield Pt A</td>
<td>226</td>
<td>4.77</td>
<td>5.59</td>
<td>11.35</td>
</tr>
<tr>
<td>Stirling</td>
<td>84</td>
<td>5.10</td>
<td>5.39</td>
<td>7.42</td>
</tr>
<tr>
<td>Marion</td>
<td>362</td>
<td>4.85</td>
<td>5.23</td>
<td>4.31</td>
</tr>
<tr>
<td>Happy Valley</td>
<td>203</td>
<td>6.00</td>
<td>5.23</td>
<td>4.15</td>
</tr>
<tr>
<td>Walkerville</td>
<td>30</td>
<td>4.25</td>
<td>5.14</td>
<td>2.46</td>
</tr>
<tr>
<td>Hindmarsh</td>
<td>46</td>
<td>5.40</td>
<td>4.98</td>
<td>-0.80</td>
</tr>
<tr>
<td>Noarlunga</td>
<td>397</td>
<td>5.13</td>
<td>4.88</td>
<td>-2.83</td>
</tr>
<tr>
<td>Tea Tree Gully</td>
<td>410</td>
<td>4.98</td>
<td>4.75</td>
<td>-5.25</td>
</tr>
<tr>
<td>Mitcham</td>
<td>239</td>
<td>3.77</td>
<td>4.54</td>
<td>-9.50</td>
</tr>
<tr>
<td>Enfield Pt B</td>
<td>67</td>
<td>4.00</td>
<td>4.48</td>
<td>-10.80</td>
</tr>
<tr>
<td>Woodville</td>
<td>315</td>
<td>3.81</td>
<td>4.33</td>
<td>-13.61</td>
</tr>
<tr>
<td>Prospect</td>
<td>87</td>
<td>4.54</td>
<td>4.05</td>
<td>-19.31</td>
</tr>
<tr>
<td>Thebarton</td>
<td>36</td>
<td>4.20</td>
<td>3.67</td>
<td>-26.79</td>
</tr>
<tr>
<td>Brighton</td>
<td>50</td>
<td>2.57</td>
<td>3.66</td>
<td>-26.98</td>
</tr>
<tr>
<td>Henley &amp; Grange</td>
<td>52</td>
<td>3.44</td>
<td>3.60</td>
<td>-28.24</td>
</tr>
<tr>
<td>West Torrens</td>
<td>153</td>
<td>3.42</td>
<td>3.47</td>
<td>-30.74</td>
</tr>
<tr>
<td>Burnside</td>
<td>109</td>
<td>2.79</td>
<td>3.41</td>
<td>-32.08</td>
</tr>
<tr>
<td>St Peters</td>
<td>34</td>
<td>3.96</td>
<td>3.40</td>
<td>-32.32</td>
</tr>
<tr>
<td>Glenelg</td>
<td>39</td>
<td>2.88</td>
<td>2.99</td>
<td>-40.37</td>
</tr>
<tr>
<td>Unley</td>
<td>128</td>
<td>3.45</td>
<td>2.90</td>
<td>-42.18</td>
</tr>
<tr>
<td>Kensington &amp; Norwood</td>
<td>36</td>
<td>3.84</td>
<td>2.87</td>
<td>-42.82</td>
</tr>
<tr>
<td>Payneham</td>
<td>46</td>
<td>2.83</td>
<td>2.76</td>
<td>-45.00</td>
</tr>
<tr>
<td>Adelaide</td>
<td>27</td>
<td>2.19</td>
<td>1.76</td>
<td>-64.88</td>
</tr>
</tbody>
</table>


This report is one of a series being conducted looking at the high rates of almost all surgical procedures conducted on residents of the Elizabeth LGA. A thesis, entitled *Cutting away the edges. Describing a variety of possible factors influencing an above average tonsillectomy rate in Elizabeth* was written by 1993 Flinders University honours graduate Shari Mathews-Cowey. This paper examines the reasons for the high tonsillectomy rate and many of the observations made there are relevant to the high rates for other procedures.
In that paper (Mathews - Cowey 1993, p.6) reference is made to government and media reports commenting on the high procedure rates for the LGAs of Elizabeth, Salisbury, Munno Para and Gawler, but of Elizabeth in particular. This report examines this phenomenon in so far as it affects the rate of Caesarian sections conducted on residents of Elizabeth, but is mindful that the high rates of other procedures are likely to share some causative factors.

When the data is mapped with the divisions selected in the chloropleth below the distribution of incidence becomes strikingly apparent. An examination of the clustering of the low incidence rates around the central suburbs might also be instructive.
Note: age/sex standardised, expressed per 100,000 of population by place of usual residence.


Comparing Local Government Areas
For the purposes of this Report statistics will generally be compared between the LGAs of

- ELIZABETH
- GAWLER
- SALISBURY
- MARION
- NOARLUNGA
- ADELAIDE

This enables comparison of Elizabeth, with distinctively the highest rate, with Gawler and Salisbury in the immediate area and with rates well above the average, against Marion and Noarlunga in the broad middle band and Adelaide in the lowest range.

Source: SA Health Commission, 1997

The graph above shows the raw figures for Caesarians performed on residents of the selected LGAs over a ten-year period. Aside from showing a general increase in the number of sections performed, the graph demonstrates that the 1989-90 figures upon which this Report is predicated are not a 'one-off'.

**What Caesarians are**
It is unheard-of, uncivilized barbarism that any woman should still be forced to bear such monstrous torture. It should be remedied. It should be stopped. It is simply absurd that, with our modern science, painless childbirth does not exist as a matter of course... I tremble with indignation when I think of... the unspeakable egotism and blindness of men of science who permit such atrocities when they can be remedied.


A Caesarian section is a medical procedure to deliver a baby without a vaginal birth. It is usually conducted in a hospital with surgical staff under general or epidural anaesthetic. An incision is made in the mother's abdominal wall and then the uterus. The baby is removed, the umbilical cord clamped and cut and the placenta removed. The uterus and abdomen are then sutured - the whole procedure usually takes between forty and sixty minutes, with the baby being delivered between five and ten minutes from the first incision (after Bennett, Etherington & Hewson 1993, pp. 266-267).

Two origins of the expression are extant by (Houghton Mifflin Company, 1992):

A surgical incision through the abdominal wall and uterus, performed to deliver a fetus. [From the traditional belief that Julius Caesar (or his eponymous ancestor) was born by this operation.]

and that the procedure is named after the Roman law 'Rex Caesaris', prohibiting the operation on a living woman - this sometimes being done on occasions where the child was valued above the mother (Matthews, 1997). The reason for requiring a law against the practice becomes evident when we realise that it is not until 1870 that the mortality rate for the mother dropped to about 70%. It was still 6-10% in 1900 and only became relatively safe with the introduction of anti-biotics mid this century. It is currently about one death in 10,000 operations (Fox, 1993)

The medical reasons for conducting Caesarian sections in South Australia are shown at Figure 1. This graph combines elective and emergency operations; the main differences being that 50% of elective operations are conducted because of a previous Caesarian and that 'foetal distress' accounts for 40% of emergency sections. The completely 'optional' aspects of a mother’s choice based on non-medical grounds would seem to be contained in the 'other' category (which varies little between the emergency and elective categories, indicating other factors at work).
IUGR = Inter-Uterine Growth Retardation.

Source: Chan et al 1995, p.22.

Some perspective

Fertility and Birth Rates

Fertility in South Australia has declined markedly in the period 1954 to 1979. The rate in the table below expresses the average number of children a woman aged fifteen would be expected to bear over her lifetime if the fertility conditions applying to the year of measurement were to continue.

Figure 4. Total fertility rates, South Australia, 1954-79.
The crude birth rates in the six LGAs selected are shown in the figure below. They fall within the range of 5.6 (District Council of Light) as the lowest figure, to the highest of 25.8 (District Council of Meadows) for LGAs within the Adelaide Statistical Division (SD).

**Figure 5. Crude birth rate for selected LGAs, 1981**

Births per 1,000 population

*Source: SA Health Commission, 1982, p.54*

*Rates of Caesarian Sections in South Australia and the World*
The Caesarian section rate for South Australia has risen from 16.9% in 1981 to 19.0% in 1986. This coincides with the increase of rates in North America and Europe; other rates ranging from the 3.6% figure for the Netherlands in 1978 to the 22.7% of the United States in 1985 (Jonas, Chan & MacHarper 1989, p.99). Some exceptional individual instances of high rates are known, such as the one-time 60% rate of middle-class women in Rio de Janeiro (Matthews, 1997). The table below outlines the commonly accepted reasons for this rise.

Table 2. Accepted reasons for the rise in Caesarian sections.

<table>
<thead>
<tr>
<th>Reason</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>reluctance of obstetrics to deliver breech babies vaginally or to perform mid-forceps deliveries because of the apparent increase in risk to the fetus</td>
<td></td>
</tr>
<tr>
<td>the view that vaginal delivery following previous Cesarean section is unnecessarily risky, although this view is now being challenged</td>
<td></td>
</tr>
<tr>
<td>the increasing use of electronic foetal monitoring which increases the chances of detecting as well as over-diagnosing foetal distress</td>
<td></td>
</tr>
<tr>
<td>because of changing child-bearing patterns, the significant increase in the proportion of elderly primigravidas [women bearing their first child] who have an acknowledged obstetric risk</td>
<td></td>
</tr>
<tr>
<td>the fear of malpractice suits, especially where there is public awareness of the apparent hazards of vaginal breech or mid-forceps deliveries</td>
<td></td>
</tr>
<tr>
<td>the request of the woman for a Cesarean section in the absence of strong clinical indications [to avoid stress or pain]</td>
<td></td>
</tr>
</tbody>
</table>


The World Health Organisation states that the rate of Caesarian section should be between 10-15% of all deliveries (Pratten 1990, p.48). Many doctors believe that the rate should be even lower than this; the Rotunda Hospital in Dublin specialising in this practice, regularly achieves rates between five and ten per cent (Matthews, 1997).

**Hospital Services**

Almost all births in South Australia are in public or private hospitals. This part of the Report identifies the main hospitals in the state which handle confinements, which of those hospitals Elizabeth residents use and compares the discharge rates of the six LGAs. In the years 1989 to 1995 no LGA in the Adelaide SD recorded more than four homebirths in any year (ABS, 1997a). Homebirths are not statistically significant for the purposes of this Report and are not considered further.

**Figure 6. Proportion of confinements at individual hospitals in South Australia, 1993.**
The figure above gives the proportion of South Australian births conducted in major hospitals.

Note that the Lyell McEwin, Royal Adelaide and Modbury hospitals are the major medical influences in the Elizabeth LGA, as shown in the figure below.
The Lyell McEwin's highest discharge rate is for obstetric procedures, so it is not general procedures which are providing this percentage. Modbury hospital, while closer than the three city hospitals ranking after the Lyell McEwin, is not well-served by public transport from this direction (SA Health Commission, 1981, p. 120).

A survey of consumer views found that residents of the Para and Districts (including Elizabeth) perceived all hospitals in the area in much the same way (Rungie & May, 1982).

The proportion of elective to emergency sections by public or private teaching hospital in South Australia shown below does not appear to instructive - showing mainly that private hospitals perform a higher rate of elective procedures.

**Figure 8. Proportion of elective to emergency sections, by public and private teaching hospital, South Australia, 1982.**
Why Elizabeth?

Here we look at the distinctive nature of Elizabeth; not only with Caesarian section, but across the broad spectrum of medical procedures. The next section examines other data which works against the premise of this Report before the Small-Area Variation (SAV) factors are considered.

The general procedure rate for the LGA

The following graph shows that Gawler and Elizabeth have distinctively higher hospital attendance rates by comparison to the other LGAs of the six selected.

Figure 9. Age-sex standardised discharge rates for the major metropolitan hospitals, by selected LGA, 1979.

Source: after SA Health Commission, 1982, p.62
The figure below indicates that Elizabeth, Salisbury and Gawler invariably have much higher rates for all the procedures graphed, with Elizabeth being the highest in almost all cases. Noarlunga and Adelaide only rarely cross the divide into the land of the above-average rate. Noarlunga's low rates is particularly notable given its ethnic and social similarity with Elizabeth - as discussed later.


Are the figures deceptive?
Interpretation and data from some other sources do not flag the concerns we are examining here. The South Australian study on Caesarian section conducted in 1986 (Jonas, Chan and MacHarper, 1989, p.100) in the section *Woman's Place of Residence* makes no mention of anything notable in the northern suburbs, concentrating on the differences in elective rates between the eastern and western regions.

**Figure 11. Percentage of births in 1991 by Caesarian section, selected LGAs.**

![Diagram showing percentage of births by Caesarian section for selected LGAs.](image)

*Source: ABS, 1997b*

The graph above charts the percentage rate of Caesarian delivery for the six LGAs from ABS data for 1991. With an average of 22% across the State in that study the Elizabeth figures do not look as distinctive. This is not to say that they are invalid, but that the form of presentation is influential.

Elizabeth is predominantly English-born, or of subsequent generations, as discussed later in this Report. Both *Caesarian Section in South Australia, 1986* (Jonas, Chan & MacHarper, 1989, p.102) and the ABS figures for 1991 (ABS, 1997c) note that Aboriginal and Asian women are more likely to have Caesarian sections than Caucasian women - the former ascribing this to the higher emergency section rate, and the latter including Greek and Phillipino women in the high percentage category.

**SAV factors**

The Small-Area Variation method of analysis is employed by Mathews - Cowey in her study of the tonsillectomy rate for Elizabeth (1993, pp.13-14) and this Report uses her observations of those factors as a starting point in this examination.

*Low socio-economic status*
Mathews - Cowey (1993, p.28) quotes ABS data which indicates that Elizabeth is an area of low socio-economic status on most indicators. Her data also indicates that Gawler, Salisbury and Noarlunga (of the six selected LGAs) share many of those indicative characteristics. The concept is that poorer areas are sicker ones because of lower-standard housing and amenities, reduced awareness of health factors, more crowding, poor diet and the like (Mathews - Cowey, 1993, pp.23-8) While Caesarian section may not appear to be directly influenced by these factors the prospective birth-weight of a fetus is; and that is a consideration in electing birth by section.

Health-care service variation

General Practitioners (GPs) are less frequent in lower socio-economic areas than in higher. This is the case for Elizabeth (Stimson, 1976, quoted in Mathews - Cowey, 1993, p.16), and may affect the availability of medical advice and support which would assist mothers facing difficult births in choosing a vaginal delivery. Mathews - Cowey also observes (1993, p.52) that GPs may be recommending surgery to reduce their own workloads - this may point to the high rate for all procedures graphed in Figure 10. The high number of 24-hour and bulk-billing services may exacerbate this (p. 37), with Elizabeth residents using these and hospital casualty services routinely (p. 42).

Physician practice patterns

Women wanted obstetricians to look them in the face. What could be simpler? But the response was anything but simple. The profession has devoted years of inquiry to ferreting out the most minute details of the conscious woman's experience of childbirth.


Mathews - Cowey found an important obstacle in examining the situation in an area as small as this; Medicare will not release data which identifies the activities of individual patients or doctors (1993, p.19). A couple of obstetricians practising over a decade could greatly influence the figures we are examining. As well as directly effecting the procedure they could create a 'norm' of expectation in the population.

Three allied factors might influence Caesarian rates, though in differing ways. The first is the notion that some Caesarians may be performed for the convenience of the obstetrician and staff (Bennett, Etherington & Hewson, 1993, p.270), enabling out-of-hours work to be minimised. The current pattern of delivery by Caesarian is shown below, where vaginal delivery and emergency section are the flatter lines and elective section peaks at eight in the morning.
The second is the proposition that this procedure is more common for patients on private health insurance (Astbury & Lumley, 1980, p. 120) and who have a better relationship with their doctor. The idea is that the physical and mental well-being of the mother will be a higher factor in the reasoning leading to a decision by a doctor who has a long-standing relationship with the patient and is not working to a tight schedule (Matthews, 1997).

Thirdly; the personal beliefs and policies of the obstetrician in charge at a hospital can be very influential. Dr Matthews (1997), who is the staff obstetrician at Modbury Hospital, inherited a 19% Caesarian rate - he is working on bringing it down and expects to see 17% this year. Modbury is one of the three major hospitals in the area and performs more work in obstetrics than in any other area (SA Health Commission, 1981, p.129).

The first two points would be very difficult to substantiate for this case, and the third would require more research and time than is available for this Report.

**Medical Competence**

It is held that performing a Caesarian is both safer and easier than handling a difficult vaginal birth (Astbury & Lumley, 1980, p.122; Matthews, 1997). Additionally, the complications which might require a Caesarian delivery are difficult to assess and can lead inexperienced doctors to perform the operation where it later turns out to have been unnecessary (Bennett, Etherington & Hewson, 1993, p.268; Fox, 1993, p.226;
Kitzinger, 1983, p.78). This reinforces the possibility that Caesarian numbers are higher in the Elizabeth area partly because of the factors considered in *Health-care service variation*.

The modern-day threat of malpractice suits is likely to be a factor generally, and perhaps more so where GPs are under time pressures and are comparatively too few. The Australian Medical Association is reserved on the matter of advising doctors on this, as 'we have no policy on Caesarian sections, you should speak to the Royal Australian College of Obstetricians and Gynaecologists' (Dashwood, 1997), while the College says (Ryan, 1997);

- Caesarian sections are done as a result of risk assessment by the attending clinician. Other illnesses being present will often be a reason also, such as kidney problems and so on. Older women are also more likely to have a Caesarian. There are also the litigation concerns, to make sure that the baby is okay. We have no general policy on Caesarian sections, it is a clinical decision.'

The Law Society of South Australia says (1997);

- We do not keep stats on this, on how much work there is in medical negligence, but we do have a list of solicitors that handle these cases. There are six in the city and twenty or thirty who handle malpractice generally.

However, the only lawyer in the Adelaide telephone book who advertises a speciality in medical malpractice says (Speck, 1997);

- I don't do much medical negligence work.
  [his secretary says that he has only two current files in this area]

The malpractice issue in South Australia may be more fear than reality.

**Patient's cultural environment**

In the Para and Districts *Survey of Consumer Needs Regarding Health Services* (Rungie & May, 1982, p.29) the residents of Elizabeth scored highest in their perceived medical needs (against Gawler, Munno Para and Salisbury). Mathews - Cowey (1993, p.46) had one respondent say;

- If we'd been in the UK, we'd be all right because children get free prescriptions.

This may not be compelling, but is a reminder that the National Health system in the UK spawned an attitude far readier to employ medical intervention than a user-pays system is (a system which we have in a small, but growing, measure). One would expect this attitude to be a factor in LGAs like Noarlunga also (largely settled by English migrants).

Chapter Five of Mathews - Cowey's (1993) thesis covers the GP-parent-specialist relationship regarding tonsillitis in a way which might apply here; substituting the
Ear, Nose and Throat specialist for the obstetrician or gynaecologist. The proposition is that the relationship works in a way where the attitudes of the doctor control the desires of the patient, and the fact of a referral almost guarantees that the specialist will agree with the diagnosis and carry out the procedure. Again, an area of possibility.

Social networking is likely to be a large factor. Mathews - Cowey (1993, p.49) examined it and found from her respondents that they felt peer expectation and experience to be powerful in their own decision-making. Elizabeth is a small enough community that good or bad experiences amongst women of child-bearing age (particularly those not in regular employment, or who attend ante-natal classes) may become common knowledge amongst a sizeable proportion.

**Local environmental factors**

Pollution sources which might affect the mother's health or the birth-weight of a fetus exist in Elizabeth but are found elsewhere too (Mathews - Cowey, 1993, p.35).

**The 'Young Mother' Factor**

As noted earlier, a first birth is more likely to be by Caesarian section than a latter one, and, once having had a Caesarian it is general practice to deliver subsequent babies by this method due to the risk of a rupture of the uterus. The graph below shows the raw figures for Caesarians performed on residents of the selected LGAs by age category - the significant feature is the extraordinarily high number for girls in the 15-19 year old bracket in Elizabeth. In this bracket Elizabeth equals Salisbury, an LGA with more than twice the population. While not shown here, the figures for the five years on either side correspond.

*Figure 13. Number of Caesarian sections performed on the residents of selected LGAs in the Adelaide SD by age group, 1990-91.*
Given that Elizabeth has an older population than Gawler, Munno Para or Salisbury (Rungie & May, 1982, p.29), and if we presume an extension of the ten year trend of young Caesarians, it may be that a much higher proportion of women in Elizabeth are obliged to have Caesarian deliveries because of their previous histories.

Of every factor examined, this appears to be the most exclusive to Elizabeth.

**Conclusion**

Caesarian section deliveries are increasing. They are safer and more acceptable now than they have ever been. Though it is generally accepted that a vaginal birth is preferable the Caesarian section requires less expertise, and involves less risk, for an inexperienced practitioner where there are complications evident in a delivery. Most of the factors which increase the rate should apply evenly across all LGAs in the Adelaide Statistical Division. That they do not is evident from the initial figures in this Report.

Shari Mathews - Cowey has examined the SAV aspects of Elizabeth in relation to tonsillectomies and found that (1993, pp.58-60) the causes cannot be socio-economic or bio-physical only, but that they could involve community opinion and high-referring bulk-billing practices of doctors. To what degree these are transferable to the rate of Caesarian section is arguable, but this examination finds that;
• lower-socio economic status increases emergency section risk,
  • fewer doctors under more pressure promotes surgical responses,
  • individual practitioners can have a significant influence on rates,
  • the threat of medical malpractice is likely to result in more Caesarian births,
  • UK-born patients may be more ready to have an elective section,
  • social-networking is strong in Elizabeth and is a factor in encouraging existing patterns, and that
  • Elizabeth has a significant number of young mothers who already have a birth by Caesarian and must then have subsequent ones.

Mathews - Cowey believes (1993, p.61) that the SAV factors contribute to the situation with tonsillectomies, but that nothing is decisive and that more study is needed. With Caesarian sections I believe that they, in concert with the young mother concept, have reached critical mass in Elizabeth reinforcing each other in a way which is not happening elsewhere.

References:


Matthews - Cowey, S. 1993, *Cutting away the edges. Describing a variety of possible factors influencing an above average tonsillectomy rate in Elizabeth*, BA (Hons) thesis, Flinders University.


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