

The Secretary, Breastfeeding Inquiry
Parliamentary Committee on Health and Aging
House of Representatives
PO Box 6021
Parliament House, Canberra ACT 2600

To the Secretary:

I am very relieved that the Parliamentary Committee on Health and Aging is seeking a greater understanding of the breastfeeding impact on mother, infant, health system, and associated industries.

Having spent a number of years diligently researching many aspects of breastfeeding this inquiry comes at an important time.

To understand **breastfeeding** it is critical to understand the extended field of **sudden infant death** (for reasons which will become clear). Indeed, this field is all that stands between Australia having a breastfeeding rate equal to the very best in the developed world (if not developing world).

On a slightly different issue connected with breastfeeding, Jill Hill, federal member for Central Coast and member of the Committee, suggested I make a contribution to this inquiry. There are very poor associations between breastfeeding, abortion, and the regional density of **nuclear power production**. For the health of women and children I am so grateful that this inquiry has come at this time.

I have 13 ½ child years of breastfeeding experience (currently breastfeeding), and as a stay-at-home mother have had the opportunity to share mothering experiences (chat incessantly) with women in three different rural towns in country Victoria across diverse demographic ranges. Prior to becoming a mother, and after completing a degree in mathematics, I trained and worked in actuarial fields assessing contingent mortality and morbidity risks as well as financial outcomes in life insurance and superannuation, before a sea-change led me to train and work as a nanny. I am 46 years old.

There are two sections to this submission:

The first "Cultural Oddities Impacting on Breastfeeding" begins with a short review of Australian breastfeeding in comparison to other world populations, and looks at how John Lennon & Yoko Ono may have acted as the catalysts for the return to breastfeeding in the developed world, pp 2 – 18.

The second "Adverse Associations Between Nuclear Power & Women's Gestational Capacities – Fertility, Breastfeeding and Abortion" addresses increasing breastfeeding (and abortion) dysfunction in increasingly dense nuclear power environments, pp 19 -28.

Yours faithfully

Madeleine Love

Cultural Oddities Impacting on Breastfeeding

<i>Where have we come from?.....</i>	<i>3</i>
<i>Where are we now?.....</i>	<i>4</i>
<i>Increasing the breastfeeding rate is ludicrously simple.....</i>	<i>4</i>
<i>How did we lose what we had?</i>	<i>5</i>
<i>Why are Swedish women better than us?</i>	<i>5</i>
<i>What's the evidence?</i>	<i>6</i>
<i>Why are Norwegian women the best breastfeeders in the post-developed world?</i>	<i>8</i>
<i>John Lennon and the breastfeeding increase in the 1970's... ..</i>	<i>9</i>
<i>"Sharing a bed for peace" to increase Australia's breastfeeding rate.....</i>	<i>9</i>
<i>Where did the bed-sharing fears come from?</i>	<i>10</i>
<i>And the point will be.....</i>	<i>11</i>
<i>Discussion on Residual State Fears</i>	
• <i>The Risk of Accidental Overlaying.....</i>	<i>12</i>
• <i>The Risk of SIDS</i>	<i>13</i>
• <i>The Risk Causing Psycho-Sociological Harm</i>	<i>17</i>
• <i>The Risk of Marital Discord.....</i>	<i>17</i>
• <i>The Risk of Dependency</i>	<i>17</i>
<i>The Simplest and Cheapest Way to Increase Australia's Breastfeeding Rate</i>	<i>18</i>

Where Have We Been?

The White Ceiling

Victoria's consistent record of breastfeeding prevalence gives a good view of where we've been - a steady decline down to the early 1970's, and then a very rapid increase, thereafter hitting "The White Ceiling"^{1,2}.

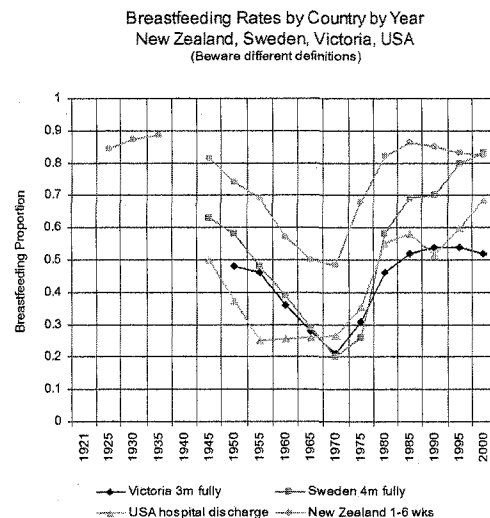
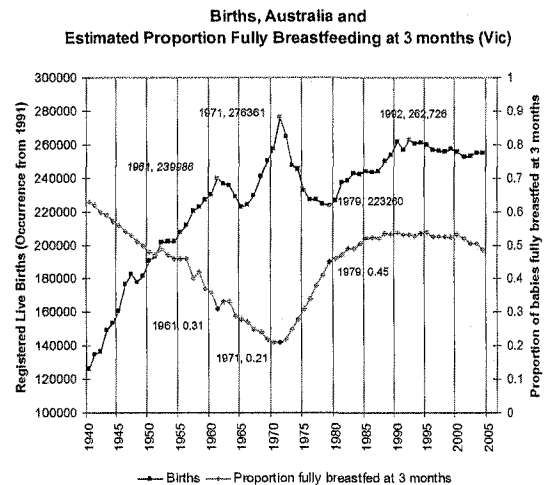
Point data from other studies^{3,4} suggest that other states all followed similar paths. As is clear from the graph, Victoria's breastfeeding rate is falling. Although NSW survey data has varied a great deal in recent years^{5,6}, other indicators suggest that there has been some increase in NSW breastfeeding over the last few years.

The experience for every developed population is reported to be universally similar³ (except for the populations such as the USA which hit absolute rock-bottom before the 1970's). Time series breastfeeding rates have been located for New Zealand, Sweden, USA, and Victoria. See graph at right. While Australia and New Zealand have hit the white ceiling, Sweden has pushed on to be second best behind Norway (see Developed Population comparison). The USA are coming to get us...some states have already surpassed us!⁷

The sudden simultaneous return to breastfeeding of the early 1970's has never found satisfactory explanation in the scientific literature. The ABA would like to credit Victoria's rise to itself, but there must have been far more dominant external influences for the whole developed world to spontaneously return to breastfeeding without discussion.

Hitchcock, in "Infant Feeding in Australia: An Historical Perspective Pt 2: 1900-1988"³, suggested increasing unemployment, revolt against the tyranny of the bra, paid maternity leave, and a return to the natural from the artificial, but declared these reasons to be rather superficial. In describing researcher's findings in a USA study which investigated social correlates to breastfeeding⁸, Hitchcock wrote

"Their failure to show any such relationship led them to conclude that the factors responsible for the reversal were more subtle than those that are documented in surveys."



Where Are We Now?

In comparison to other developed populations:

About 51% of women in Australia were “fully breastfeeding” at 3 months (~2000/1). The equivalent figure for Sweden is about 75%, and Norway 77%. The rates for Ireland, France and Belgium are about 8%, 10% and 10% respectively. See graph at right⁹.

In comparison to some undeveloped populations:

In the developing world, the aim is not 3 months, but rather, the WHO recommendation of 2 years (see graph at right). Only 1% of Australian women manage to breastfeed through to age 2. From these selected populations, 90% of women from Bangladesh are still breastfeeding at 20-23 months, and 15% of babies in China are still breastfeeding at this age¹⁰.

It is expected that their governments are outlaying absolutely no money to achieve these results.

Governments only have to outlay money to achieve something that is different from a natural evolved (or designed) process.

Increasing the breastfeeding rate is ludicrously simple...

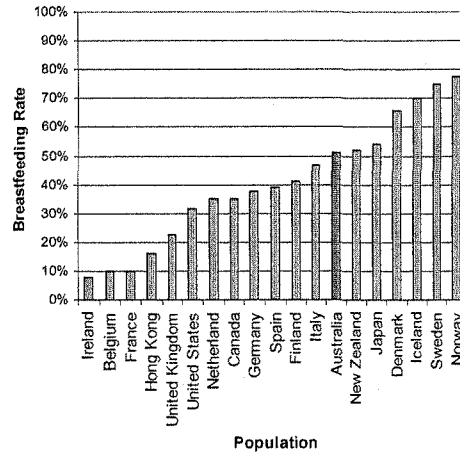
By deduction and by anecdote, for the vast majority of women (about 75%) breastfeeding is extremely tiring or doesn't work very well unless they are sleeping with, or within arms length of their babies.

Women in western developed populations fail at breastfeeding because circumstances and iatrogenic encouragement over *very* recent history have led to babies being kept at a great distance.

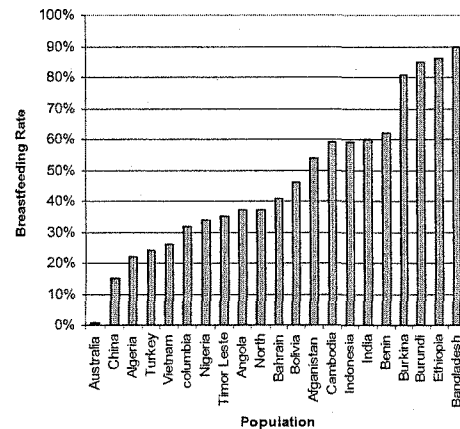
Women in non-western developing/ed populations are successful at breastfeeding because they keep their babies closeⁱ.

Every little mammal sleeps with its mother at nightⁱⁱ as do 90% of the world's little human mammals – the 90% whose mothers are successful at breastfeeding.

Fully Breastfeeding Rates at 3 Months
(Estimated and Precise)
Most Post-Industrial Populations 2000/1



Fully Breastfeeding Rates at
20-23 months
Selected populations
UNICEF numbers (1996-2005)



ⁱ Nearly 100% share a bed with their parents in India – 93% in urban centre Chandrakah, 88% in Chongqing, China.

ⁱⁱ Unless the mother is a seal and has gone off for 4 days fishing and has fed her pup extremely high fat milk

How Did We Lose What We Had?

Anthropologist Helen Ball has written a compelling chapter for a forthcoming book describing the circumstances and iatrogenic encouragements which have led to the separation of mothers and babies in western developed populations¹¹. Her writing primarily describes the history of the adverse effects of hospitalization of birth, and health professionals who have heard this story report experiencing a “**light-bulb moment**” where the helplessness of neonatal infants is explained. *I strongly recommend The Committee read it.*

Testing the simple principle of the necessity of mother-infant closeness, Helen designed a study in a hospital post-natal ward, where first time mothers were randomly allocated to three different care groups. One group had the newborn in the standard plastic cot by the bed at night. A second group had the baby in a three-sided “side-car” cot attached to the bed so the sleep surfaces were level. The third group had the baby sleeping directly with them. (Only non-caesarian and non-opiate deliveries were included.)

The mothers in the second and third groups made more than twice as many attempts to breastfeed through the night, established more than twice as many successful breastfeeds, the babies put in twice as much feeding effort¹², and over the long term (16 weeks) these mothers were twice as successful at breastfeeding, in comparison to group of mothers with the standard care rooming-in plastic cot¹³.

That simple! Mothers and babies of every mammalian species belong together.

Why Are Swedish Women Better Than Us?

More Swedish women sleep with their babies. At least 65% of Swedish women sleep with their babies on any given night, whereas only about 30% of Australian women reported that they do¹⁴. That more than covers the difference in the breastfeeding rates.

I’m hearing “paid maternity leave” and “better employer conditions”... small effect I think. Most of the breastfeeding failure happens very early on, due to the extreme fatigue of trying to achieve “infant-in-the-cot” breastfeeding. Most women want to find “mothering” a pleasant experience and want to stay home for a while – generally insanity drives them back to work a lot sooner than they had intended (in my chatting experience) – although they’ll say it’s for “money” to Maternal & Child Health Nurses so they’re not assessed as “bad mothers”. I don’t think “paid maternity leave” will encourage breastfeeding duration, except in those women who are already finding the job pleasant by sleeping well at night with their babies. But of course we should be paid if we are doing something for the community rather than something for ourselves – if the State wants our beautiful sons to go to war, for example.

Separated mothers and babies cost the Australian population so much money in so many different ways.

What's the Evidence?

English Experience

(1997) Clements et al¹⁵ investigating influences on breastfeeding in southeast England found that “*bed-sharing was associated with a longer duration of breastfeeding*”.

(2003) Helen Ball examined the night-time care-giving practices of 253 families during the first 4 months of their infant's life, determined parents' responses to their infant's sleep patterns, looked at how breastfeeding parents managed night-time feeding, and whether bed-sharing was a common strategy¹⁶.

Of those mothers who had ever breastfed, 65% had Bed-Shared at least once a week. Of the mothers who had never breastfed, only 33% had bed-shared ($p < 0.000001$).

Of the mothers who were still breastfeeding at 4 weeks, 72% were bed-sharing. Of the mothers who were formula feeding at 4 weeks, 38% were bed-sharing ($p < 0.000001$).

Most breastfeeding mothers find night-time care-giving extremely challenging, and have two options; either to bed-share, or to put the baby onto infant formula (bottles).

She concluded with

“An understanding of the role of infant feeding practice on infant sleep and parental care giving at night is a crucial element in breastfeeding promotion and enhancement of infant health. Health professionals should discuss safe bed-sharing practices with all parents.”

(2004) SIDS researcher Peter Blair and Helen Ball collaborated to examine the prevalence and characteristics associated with parent-infant bed-sharing in England across a wide range of parental and infant characteristics¹⁷.

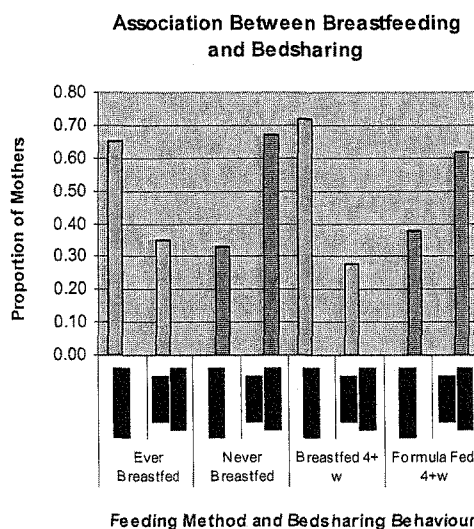
They concluded that

*“Bed-sharing is a relatively common practice in England, not specific to class, but **strongly related to breastfeeding**”.*

They found that on any night in England, 30% of parents of infants in their first month are sharing a bed with their baby. Of about 650,000 live births in a year, that is 195,000 babies (30%). On a national basis 46% of babies will share a sleep surface with their parents, at least “occasionally”.

In their results they stated:

“Bed-sharing was not related to younger mothers, single mothers, or larger families, and was not more common in the colder months, at weekends, or among the more socially deprived families; in fact bed-sharing was more common among the least deprived in the first months of life. Breastfeeding was strongly associated with bed-sharing, both at birth and at 3 months.”



New Zealand Experience

(1994) Data from 1529 infants was analysed to identify factors that might hinder the establishment and duration of breastfeeding¹⁸.

When adjusted for confounding factors, “not exclusive breastfeeding” at discharge was significantly associated with “mother not bedsharing”, amongst other factors.

When similarly adjusted, a “short overall duration of breastfeeding” was associated with “mother not bedsharing” amongst other factors.

USA Whole Population Experience

Similarly, in the United States, from a 10,000 family national survey¹⁹, bed-sharing mothers were three times more likely to be breastfeeding (rather than bottle feeding)²⁰.

In fact, the study “Trends in Infant Bed Sharing in the United States, 1993-2000”⁹ showed that the proportion of infants “usually sharing” an adult bed at night had more than doubled, increasing from 5.5% to 12.8%. This has come at a time when population-wide breastfeeding at 6 months has increased from 19.0% to 31.4%⁷. Through this time SIDS has fallen from 1.17²¹ to 0.62²² per thousand.

(The “independence-crazy” US culture would not have increased in bed-sharing unless it really had to support breastfeeding.)

Alaskan Experience

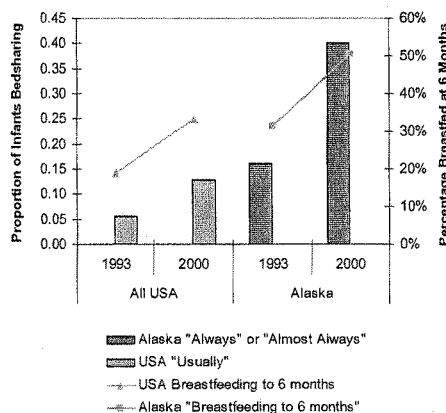
Similarly, in Alaska, over this same time period the proportion of mothers who report that they “Always” or “Almost Always” sleep with their infants increased from 16% to 40%, while breastfeeding has increased from 31.3% to 50.2% and SIDS has declined “50% to 70%” (Gessner and Porter)²³.

Australian Experience

Unfortunately I haven’t come across any breastfeeding/bed-sharing comparisons for Australia, but to normalize bed-sharing... On any given night in Brisbane it can be expected that 30% of parents with 3 month olds will be sharing a bed with their infants (12% >5 hrs, 12% between 2–5 hrs, 6% less than 2 hours)¹⁴. This cohort came from the south of Brisbane, and it is reasonable to expect that the finding can be generalized around Australia. Of 260,000 babies in Australia, 78,000 will be sharing an adult bed for some part of the night when they are three months old. Based on the English experience¹⁷ there will be a slightly higher incidence of bed-sharing of one-month-old infants, but about the same for all the months of an infant’s life.

And the vast majority of parents aren’t doing it because they “can’t get enough of their babies”, but rather for the simple practical reason that it makes breastfeeding at night manageable. (From Baddock²⁴ in New Zealand: The most frequent reasons for bedsharing were that the mothers felt it provided comfort for the infant (14 mothers), it was natural (12), it facilitated breastfeeding (11), it was convenient (10), and it promoted bonding(8).)

Prevalence of Bedsharing and Breastfeeding
USA & Alaska



Why are Norwegian women the most successful breastfeeders in the post-developed world?

From the Norwegian Directorate for Health and Social Affairs publication “**Hvordan du ammer ditt barn?**” (How do you breastfeed your baby? “Night feeding” p16) published 7/2/2005, last amended 9/1/2007 http://www.shdir.no/vp/multimedia/archive/00004/IS-2092_4513a.pdf

Nattmåltidene

Særlig det første halvåret er det vanlig at barnet trenger mat døgnet rundt. Nattamning stimulerer melkeproduksjonen, og med et diebarn er nattmåltidet en enkel sak.

Tenn minst mulig lys, ta barnet opp til deg i sengen når du ammer, og skulle dere sovne sammen er det ikke noen fare forbundet med det. Barnet bør ha sin egen dyne.

Hvis foreldrene røyker, bør barnet sove i egen seng pga. risikoen for krybbedød.

Stell og bleieskift tar du bare hvis det trengs. Noen barn sover natten gjennom allerede tidlig, andre våkner hver natt, uansett om de får morsmelk eller ikke. Har barnet en tilfredsstillende vektøkning, kan du godt la det sove natten igjennom.

Hvis du en periode har litt lite melk eller barnet ikke legger på seg, bør du amme ofte og gjerne legge inn ett nattmåltid eller to. Blir du selv sliten og synes det tar på med nattevåking og mye nattmating, så prøv å sove litt du også når barnet sover om dagen.



Translated...

Night Feeding

Particularly during the first half-year it is usual that the baby requires feeding 24 hours, day and night. Night breastfeeding stimulates milk production, and with a (?) baby night feeds are a simple matter.

With the lowest possible light, **take the baby up to you in the bed when you breastfeed, and you should there sleep together if there are not any contraindications against it.** The baby should have its own doona/quilt.

If the parents smoke, the baby should sleep in its own bed because of an increased risk for SIDS.

Care and nappy changes should take place only if it is absolutely necessary. Some babies sleep through the night very early, others wake every night, whether they have mothers milk or not. Only if the baby has a satisfactory weight gain, is it alright to allow it to sleep through the night.

If you for a time have too little milk or the baby is not settling (?), you should breastfeed often and willingly add in a night feed or two. If you become tired and stressed (?) with all the night waking and much night feeding, try to sleep a little yourself when the baby sleeps during the day.

John Lennon and the Breastfeeding Increase in the 1970's

Breastfeeding appears to be dependent on co-sleeping (which in these studies and advices has been mostly bed-sharing). Looking back at the early 1970's it seems unlikely that the sudden increase in breastfeeding could have happened without an increase in the prevalence of bed-sharing. The 1970's were times of peace, love and counterculture, and bed-sharing was part of it. A longitudinal study into "non-conventional" families began in California in 1975.

That these breastfeeding increases happened simultaneously around the western developed world doesn't seem possible without also a simultaneous increase in bedsharing.

I can't help wondering about John Lennon and Yoko Ono's week-long "Bed-In for Peace" in 1969, where John and Yoko blasted simultaneously into every lounge room of the western developed world, inviting us all to share a bed for peace with them (having invited the world's media to join them in bed) thereby taking an axe to the private sanctity of the marital bedroom. They were on their honeymoon. A few months later they followed it up in Toronto where musicians joined them in bed to record "Give peace a chance", a song destined to become the peace anthem of the decade²⁵.

Maybe John & Yoko provided the means by which the western world could be accidentally successful at breastfeeding. Perhaps the parents took their newborns into bed, and rediscovered that elusive parental peace, and breastfeeding success as well.

"Imagine" was released in 1971, and Pediatricians of the developed world gave the iatrogenic advice to place babies on their tummies to sleep, instead of on their backs as traditionally practiced, heralding the SIDS epidemic.

Lennon was shot in 1980, but not before books had been written on the health benefits of breastfeeding. Mothers universally tried breastfeeding, but breastfed babies generally don't sleep in cots.

"Sharing a Bed for Peace" to increase Australia's breastfeeding rate...

If Australia would like more of it's infants and mothers to have the favorable mental and physical health outcomes associated with breastfeeding, the simplest and cheapest way (and likely the *only* way) is to recommend that new mothers

Share a sleep surface with their infants from their first night in hospital,

And thereafter on a safe sleeping surface at home

.... with a strong message from Yoko Ono not to do it with drugs or alcohol.

Listen to the people screaming SIDS, accidental rollovers, they'll all turn into sexual deviants/clingy/dependent, it'll wreck their parent's sleep, the babies will form bad habits, males will miss out on sex!...sigh, yes, coming to that.

Where Did All the Bed-sharing Fears Come From?

There has been a problem in western nations and their European origins for some centuries, over what to do with the excess pregnancies for which no one has the resources to parent. No single issue arouses greater passion. I've read a little bit Error! Bookmark not defined.,26,27,28,29,30,31 ...

Middle Ages: Fourth trimester abortion (infanticide) was a family issue, particularly among poor families to limit family size. Most common methods were to "overlay" the baby (lie on top of it soon after birth), or to withhold breastfeeding. Midwives were sometimes given the job ("a witch stole my baby in the night"). Churches tolerated it. Withholding breastfeeding was regarded as the cruelest approach.

Reformation: Churches got strong. Took exception to overlaying, and seized the right to deal with the "excess babies". To prevent women claiming that they had "accidentally" rolled on their baby, they ordered that babies were not to sleep in their mothers' beds. In Florence the punishment for midwife "witches" was to be burnt at the stake. Infanticide was not a feasible option, and babies were abandoned instead.

Foundling homes were established to deal with the massive numbers of abandoned babies. Most died (no breast milk obviously, and no infant formula). In France, babies from Paris were sent off to wet-nurses in the country – most babies died.

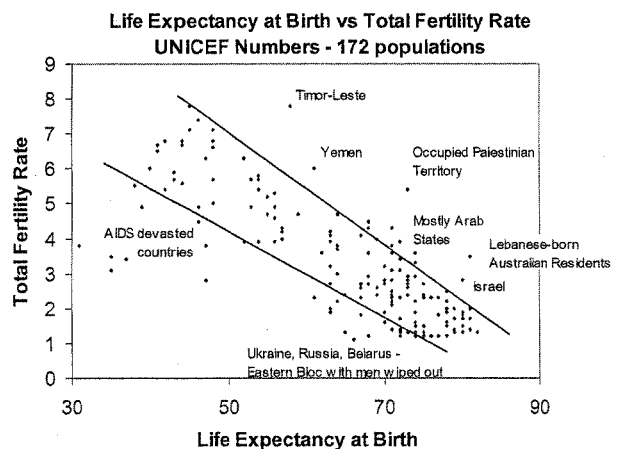
There was always self or assisted abortion, as I understand it. Babies only happened if these attempts failed.

In Australia in the late 19th Century the large middle class was almost universally breastfeeding and babies were in their parent's rooms, and in their beds. Well-off women had access to reasonable contraception from the late 1880's. Not so for busy working class women. It is thought there was a bit of infanticide, and some "baby farms" – places where you could send a baby where it would be fed opium to keep it peaceful, eventually dying. Abortions seemed to be available through midwife-type services.

Early 20th Century: Federal authorities were very upset about the very low birthrate. Doctors got a monopoly over abortion services. Working class women were admonished by both men and women for not breastfeeding. Science and clocks and reasonable milk alternatives had arrived, and artificial feeding schedules developed to feed the babies of women who wouldn't breastfeed. It is a great misfortune that timing was later recommended for breastfeeding too. Baby weigh-in centres were established. Germ theory led to the instruction that all children should have separate beds.

1912: The "Baby Bonus" was brought in to help women (particularly poorer women) provide well for their babies and encourage them to have more. Over the next 15 years or so there was no improvement in either infant mortality or maternal mortality (lots of self-induced abortions), and there was no increase in the birth rate. There was criticism that the bonus was spent on new drapes and furniture. Sound familiar?

Infanticide
Deliberate Overlaying
Churches
Witches
Foundling Homes
Baby Farms
Abortion
SIDS
and
Breastfeeding



It isn't possible to have both long life and high fertility. Populations seeking both are unstable.

1920's: It is thought that breastfeeding was still predominant in the early 1920's., but Sir Truby King advised women to have their babies spend a lot of their time in dark quiet rooms, to self soothe, and to feed on schedule. Breastfeeding fell dramatically and continuously until the early 1970's.

Late 1960's/Early 1970's: Women seized the right to deal with the "excess pregnancies". Legal and Quasi-legal termination arrived.

AND THE POINT WILL BE...

With as much contraception as a woman could possibly want, perhaps 100,000 early miscarriages, 85,000 terminations, around 1900 fetal deaths, 900 neonatal deaths, 300 post-neonatal deaths which can be explained,

60 which can't (most often in very compromised infants of smoking mothers/fathers/others living in extreme poverty, who have been saved in the first place by NICUs),

the degree of residual State fear concerning "what might happen to a baby in a woman's bed" seems somewhat irrational.

By failing to accurately report the extreme statistical unlikelihood of SIDS and "accidental overlaying" for today's breastfeeding parents'

in fact, not even bothering to calculate such risks,

the State is keeping responsible majority parents in a condition of unreasonable fear,

many of whom sacrifice the evolved (or designed) necessity of nighttime mother-infant proximity to facilitate breastfeeding on behalf of this fear,

thereby compromising their likelihood of breastfeeding success, and all the benefits which flow from it.

Discussion on Residual State Fears

- The Risk of Accidental Overlaying
- The Risk of SIDS
- The Risk Causing Psycho-Sociological Harm
- The Risk of Marital Discord
- The Risk of Dependency

The Risk of Accidental Overlaying

There are already a lot of well-publicised sensible recommendations for the safe practice of night-time surface-sharing and I won't go through them here at great length (firm surface, safe bedding, no mind-altering substances eg alcohol/drugs/sleeping medications, nothing that could impede responsive adult or infant movement, other people in the bed who don't know the baby's there etc..).

There is something that needs to be seriously addressed, and this is the perception by a large proportion of women that they might 'roll on their baby' if they sleep on the same surface.

Of the ~19,000 infants who shared a night time sleep surface each night in Victoria over 2004 and 2005, that's ~14,000,000 sleeping events of 'exposure' (actuarial term), there was not one single death attributed to accidental overlay or asphyxiation (although there was one event of asphyxiation for an infant in a portacot in 2004, and one entrapment of an infant in a cot in 2005).

It isn't even possible to evaluate a risk for it. **There really should be a Royal Commission into why women aren't told the true level of risk.** Granted, the majority of these mothers would have been breastfeeding mothers, and night-time surface-sharing breastfeeding mothers spontaneously adopt highly protective sleeping postures in comparison to formula feeding mothers³² (who place their baby at the head of the bed rather than curling up around it as a feeding mother does), but nonetheless, the risk is **very low for all mothers.**

There is a long history to this. McKenna³³ writes

"The exaggerated fear of suffocating an infant while co-sleeping may, in part, stem from western cultural history. During the last 500 years many economically destitute women living in Paris, Brussels, Munich and London (to name but a few locales) confessed to Catholic priests of having murdered by overlaying their infants, in order to control family size. Led by the priests who threatened ex-communication, fines or imprisonment (for actual deaths) infants were banned from parental beds."

It is more likely that women are frightened by a very long history of the fear of punishment should an accident occur, rather than by any empirical observation of the likelihood of the event. **Certainly those in the position of announcing likelihoods have not said anything to remove a woman's fear.**

The Risk of Sudden Infant Death Syndrome

An infant is said to have died from “Sudden Infant Death Syndrome” (SIDS), if, after a full autopsy, no particular cause of death has been identified³⁴.

SIDS is not asphyxiation, entrapment in a cot, nor an accidental overlay in an adult bed, nor determined infanticide. SIDS is not a “cause” of death, it’s a “we don’t know” description.

The experience of Sudden Infant Death Syndrome in Australia is shown in the graph to right³⁵. States accepted the definition of this syndrome at different times. The incidence of SIDS rose from the early 1970’s (although unexplained deaths in cots have always been present), peaked in 1986 (at about 2.3 deaths per thousand live births), and has been falling since.

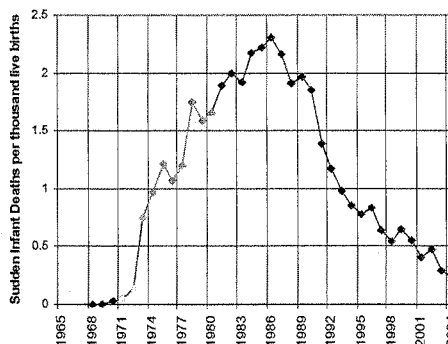
It is generally believed that a very large component of the SIDS experience was due to the iatrogenic advice of pediatricians (first suggested at a conference in Vienna in 1971 and implemented perhaps a year later) to place infants to sleep on their tummies, rather than on their backs (the traditional way a mother would lie her baby). After the “Back to Sleep” campaigns of the early 1990’s, the incidence of SIDS fell dramatically.

The experience has been similar in most developed populations – the paths for England & Wales, Norway, Australia and New Zealand can be seen at right, as a proportion of each country’s maximum incidence.

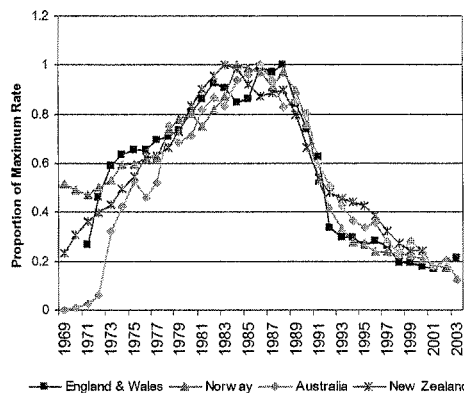
The incidence of SIDS has been quite different however. New Zealand had a relatively high incidence of SIDS at the peak (~4.5/1000), and Sweden’s was comparatively low (~1/1000).

As a further illustration of changes in the experience, the winter peak in SIDS diagnoses has all but gone. The experience has been similar for England&Wales and for New Zealand (at least). No one knows why it appears important for babies to sleep on their backs. There are several hypotheses.

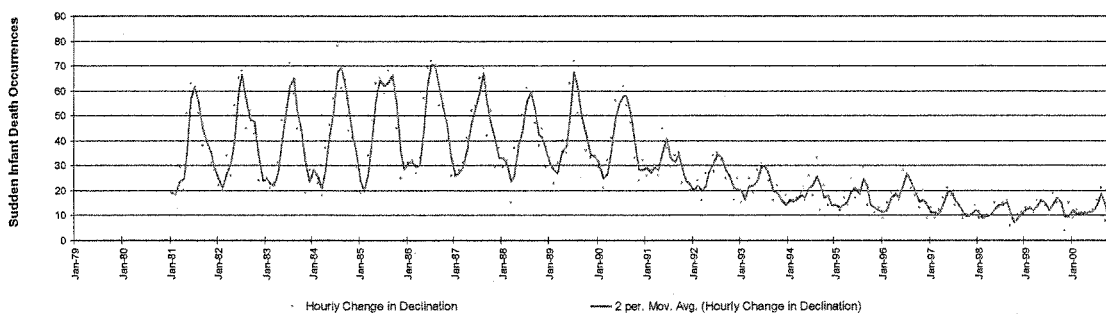
Sudden Infant Deaths per 1000 Live Births by Year - Australia
(Vic only <1973)
(Vic,QLD for 1973)
(NSQ,Vic,QLD 1974-1981)



SIDS Incidence Path
as a proportion of the maximum rate, by year
England & Wales, Norway, Australia, New Zealand



Sudden Infant Death Occurrences by Month (Australia)



Which babies are more likely to have a final diagnosis of SIDS?

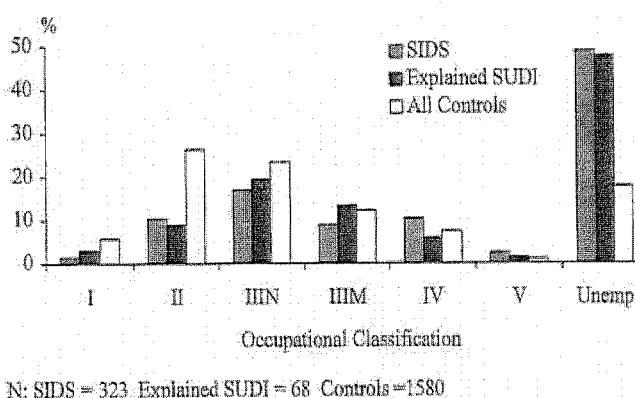
When I was about five (~1965) I was the proud cousin of twin girls, born prematurely, one with a hole in her heart. When the girls were able to be visited our family excitedly prepared to go in. Before leaving we got a phone call, and learnt that the healthy twin had died, of no known cause. As a five year old it was nice to see one little girl cousin through the glass of the nursery window – I marveled at her tiny fingers. But about 30 years later, driving through Healesville (a place of my childhood), a memory was triggered and for the safety of those around me had to pull off the road, to cry out the grief I absorbed 30 years earlier as a five year old, as I watched my mother take that phone call, and then watched her try to decide whether to take the two toy giraffes she had bought as gifts or just the one.

I do not enter this field lightly, or with any disrespect for anyone who has suffered from the grief of losing an infant in unexpected circumstances.

If a Sudden Unexpected Death in an Infant (SUDI) cannot be explained, it is called SIDS. Explained deaths are mostly infections (pneumonia, meningococcal).

In England, babies dying of SIDS (post-tummy sleeping) and Explained SUDI are predominantly babies who are born into extreme poverty and parental disadvantage.

From a study in five regions of England within the “National Confidential Enquiry into Stillbirths and Deaths in Infancy” (total population >17 million), looking at 325 SIDS deaths and 72 unexpected but Explained deaths, nearly half of all deaths occurred in the occupational group “Unemployed” - see graph at right. All SUDI deaths were under-represented in the more advantaged Occupational Classifications.



This is likely to be the same in Australia. From the ABS SIDS Information Paper (Aug 2003) :

Fig 4. Occupational classification of sudden infant death syndrome, explained sudden and unexpected deaths in infancy, and control families. Epidemiology of SIDS and Explained Sudden Infant Death, Leach et al, Pediatrics 1999;104:43-

“Infants of Aboriginal and Torres Strait Islander origin are six times more likely to die of SIDS than non-indigenous infants”.

The general risk description common to the developed populations is as follows: Babies of mothers who have smoked in pregnancy, of low birth weight, short gestational age, multiple births, babies who have been admitted to special care units at birth, of male gender, mothers aged less than 20, maternal use of illegal drugs more than once and alcohol consumption, where the baby is of high parity (2nd or 3rd child twice the risk, 4th or later child five times the risk) and where the family lives in overcrowded housing (defined).

In the majority of cases these risk factors converge to a very small component of the general population. It needs to be strongly pointed out that all descriptions of where and how the infant was found are dependent on **parental report** – deceased infants are not typically left in death position (wherever it happened to be) with (e.g.) covers over their face, to await the assessment of ambulance staff or police. Undetected infanticide is expected in at least 10% of the (UK) cases.

Infanticide is important, because it was the first reason why babies were removed from their mothers' sides in European populations in the late middle ages.

A Specific SIDS Risk Group: Young Mothers
SIDS, Breastfeeding, Abortion, Neglect and (Conscious or Unconscious) Infanticide

*"IT'S AN AWE-INSPIRING FORCE,
 THE IRON DETERMINATION OF A
 WOMAN WHO REFUSES TO
 BEAR A CHILD THAT SHE KNOWS
 SHE CANNOT MOTHER."*

*Helen Garner,
 "LOST - Illegal Abortion Stories",
 Edited by Jo Wainer*

One of the highest risk groups for Sudden Infant Deaths is "Young Mother". Nearly half of all the mothers less than 20 in Australia are smokers. Babies born of young mothers are more typically of low birth weight. They are more likely to be single, or to have an unemployed partner, and to live in crowded housing conditions (eg, 1 bedroom flat, or caravan). Six risk factors for SIDS, altogether. If this is their second or subsequent child there is a further risk. It is likely their nutrition is poor.

Although such mothers could benefit financially from breastfeeding, the vast majority will not be breastfeeding for any significant duration. Universally, studies of breastfeeding¹ show that risks of not breastfeeding in developed populations are: young mother, smoker, low-birth weight baby, un-partnered, not tertiary educated.

If a young woman realizes early on in her pregnancy that she does not have the resources to mother a child, and that those around her do not have the resources to support her, but the woman herself has the resources for a termination, she may pursue this option, deferring motherhood to a time where she is fully resourced.

This leaves three groups of young women who are going through with a pregnancy:

- Women who are fully resourced and prepared for the rigors of motherhood who may even breastfeed
- Women who do not have resources for a termination and/or the wherewithal to find one, nor perhaps even the knowledge that they are pregnant
- Women who are not fully resourced and prepared for the rigors of motherhood but whose values or cultural surrounds say they should not terminate their pregnancy (such would be the case in Ireland where abortion is illegal, and in parts of the USA where abortion is legal, but where there are a number of conditions which are restrictive in practice including limits to finance).

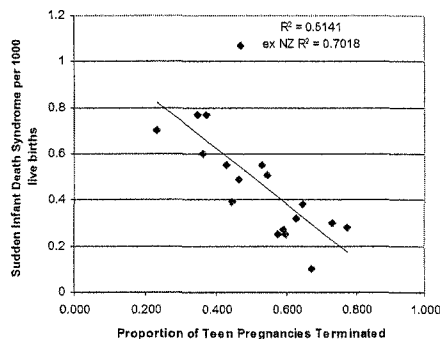
The higher the teen abortion ratio³⁶ in a population, the lower will be the population incidence of "SIDS"³⁷, (irrespective of actual cause of death). See graph at right. Although this will not by itself account for the incidence of SIDS, restrictive abortion practices and extreme poverty must play their parts in the population incidence of SIDS.

Mothering Resources & Termination

A woman who fully breastfeeds her infant for the first 6 months (as recommended by WHO) has physically resourced her infant for 15 months in total - 9 months internally through pregnancy, and 6 months externally through breastfeeding.

A woman who feeds modified cows milk from birth has provided 9 months of physical resources (pregnancy alone), and a woman who terminates can be said to have insufficient resources to offer the pregnancy.

SIDS per 1000 live births vs Proportion Teen Pregnancies Terminated
 Developed populations for which termination data was able to be found (2000/1)



No study on SIDS has ever come up with a specific risk factor for various groups in the population with an interest in bed-sharing, such as educated, non-smoking drug-free dedicated mothers who are breastfeeding.

Broad International Experience

The “International Childcare Practices Study: infant sleeping environment” looked at the nighttime practices within urban cohorts around the world¹⁴. One of the cohorts was drawn from Brisbane

This study will become a classic, simply because it is supposed that the outcome is the reverse to what had been anticipated²⁰, the population incidence of SIDS is negatively associated with the incidence of bed-sharing in urban cohorts of the population. That is, the higher the proportion of bed-sharers, the lower the population incidence of SIDS.

Japan and Sweden are bed-sharing nations with good breastfeeding and very low SIDS. Chinese Hong Kong also has very prevalent bed-sharing (in the general absence of breastfeeding) and almost non-existent SIDS.

There is nothing endemically dangerous about bed-sharing, other than the conditions under which it might be practiced by the extreme minority population in Australia, in the same way that cars can be dangerous in the hands of the drunk and inexperienced few.

Cars are not discouraged for the general population (although not good for the environment), and on the same grounds, there’s no reason why mother-infant surface sharing should be discouraged, particularly where it supports the highly positive practice of breastfeeding (and is good for the environment, and doesn’t hurt other people’s children). In fact, it should be highly encouraged, as it is likely that the extended risks of not breastfeeding outweigh the rarer risks of a baby dying from an un-known cause.

Bed-sharing is not advised for mothers who smoke, but Norwegian breastfeeding smokers don’t appear to be taking this advice, putting the risks of not breastfeeding ahead of the rare risk of SIDS. Given the risks, this seems a rational thing to do.

SIDS is interesting, it’s like trying to reach the moon for the research population, but it shouldn’t be running the lives of mothers and infants to the extent that other positive parenting practices are compromised.

It might actually be the inevitable surface-sharing of breastfeeding which is the vital ingredient of infant health.

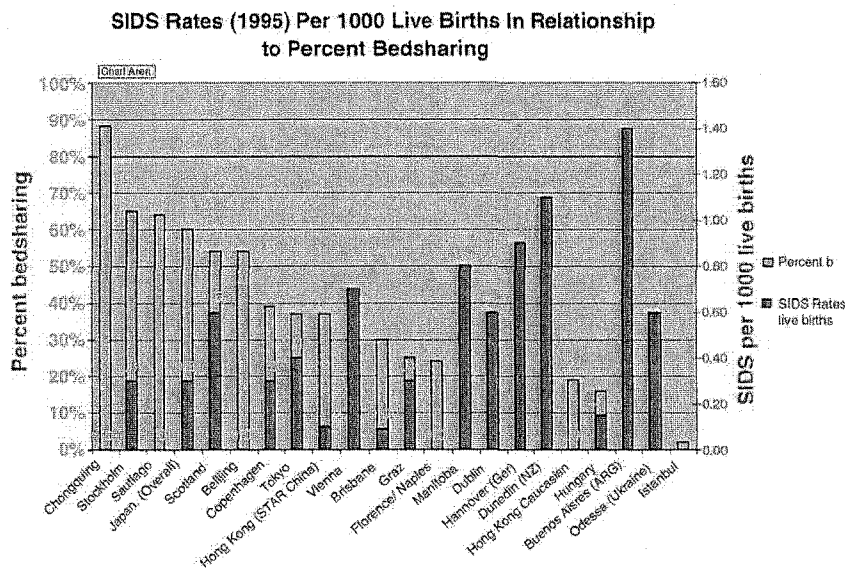


Figure 7 Sudden infant death syndrome (SIDS) rates in relation to percentage of societal bedsharing (per culture, country or region). Contrary to what would be predicted by those arguing a linear, simple relationship between bedsharing and SIDS, some of the lowest SIDS rates are associated with the highest bedsharing or co-sleeping geographical or cultural entities. Source: SIDS Global Task Force Child Care Study – Nelson et al, 2001.90 From McKenna & McDade, "Why babies should never sleep alone: A review of the co-sleeping controversy in relation to SIDS, bedsharing and breast feeding", PAEDIATRIC RESPIRATORY REVIEWS (2005) 6, 134–152

The Risk of Causing Psycho-social harm

It would appear that in Australia babies were still in the parental bedroom at the time of Federation, and breastfeeding was near universal, in contrast to Europe where well-to-do babies and children had long been separated to nurseries with their nannies²⁶.

In the late 1800's European psychologists (who perhaps had been separated from their mothers and had unsatiated infantile desires for their mothers themselves) suggested, from their adult perspective, that the mother-child relationship was sexual. Kociumbas²⁶ writes "In 1879 S Lindner [...suggested] that the infant's instinct to suck had a sexual foundation, and in 1898 Havelock Ellis produced a detailed proposition that the mother-child relationship was sexual. It remained for Freud to put the last nail in the coffin ...". This turned breastfeeding into a possible sexual act, and put all mothers under scrutiny.

McKenna has gathered together a long list of studies demonstrating that bed-sharing children have at least equivalent but often better psycho-socio-emotional outcomes in comparison to their cot-sleeping counterparts. These studies are oft-repeated and have a life of their own.³³

Given the prevalence of bed-sharing amongst successful breastfeeding mothers, it is to be wondered if the finding of better mental health outcomes for children breastfed for 6 months or more stems not from nutritional aspects of breast milk (as suggested by nutrition researcher Wendy Oddy), but from the secure parental attachment facilitated by night-time bed-sharing.

The Risk of Marital Discord

Are they kidding?? What woman, who has just evacuated a watermelon through a very small opening, or through major abdominal surgery, who is wearing a very large pair of maternity underpants containing a 12 inch maternity pad which is soaked with blood and covering perineal stitches, who is leaking breast milk all over the bed, what woman who has recently given birth, wants sex??? Whether the baby is in a cot or bed, the husband isn't missing out on anything. At least if the baby is in the bed some of the breast milk might get to the right place.

When it comes time to "climb back up on the horse", (and in the 1800's women were given 18 months, because it was believed that sex made the blood boil, and since breast milk was thought to be white blood sex wasn't good because the milk would also boil and go off), when it comes time to "climb back up on the horse", a way and place and time is always found to accommodate it, unless one of the partners is unwilling. This is quite a different issue, and has nothing to do with the sleeping place of the child to accommodate night-time ease of breastfeeding.

The Risk of Dependency

Parents are infinitely powerful in comparison to an infant. If the time comes that they want to move the infant out, they just do it. At least there will have been some night-time surface-sharing supported breast feeding, rather than none at all. Parents and infant will have been far better slept through the process.

The simplest and cheapest way to increase Australia's breastfeeding rate...

Just overtly give mothers "permission" to sleep with their babies from their first night in hospital, and thereafter on a safe sleeping surface at home, while breastfeeding, and let them know that

- **They won't roll on their babies**
(so long as the simple safe guidelines are followed – provide the women with the specific risks for their demographic so they can weigh up the cost-risk-benefits for themselves),
- **Their healthy babies won't die of unknown causes (unless perhaps the babies are in a cot!)**
(So long as the simple safe guidelines are followed – provide the women with the specific risks for their demographic so they can weigh up the cost-risk-benefits for themselves),
- **Their 'marital life' won't be interrupted**
(Husbands and wives or partners come to their own understandings – most husbands find it easier to be with a "well-slept happy woman" and a "content well-fed baby" rather than a "tired crying emotional woman" and a "distressed crying and hungry baby who has to be walked up and down the hallway at 3am to try to get it to sleep while the mother tries to get back to sleep"),
- **The psycho-social and emotional development of their children will at least be the equal of but probably better than their cot-sleeping counterparts,**
- **The children will grow up to be highly independent sleepers if this should be the eventual parental wish,**
and that
- **They will get more sleep in a 24 hour period – even more than bottle feeders,**
- **All of the promised physical and mental health benefits, the economic and environmental benefits, suggested intellectual and attachment benefits of breastfeeding will be there not only for their infant, but for themselves,**
- **They will be able to continue to breastfeed with little difficulty, even if they must return to work , and**
- **They will have a lower risk of post-natal depression.**

That will overcome most of the fundamental barriers – those of fatigue, milk supply, and returning to work.

Victoria's 2004 Experience¹⁵

In Victoria in 2004 there were 22 deaths of infants (29-364 days) for whom the cause of death could not be determined. Twenty were given the SIDS classification; two didn't have autopsies on religious grounds and were left as "unclassified".

There were no infant deaths attributed to asphyxiation or overlaying in Victoria in 2004, except for one who had been wedged between an ill-fitting mattress and the side of a portacot.

- From parental report, 13 died alone (60%) (presumably in a cot?), and 9 died with others (40%).
- The statistics did not report the parental smoking/drug/alcohol status in respect of the 13 infants who died alone.
- Of the nine cases that died with others, eight did not have a complete data history on smoking, drugs and alcohol, however, alcohol and drugs had been present in at least 4 of the cases, and there was current smoking in the household in at least 4 of the cases. There was no report of breastfeeding status at last feed.
- Of the 9, one was with a parent on a couch, one with a parent on a mattress, and of those who were reported to have died in an adult bed, two were with a parent and another sibling, four were with two parents, and one with one parent.
- Death due to overlaying or asphyxiation in respect of these 9 cases could not be ruled out, but was not determined.

The statistics did not report any of the other parental demographic risk factors associated with Sudden Infant Death, nor any of the infant characteristic risk factors.

Without considering any of the characteristics of the parents, or infants, or the feeding practice employed on the last feed prior to death (breastfeeding or bottle feeding), the risk of SIDS for all live births was about 1 in 4200.

Adverse Associations between Nuclear Power and Women's Gestational Capacities – Fertility, Breastfeeding and Abortion

Women and Nuclear Power20

The Earth and Nuclear Power.....20

Purpose and Requests21

Background – Breastfeeding, Abortion, Fertility22

Extent of “Will”22

The Breastfeeding-Abortion Association24

The Study Population.....25

- *Breastfeeding*.....25
- *Abortion*.....26
- *Breastfeeding, Abortion and Nuclear Power*.....26
- *Controlling for Nuclear Density*27

Total Gestational Capacities
– *Combining the USA Regions with the other Developed Nuclear Populations*.....28

In Summary.....29

Adverse Associations between Nuclear Power and Women's Gestational Capacities – Fertility, Breastfeeding and Abortion

I was distressed to hear John Howard initiate an investigation into nuclear power options for Australia. Through years of detailed study in breastfeeding, abortion and fertility I had noticed that women had very poor breastfeeding and abortion outcomes in regions where there was a lot of nuclear power production. In summary:

Women and Nuclear Power

- As nuclear density increases women have increasingly poor breastfeeding and abortion outcomes for their demographic type.

There is reason to be deeply concerned about the impact of imposing nuclear power on women and infants in Australia. Australian women are already pushing maximum abortion ratios³⁸, below replacement fertility³⁹, and annual data from Victoria shows breastfeeding to be falling¹.

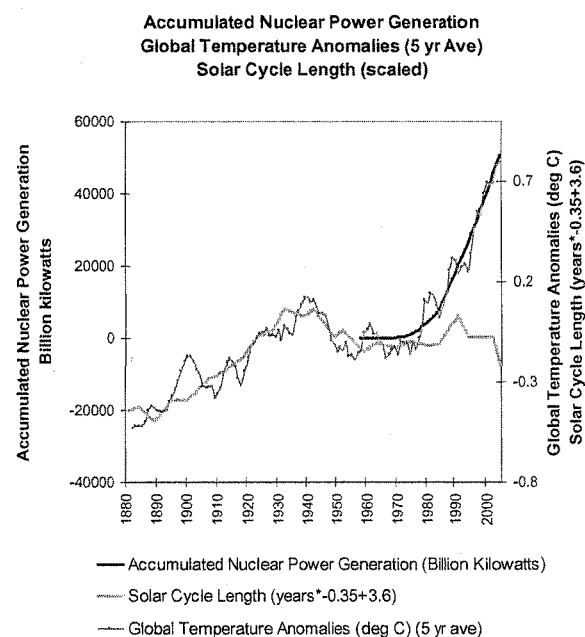
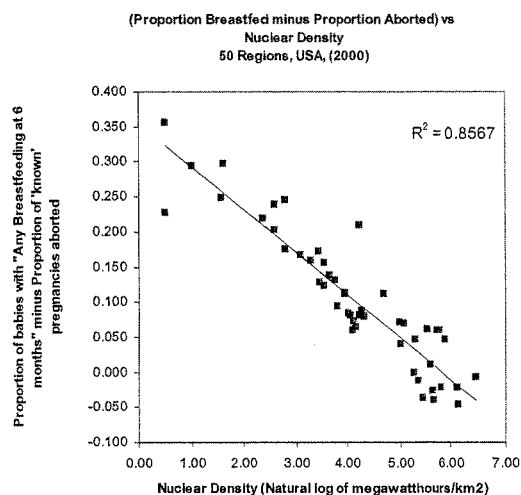
Typically, abortion or failed breastfeeding outcomes are attributed to human will and the social environment, but there is substantial evidence that on a population level, all of the female physical gestational outcomes (fertility, breastfeeding and abortion) are highly influenced by statuses of the natural environment.

The Earth and Nuclear Power

It is hard not to be similarly concerned about the impact on the earth's fertility. The current scientific inclination is to attribute regional temperature rises to the increasing concentration of well-mixed CO₂. However, associations with the profoundly recent man-made imposition of nuclear power generation⁴⁰ are direct and strong.

Estimated global temperatures⁴¹ have only escalated away from solar cycle length models⁴² since the gross introduction of nuclear power in the late 1970's, and it is the nuclear dense regions which have seen a great deal of warming (East coast USA, Canada food bowl, and Europe)⁴³.

In contrast, the increase in well-mixed CO₂ concentration has occurred at a very steady rate, and the atmospheric models for global temperature change by necessity must include an extraordinary range of variables to get close. Thousands of scientists, who have all studied the same material at university, are investigating global warming from this multi-layered atmospheric perspective (as a result of a theoretical mechanism proposed more than 50 years ago). Without denying this theoretical mechanism, I



would wish that someone would also consider the contribution of nuclear power to regional warming. The greatest weakness of scientific process is the requisite narrow path of investigation.

Atomic processes are suggested to be occurring within the Earth's core, generating the Earth's geomagnetic field⁴⁴ in much the same way atomic processes are believed to generate the solar magnetic field. The impact (on the core) of surface atomic processes (nuclear power production), does not appear to have undergone any scientific scrutiny. Investigation into the impact of high density neutrino emission from nuclear power stations – measurable at tremendous distance from the reactors themselves - has barely begun. Certainly the intensity of the geomagnetic field is falling.

I am concerned that nuclear power production may be destroying other functions of the Earth's natural processes, apart from women's gestational capacities. I doubt that environmentalist James Lovelock is right when he suggests in his book "Gaia" that nuclear power would be good for the earth.

Purpose and Requests

I write to highlight the imperative for you to take an active position against nuclear power (for Australia and for the globe), to protect the capacity of women in Australia to bear and nurture their infants.

From the perspective of a reproducing female who is sustainably employed in building new life, I am compelled to advise that it is highly irresponsible to extract a large advance of 'life' from a uranium atom, leaving in the residual a debt of 'death' so great that repayment is required by the inhabitants over the next 100,000 years (whatever those inhabitants might be).

Touching very lightly on 'energy needs', Australia's history shows that Australians were very happy long before electricity had been dreamed of. Certainly the previous generation got on quite well without air conditioners, and patronized the local swimming pools a little better, with a better sense of community. All would not be lost if we lost some electrical capacity.

As for building a nation with massive industry with massive power needs, those of us with severe water restrictions may consider that a population of 20,000,000 is enough for now. I have a great sense of faith in the capacity of women to reproduce according to the limits of the environment, and that the below-replacement fertility of Australia's women should be heeded for what it represents. Information in this letter suggests that the introduction of a nuclear industry will further degrade the natural population growth of this country, rather than allow the growth that nuclear proponents suggest. Fifth on the Olympic medal table is really quite good.

An overview on the deficiency of female capacities in nuclear dense environments (and background information) follows. If you are short on time, head straight for page nine, "Total Gestational Capacities", and the "Summary" on page 10. It has been difficult to determine 'the right balance' of information to present - please contact me if you'd like the any of the data, its sources, or references supporting the statements in this letter. Every statement is referenced.

NB: In this submission, "known pregnancies" refers to Live Births + Induced Terminations (also sometimes called "viable pregnancies").

Background – Breastfeeding, Abortion, Fertility

Breastfeeding, abortion and fertility are generally studied as separate variables, but in the way described below, they belong together....

A woman who fully breastfeeds her infant for the first 6 months (as recommended by WHO⁴⁵) has physically resourced her infant for 15 months in total – 9 months internally through pregnancy, and 6 months externally through breastfeeding.

A woman who feeds modified cows milk from birth has provided 9 months of physical resources (pregnancy alone), and a woman who terminates can be said to have insufficient resources to offer the pregnancy.

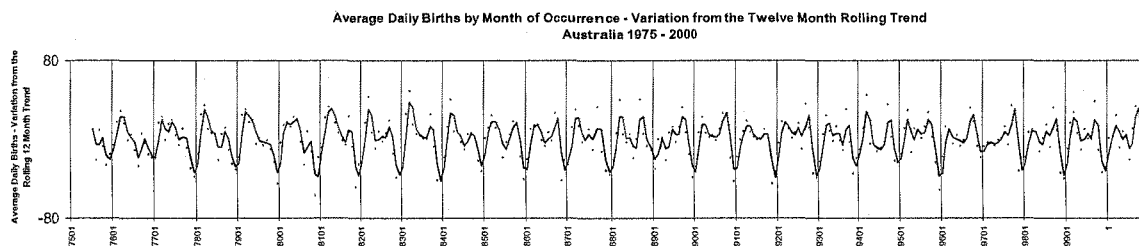
By combining these three items, one can see the relative total ‘resources’ women in various developed population environments have to offer their pregnancies and infants. Women in nuclear dense environments such as France and Belgium are grossly lacking in ‘resources’. (NB: Dairy herd variables should also be included in any population study, since 700,000 French babies would die each year without the cows.)

Extent of “Will”

It is commonly supposed that fertility is an act of will of the parents, that breastfeeding is an act of will from the mother, and that abortion is an act of will from the woman and/or those who cannot support her pregnancy. These notes are intended to illustrate the extent of the “power of will”.

In Australia an estimated 50% of pregnancies are unplanned, and of the unplanned pregnancies which survive spontaneous miscarriage, about 50% are voluntarily terminated. Of the 300,000 couples trying to get pregnant, less than 200,000 will conceive a viable pregnancy in the year of study. There is usually a delay between ‘trying for a baby’ and ‘conceiving a baby’.

It is very difficult to reconcile the random nature of conception with the highly regular seasonal pattern to live birth in reporting populations. Australia’s highly specific seasonal pattern of birth has hardly varied since first reported with data from the 1910’s, despite a very wide variety of economic and social conditions and the legalization of abortion. Although dramatically illustrated below, this seasonal variation

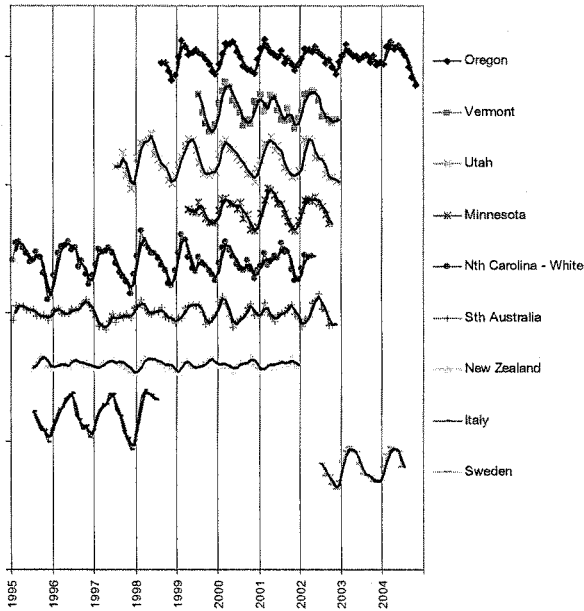


is actually very small, varying by little more than +/- 5% from the rolling 12 month trend. When one considers that abortion is estimated to run at about 25% of “known pregnancies”, it is astonishing that this seasonal pattern of live birth keeps its form. It’s hard to go past the idea of there being a seasonally dependent environmental limit on positive conception outcomes.

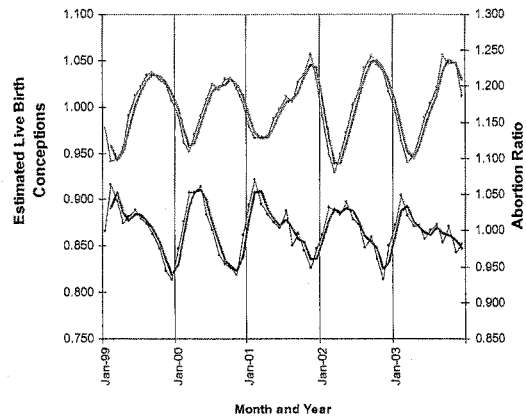
Also, while every abortion may be related as a case-specific act of will, the proportion of pregnancies voluntarily terminated for 9 developed populations (at least) also follows a highly seasonal pattern specific to the region, and mirrors the conception pattern of the region, illustrated in the example for Oregon below.

(Abortion slightly enhances, or slightly smooths the conception pattern – it does not make the pattern.)

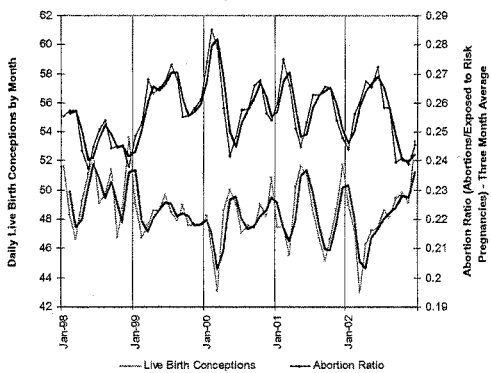
"Seasonality of the Abortion Ratio - Preliminary Data"
 Nine Developed Populations
 Three Month Smoothed
 Adjusted for Trend



OREGON - Live Birth Conceptions and Abortions -
 Monthly Variation from 12 Month Rolling Trend
 In Order...
 1. Estimated Live Birth Conceptions
 2. Resident Abortions as a Ratio of Estimated "Exposed to Risk"
 Pregnancies



South Australia
 Abortion Ratio vs Estimated Live Birth Conceptions
 by Month



Comprehensive abortion data is not available for Australia as a whole, and South Australian abortion data appears irregular at first glance. However, as a proportion of 'exposed to risk'³ pregnancies, as for other populations, the incidence of abortion reflects the incidence of conception.

There are times of high and low incidence of conception, and these mirror the times of low and high incidence of abortion... "Good times" and "Bad Times"

³ Actuarially determined exposure of pregnancies at different ages of gestation, adjusted for the relative risk associated with the particular age of gestation

Finally, breastfeeding in the majority of developed populations is seldom a maternal choice... it's a maternal experience. The intention to breastfeed may or may not be formed at the time the baby is born. The experience of the birth or the first few hours after birth, past experiences of self, friends or family, ante-natal advice, educational level, sociodemographic variables, age, partner support, hospital practices, "self-confidence" (and more) may influence the commencement of breastfeeding.

In the majority of developed populations, however, there is a rapid failure rate, and routinely it is reported that about 40% of those who commence fail early on due to a perceived inability to meet the infant's needs (except in Norway, where maternal age was the only reported determinant of breastfeeding failure). Having seen breasts of all proportions operating very effectively it is difficult to imagine that those in Norway can be so much more effective than those in other developed populations. Seasonal patterns of breastfeeding duration have *also* been reported for three populations (Egypt, Sweden & India).

The Breastfeeding-Abortion Association

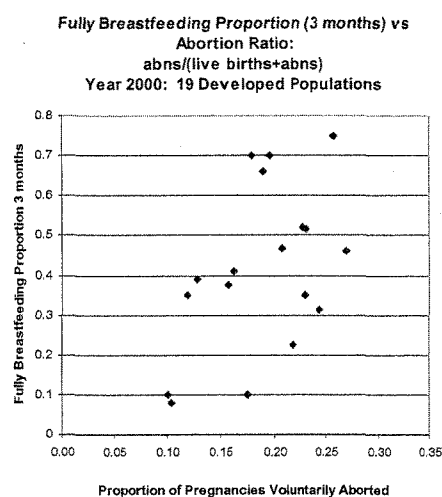
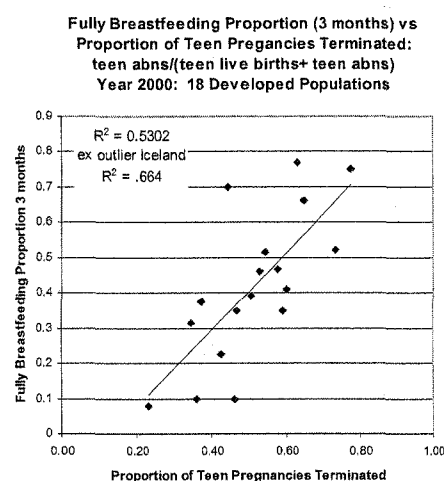
There is a positive association between breastfeeding and abortion (particularly teen abortion) in developed populations. Populations with high abortion ratios will generally have high breastfeeding rates.

This confuses those who have attributed value judgments to each of these maternal (or more appropriately) familial behaviours.

Typically, breastfeeding is regarded as the ultimate in loving maternal inclusion, and abortion regarded as the extreme in rejection. In fact, the two usually run together in a population.

At the extremes, the population Sweden has high breastfeeding and higher abortion ratios, and Ireland (where abortion is illegal) has low reported abortion ratios (all from the UK) and almost non-existent breastfeeding.

However, after consideration of many demographic, economic, social and environmental variables (as well as issues of abortion legality and reporting), it was observed across the developed populations that some populations had substantially higher abortion ratios for their given breastfeeding proportions. A commonality in these countries of high nuclear density was described, and a study of gestational outcomes in varying nuclear densities initiated.



The Study Population

The United States was chosen as the study population. It was divided into 50 overlapping regions, each comprised of a state and those that ringed its borders. Some regions, therefore, were comprised of 8 states, the 'Maine' region only two. Alaska and Hawaii were on their own. The District of Columbia was joined with Maryland.

These regions were chosen because not all states have nuclear power plants, because many women cross borders for terminations of pregnancy with insufficient reporting of non-resident abortion data, and because the breastfeeding statistics, while the very best available for durational consistency of survey across the states, have been suggested to suffer from small sample sizes for some states and years.

Very large differences in the capacities of women emerged for these 50 regions.

Breastfeeding

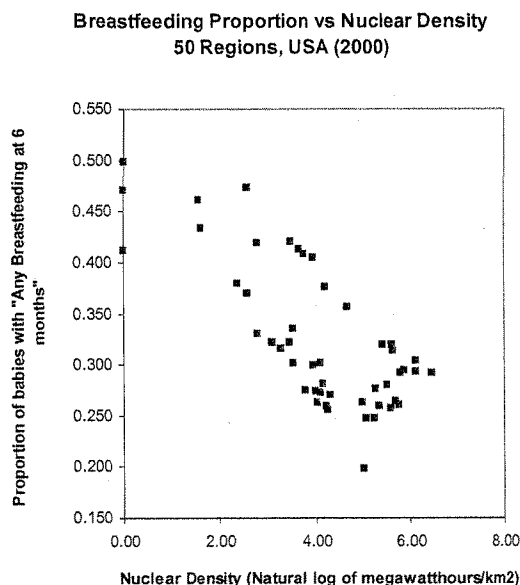
While the regional breastfeeding capacities of women in Australia are nearly homogeneous (varying within regions by the typical age and sociodemographic parental characteristics), the capacities of women of the USA are not. Even in these very large overlapping regions, there is profound percentage variation (from the low 20's to the high 40's).

There is a strong negative association between the regional nuclear density^{46 47} and the regional breastfeeding proportion^{7 48}. The points are not independent. The high/low split in breastfeeding outcomes will be explained.

The confounding variables of race, median age of mother, very low and low birth weight proportions, marital status, gestational age at birth, early and late ante-natal care, and teen birth proportion were examined.

Adjustment for the Black proportion of births (and concomitant lower breastfeeding rates⁴⁹) made little difference to the outcome, as the black proportion of all births was generally very low with an insignificant impact on total breastfeeding proportion. In fact, the white breastfeeding rate showed greater sensitivity to region.

Other characteristics, baby friendly hospitals, post-natal community support, maternity leave, maternal employment and socio-demographic status of each region were not specifically examined for each region. Consideration had been given to some of these items on a broader study of the developed populations using UN women's statistics⁵⁰.



Abortion

Not much is known about abortion in Australia, other than that the proportion aborted is estimated to be higher than that of most western developed populations, and within a few percent for the various states.

However, as for the regional incidence of breastfeeding in the USA, the aborted percentage of known pregnancies varies widely by region, from the low teens to the high 30's.

There is a strong positive association between the aborted proportion^{51 48} and nuclear density, although, again, the points are not independent. The high/low split in abortion outcomes will be explained.

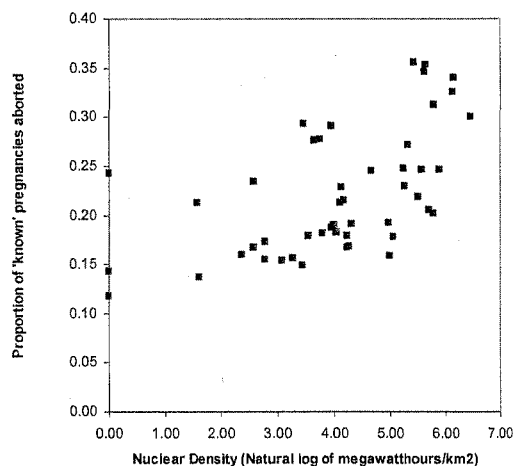
The variables of race, abortion conditions (funding, waiting periods, notification of parents for minors), number of providers (by density, population, number of abortions), and the incidence of teen pregnancy were considered. Contraceptive use and sex education were not specifically examined for each region. Consideration had been given to contraceptive use on a broader study of the developed populations using UN women's statistics⁵⁰.

Breastfeeding, Abortion, and Nuclear Density

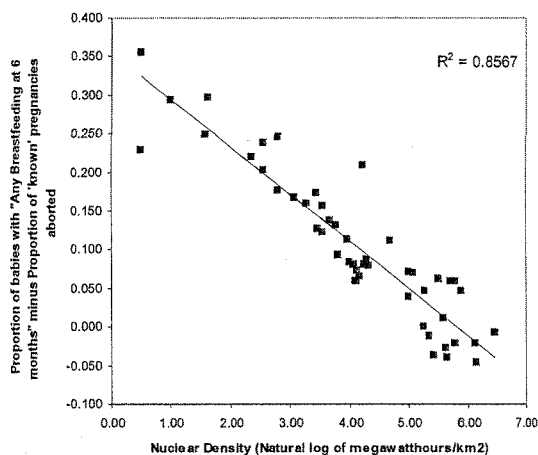
When the net physical capacities of women are examined for the 50 regions, with breastfeeding acting as the 'positive' expression of maternal capacity and abortion acting as the 'negative' expression, there is a very direct association with nuclear density.

Areas of high nuclear density have higher abortion and lower breastfeeding proportions in comparison to regions of low nuclear density.

Abortion Proportion vs Nuclear Density
50 Regions, USA (2000)



(Proportion Breastfed minus Proportion Aborted) vs
Nuclear Density
50 Regions, USA, (2000)

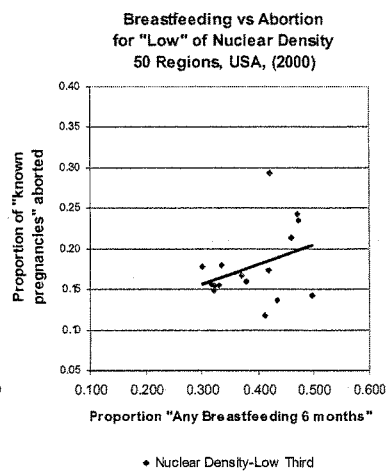
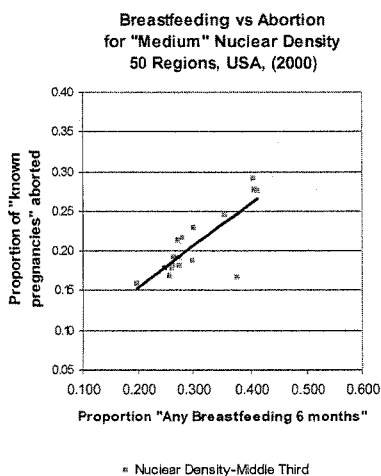
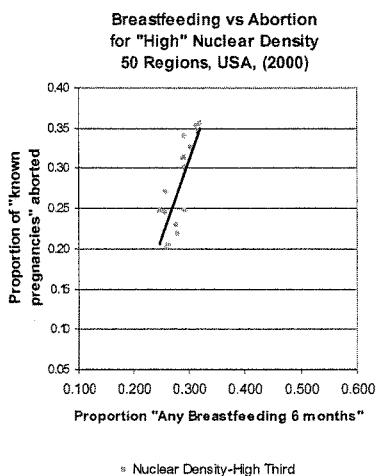
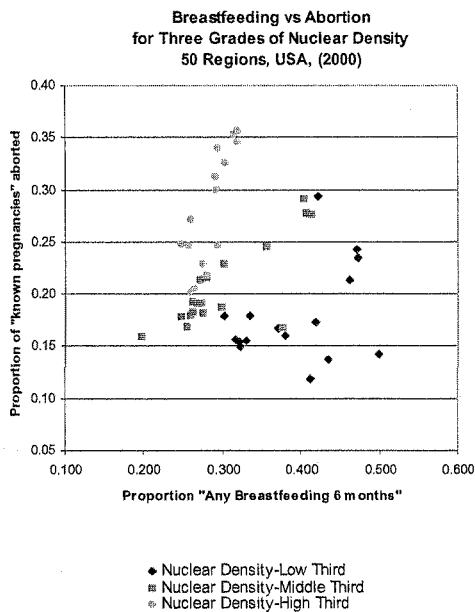


Controlling for Nuclear Density

As a gesture to control for Nuclear Density, the breastfeeding vs abortion data points have been equally divided into three series – Low, Medium and High Nuclear Density. When nuclear density is thus controlled, the highly positive association between breastfeeding and abortion observed between the developed populations becomes observable in the USA regions.

It is this side-by-side characteristic of breastfeeding and abortion which is the origin of the split in the earlier nuclear density comparisons.

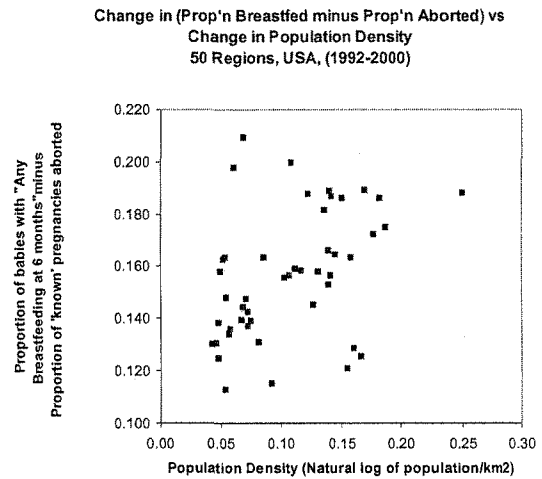
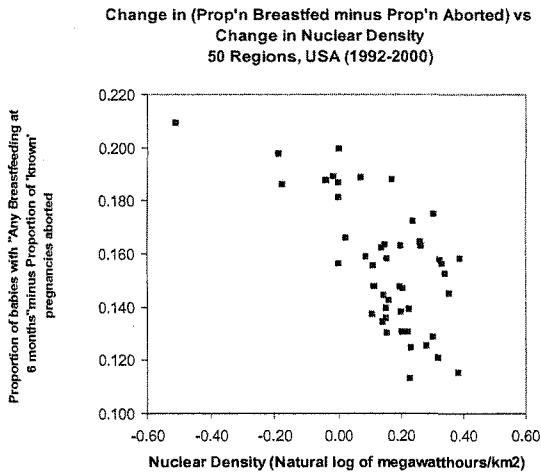
Higher breastfeeding occurs in nuclear dense areas where it is supported by higher abortion. Similarly, where there is limited abortion for a particular nuclear density, there will be limited breastfeeding.



It is, however, difficult to separate these results from similar, although slightly weaker, associations with population density alone, since for the USA there is a very high association between population density and nuclear density. The sensitivity of response to both population density and nuclear density over time⁵² has therefore been examined.

The USA has been working hard on promoting breastfeeding and reducing the incidence of abortion. If these female capacities were subject to a changing nuclear density, one would expect smaller improvements in regions of greater increases in nuclear density. Similarly, one would expect the same for changes in population density if these female capacities were responsive to population density. The outcomes are quite different however.

The nuclear association is consistent with the Year 2000 snapshot, with the smallest improvements in the regions of greatest nuclear increase (note the Maine point to the far upper left where a nuclear plant had closed during the period). The sensitivity to population density is not consistent with the snapshot, however, with a vague positive response.



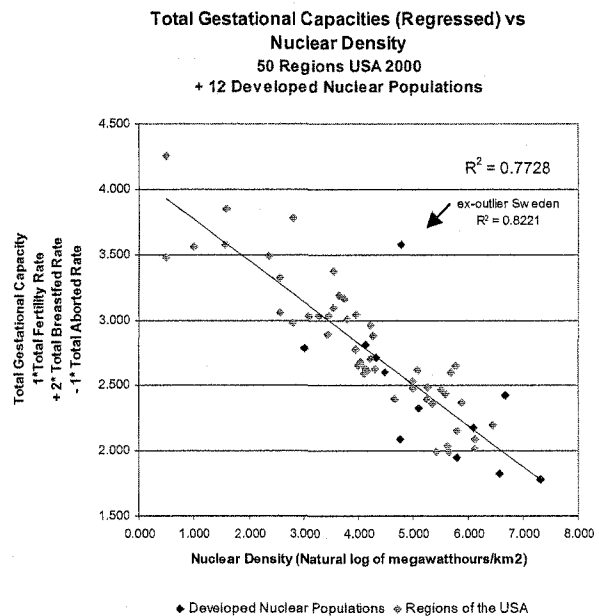
Total Gestational Capacities – Combining the USA Regions with the other Developed Nuclear Populations

It becomes possible to identify the populations in which women have the greatest reproductive resources by bringing the fertility, breastfeeding, and abortion variables to a similar basis and regressing against nuclear density. The “developed populations” used are entire populations, and they ‘fit’ very well on the line.

For the mathematically interested, the regression equation is:
 $-2.5 * TFR - 4.9 * TBR + 2.6 * TAR + 10.9 = ND$,
 plotted here for simplicity as
 $TFR + 2 * TBR - TAR$ vs ND .

The women/families of very high nuclear density France and Belgium are the most under-resourced (points to bottom right).

The women/families with the greatest resources in the USA are those in the regions centred on Utah, Idaho, Wyoming, Montana, and the states of Alaska & Hawaii.



The countries of Japan and Sweden are 'outliers', with the women/families performing well for their nuclear density.

Essentially, the regression equation says that, for a given nuclear density (and the environmental conditions of the time), an increase in abortion will produce an increase in breastfeeding or fertility. Or that an increase in fertility will have the outcomes of reduced breastfeeding and/or increased abortion.

SUMMARY OUTPUT

<i>Regression Statistics</i>	
Multiple R	0.879
R Square	0.773
Adjusted R Square	0.762
Standard Error	0.735
Observations	62

ANOVA					
	df	SS	MS	F	Significance F
Regression	3	106.982	35.661	65.923	1.1149E-18
Residual	58	31.374	0.541		
Total	61	138.356			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	10.921	0.763	14.313	1.09E-20	9.394	12.449
Total Fertility Rate	-2.462	0.402	-6.129	8.34E-08	-3.266	-1.658
Total Breastfed Rate	-4.854	0.490	-9.897	4.56E-14	-5.835	-3.872
Total Abortion Rate	2.593	0.447	5.807	2.83E-07	1.699	3.487

The breastfeeding rate is the most significant driver in the equation, and the outliers Japan and Sweden have much higher breastfeeding than those of similar nuclear density. It could be that the women in these two countries are assisted by favourable breastfeeding practices. These two populations have high recorded rates of "co-sleeping" with their infants, a practice having a highly positive impact on breastfeeding ease and success. In recent history co-sleeping has not been a general cultural practice in developed populations.

In Summary

There is a great deal more information to provide on this field, but in the meantime:

There would appear to be a *natural* limit to the capacities of women and those who support them, strongly associated with the environmental (not social) conditions of population density, and that there is a concern that nuclear power production may further degrade this environmental limit.

It could be concluded that nuclear power is considered to be 'good' in populations where the natural processes of women are not considered to be important, and where the women are more likely to be the victims of unwanted pregnancies they cannot support.

At the very least, it can be concluded that nuclear power stations are put where women/families are least able to support further life, and where women are least empowered to breastfeed for the mental and physical health benefits for themselves and their infants, for the economic benefits for themselves and their population, for the intellectual and (arguably) attachment benefits for their infants, and for the environmental benefits for their population.

References (unfortunately not quite complete yet due to time constraints) – Contact me directly if you want to know references for any of the statements – they are all referenced.

- ¹ Maternal and Child Health Services Annual Reports, Office For Children, Department of Human Services, State Government of Victoria. 2000/1-2004/5 at <http://www.office-for-children.vic.gov.au/children/ccdnav.nsf/childdocs/-F6E55C5D757CA2BCA256E18006497D4-ED1E2431B9EB4892CA256E2000088BF8-AE9FB320272ADFE6CA256E20000882FF?open>
For prior years data was obtained from the Australian Breastfeeding Association's Lactation Resource Centre.
- ² AUSTRALIAN BUREAU OF STATISTICS, cat. no. 3105.0.65.001 Australian Historical Population Statistics, TABLE 36. Births registered(a) by sex, states and territories, 1824 onwards
- ³ Hitchcock NE, "Infant feeding in Australia: An historical perspective, Part 2: 1900-1988", Australian Journal of Nutrition and Dietetics (1989) 46:4
- ⁴ Hartmann PE, Kulski JK, Rattigan S, Prosser CG, Saint L, "Breastfeeding and Reproduction in Women in Western Australia – A Review", Birth and the Family Journal Vol. 8:4 Winter 1981
- ⁵ NSW Population Health Survey (HOIST), Centre for Epidemiology and Research, NSW Department of Health (2003 and 2004)
- ⁶ NSW Public Health Bull 2005; 16(3-4) 47-51 citing New South Wales Child Health Survey 2001 (HOIST) Donath & Amir, also citing National Health Survey 1995
- ⁷ Mothers Survey, Ross Products Division of Abbott
Li R, Zhao Z, Mokdad A, Barker L, Grummer-Strawn L, "Prevalence of Breastfeeding in the United States: The 2001 National Immunization Survey", Pediatrics 2003;111:1198-1201
Ryan AS, "The Truth About the Ross Mothers Survey", Pediatrics Vol. 113 No. 3 March 2004, pp. 626-627
- ⁸ Eckhardt KW, Hendershot GE, "Analysis of the Reversal in Breast Feeding Trends in the Early 1970s", Public Health Reports, 1984;99:410-415
- ⁹ The decision to compare populations on the basis of the "3 Months Fully Breastfeeding Rate" was strongly influenced by availability of data across the populations. It is also a significant indicator of the percent of women who can provide full nutrition at a time before solid foods are generally introduced, and reflects the capacity of women to get through the most difficult stages of breastfeeding. It was assumed that where "exclusive" rates were quoted, that they were exclusive with respect to 24 hour recall, rather than longitudinally exclusive, and were therefore more comparable to a "fully breastfeeding" rate. A close association between the 3 month Fully Breastfeeding rate and the 6 month Any Breastfeeding rate was observed where both data were available. Therefore in the absence of the 3 month Fully rate for a population, the 6 month Any rate was used as a reasonable substitute. Some population rates are precise (Sweden), others are fairly raw estimates with a fair margin of error (Canada, Japan, New Zealand). Most of the studies from journals below were abstracts only (due to availability of financial resources).
Australian Bureau of Statistics, "Breastfeeding in Australia, Electronic delivery", www.abs.gov.au/Ausstats/abs@.nsw/
Bertini G, Perugi S, Dani C, Pezzati M, Tronchin M, Rubaltelli FF. "Maternal education and the incidence and duration of breastfeeding: a prospective study", J Pediatr Gastroenterol Nutr. 2003 Oct;37(4):447-52 Entrez PubMed www.ncbi.nlm.nih.gov/entrez/
Blyth R, Creedy DK, Dennis CL, Moyle W, Pratt J, De Vries SM. "Effect of maternal confidence on breastfeeding duration: an application of breastfeeding self-efficacy theory", Birth. 2002 Dec;29(4):278-84 Entrez PubMed www.ncbi.nlm.nih.gov/entrez/
Branger B, Cebren M, Picherot G, de Cornulier M. "Factors influencing the duration of breastfeeding. A study of 150 women", Arch Pediatr. 1998 May;5(5): 489-96. Entrez PubMed www.ncbi.nlm.nih.gov/entrez/
Stockholm County Council, "Breast-feeding", <http://www.cbu.dataphone.se/EngBarnrapp/breastfe.html>
Brothwell D, Limeback H. "Breastfeeding is protective against dental fluorosis in a nonfluoridated rural area of Ontario, Canada. J Hum Lact. 2003 Nov;19(4):386-90 Entrez PubMed www.ncbi.nlm.nih.gov/entrez/
Bulk-Bunschoten AM, van Bodegom S, Reerink JD, Pasker-de Jong PC, de Groot CJ. "Reluctance to continue breastfeeding in The Netherlands", Acta Paediatr. 2001 Sep;90(9):1047-53.
Callen J, Pinelli J. "Incidence and duration of breastfeeding for term infants in Canada, United States, Europe, and Australia: a literature review". Birth. 2004 Dec;31(4):285-92 Entrez PubMed www.ncbi.nlm.nih.gov/entrez/
Canadian Perinatal Surveillance System (Reproductive Health Division), "Breastfeeding", www.phac-aspc.gc.ca/rhs-ssg/factshts/brstfd_e.html

-
- Cattaneo Am Davanzo R, Ronfani L. "Are data on the prevalence and duration of breastfeeding reliable? The case of Italy." *Acta Paediatr.* 2000 Jan;89(1):88-93. Entrez PubMed www.ncbi.nlm.nih.gov/entrez/
- CDC's breastfeeding National Immunization Data. "Table 3: Any and Exclusive Breastfeeding Rates by Age", www.cdc.gov/breastfeeding/NIS_data/age.htm.
- Chan SM, Nelson EA, Leung SS, Li CY. "Breastfeeding failure in a longitudinal post-partum maternal nutrition study in Hong Kong", *J Paediatr Child Health.* 2000 Oct;36(5):466-71. Entrez PubMed www.ncbi.nlm.nih.gov/entrez/
- de la Torre MJ, Martin-Calama J, Hernandez-Aguilar MT; Spanish Committee on Human Lactation, Spanish Paediatric Association. "Breastfeeding in Spain". *Public Health Nutr.* 2001 Dec;4(6A):1347-51. Entrez PubMed www.ncbi.nlm.nih.gov/entrez/
- Dietary Guidelines for Children and Adolescents in Australia"
- Directory for Health and Social Affairs. "Dietary survey among infants, 1998", www.ssb.no/english/subjects/03/01/kostspe_en/art-2003-03-28-01-en.html
- Dremsek PA, Gopfrich H, Kurz H, Bock W, Benes K, Philipp K, Sacher M. "Breast feeding support, incidence of breastfeeding and duration of breast feeding in a Vienna perinatal center", *Wien Med Wochenschr.* 2003;153(11-12):264-8 Entrez PubMed www.ncbi.nlm.nih.gov/entrez/
- Ford RP, Mitchell EA, Scragg R, Stewart AW, Taylor BJ, Allen EM. "Factors adversely associated with breastfeeding in New Zealand", *J Paediatr Child Health.* 1994 Dec;30(6):483-9 Entrez PubMed www.ncbi.nlm.nih.gov/entrez/
- Freysteinsson H, Sigurdsson JA, "Breastfeeding in Iceland. Predictive factors and effects of interventive measures." *Scand J Soc Med.* 1996 Mar;24(1):62-6 Entrez PubMed www.ncbi.nlm.nih.gov/entrez/
- German Nutrition Society "The Nutrition Report - 2000 Summary", www.dge.de/Media/PDF/NutritionReport2000_summary.pdf
- Giovannini M, Banderali G, Radaelli G, Carmine V, Riva E, Agostoni C. "Monitoring breastfeeding rates in Italy: national survey 1995 and 1999", *Acta Paediatr.* 2003;92(3):357-63. Entrez PubMed www.ncbi.nlm.nih.gov/entrez/
- Giovannini M, Riva E, Banderali G, et al, "Feeding practices of infants through the first year of life in Italy", *Acta Paediatr* 2004 Apr;93(4):492-7. Entrez PubMed www.ncbi.nlm.nih.gov/entrez/
- Heath AL, Tuttle CR, Simons MS, Cleghorn CL, Parnell WR, A longitudinal study of breastfeeding and weaning practices during the first year of life in Dunedin, New Zealand. *J Am Diet Assoc.* 2002 Jul; 102(7):937-43 Entrez PubMed www.ncbi.nlm.nih.gov/entrez/
- Helen L Ball, "Breastfeeding, Bed-Sharing, and Infant Sleep", *Birth* 30:3 September 2003
- History of Breastfeeding", www.seldomfar.com/nurturing/bfhistory.htm
- Hitchcock NE, "Infant feeding in Australia: An historical perspective* - Part 2:1900-1988". *Australian Journal of Nutrition and Dietetics* (1989) 46:4
- Interlake Regional Health Authority, McKinnon J, Martens P, Carr C. "Interlake Infant Feeding Survey Report"
- Kerstingm, Dulon M. "Assessment of breast-feeding promotion in hospitals and follow-up survey of mother-infant pairs in Germany: the SuSe Study", *Public Health Nutr.* 2002 Aug;5(4):547-52 Entrez PubMed www.ncbi.nlm.nih.gov/entrez/
- Kobayashi M. "Promoting breast-feeding—a successful regional project in Japan", *Acta Paediatr Jpn.* 1989 Aug;31(4):404-10. Entrez PubMed www.ncbi.nlm.nih.gov/entrez/
- Kronborg H, Vaeth M. "The influence of psychosocial factors on the duration of breastfeeding", *Scand J Public Health.* 2004;32(32):210-6 Entrez PubMed www.ncbi.nlm.nih.gov/entrez/
- Kutschera J, Christidis I, Rosegger H, Moser F, Muller W. "Changes in breast feeding behavior in Styria 1994 and 2000", *Wien Med Wochenschr.* 2002;152(1-2):19-22 Entrez PubMed www.ncbi.nlm.nih.gov/entrez/
- Labarere J, Bellin V, Furny M, Gagnaire JC, Francois P, Pons JC. "Assessment of a structured in-hospital educational intervention addressing breastfeeding: a prospective randomised open trial", *Bjog.* 2003 Sep;110(9):847-52 Entrez PubMed www.ncbi.nlm.nih.gov/entrez/
- Labarere J, Dalla-Lana C, Schelstraete C, Rivier A, Callec M, Polverelli JF, Francois P. "Initiation and duration of breastfeeding in obstetrical hospitals of Aix-Chambery", *Arch Pediatr.* 2001 Aug;8(8):807-15 Entrez PubMed www.ncbi.nlm.nih.gov/entrez/
- Lande B, andersen L, Baerug A, Trygg KU, Lund-Larsen K, Veierod MB, Bjorneboe GE. "Infant feeding practices and associated factors in the first six months of life: the Norwegian infant nutrition survey." *Acta Paediatr.* 2003;92(2):152-61 Entrez PubMed www.ncbi.nlm.nih.gov/entrez/
- Lathouwer SD, Lionet C, Lansac J, Body G, Perrotin F. "Predictive factors of early cessation of breastfeeding; A prospective study in a university hospital", *Eur J obstet Gynecol Reprod Biol.* 2004 Dec 1;117(2):169-73 Entrez PubMed www.ncbi.nlm.nih.gov/entrez/
- Lawson K, Tulloch MI. "Breastfeeding duration: prenatal intentions and postnatal practices", *J Adv Nurs.* 1995 Nov;22(5):841-9

Entrez PubMed www.ncbi.nlm.nih.gov/entrez/

Leung GM, Ho LM, Lam TH. "Breastfeeding rates in Hong Kong: a comparison of the 1987 and 1997 birth cohorts", *Birth*. 2002 Sep;29(3):162-8 Entrez PubMed www.ncbi.nlm.nih.gov/entrez/

Leung GM, Ho LM, Lam TH. "Maternal, paternal and environmental tobacco smoking and breast feeding", *Pediatr Perinat Epidemiol*. 2002 Jul;16(3):236-45 Entrez PubMed www.ncbi.nlm.nih.gov/entrez/

Li R, Darling N, Maurice E, Barker L, Grummer-Strawn LM. "Breastfeeding rates in the United States by characteristics of the child, mother, or family: the 2002 National Immunization Survey", *Pediatrics* 2005 Jan;115(1):e31-7 Epub 2004 Dec 03. Entrez PubMed www.ncbi.nlm.nih.gov/entrez/

Mardones-Santander F, "Breast-feeding determinants in Chile", *World Rev Nutr Diet*. 1989;58:1-32. Entrez PubMed www.ncbi.nlm.nih.gov/entrez/

Michaelsen K, Larsen PS, Thomsen BL, Samuelson G. "The Copenhagen cohort study on infant nutrition and growth: duration of breastfeeding and influencing factors", *Acta Paediatr*. 1994 Jun;83(6): 565-71 Entrez PubMed www.ncbi.nlm.nih.gov/entrez/

New Zealand's breastfeeding rates - statistics from Breastfeeding: A Guide to Action" www.moh.govt.nz/moh.nsf/

Papinczak TA, Turner CT, "An analysis of personal and social factors influencing initiation and duration of breastfeeding in a large Queensland maternity hospital", *Breastfeeding Rev*. 2000 Mar;8(1):25-33 Entrez PubMed www.ncbi.nlm.nih.gov/entrez/

Prevalence of breastfeeding* by country", "Do mothers stop breastfeeding before they want to?" "Why did mothers stop breastfeeding" www.babyfriendly.org.uk/ukstats.asp

Promotion of Breastfeeding in Europe, EU Project Contract N. SPC 2002359, "Protection, promotion and support of breastfeeding in Europe: current situation" Dec 2003

Ross Products Division of Abbott, "Mothers Survey"

Schneidrova D, Mullerova D, Janout V, Paulova M, Kudlova E. "Impact of breast-feeding promotion on infant feeding in the Czech Republic.", *J Nutr Educ Behav*. 2003 Sep-Oct;35(5):228-35. Entrez PubMed www.ncbi.nlm.nih.gov/entrez/

Schuman AJ, "A concise history of infant formula (twists and turns included)", *Contemporary Pediatrics*

Seo T, Takeichi H, Segawa M, Hatanaka H. Japanese Association of Lactation Consultants, Sapporo, Japan. "Current Breastfeeding Issues in Japan"

Shah IH, Khanna J. "Breast-feeding, Infant Health and Child Survival in the Asia-Pacific Context", *Asia-Pacific Population Journal*, Vol.5, No.1

Socialstyrelsen Epidemiologiskt Centrum, Sveriges officiella statistik "Amning av barn fodda 2000",

Suares Gil P, Alonso Lorenzo J, Lopez Dias, A, Martin Rodrigues D, Martinez, Suarez M. "Prevalence and duration of breastfeeding in Asturias", *Gac Sanit*. 2001 Mar-Apr;15(2):104-10 Entrez PubMed www.ncbi.nlm.nih.gov/entrez/

The Importance of Lactation", <http://cas.bellarmine.edu/tietjen/images/breasts.htm>

The National Breastfeeding Committee Denmark, "The Breastfeeding Situation - in short", www.ammekomiteen.dk/htm/english/menu_english.html

Twomey Anne, Kiberd B, O'Regan M, "Feeding Infants - An investment in the future", November 2000 Volume 93 No 8, www.imje.ie/news_detail.php?nNewsID=1887&nVolId=57

van der Wal MF, de Jonge FA, Pauw-Plomp H. "Increased percentages of breastfed infants in Amsterdam", *Ned Tijdschr Geneeskd*. 2001 Aug 18;145(33)1597-601. Entrez PubMed www.ncbi.nlm.nih.gov/entrez/

- 10 Unicef, "Information by Country", <http://www.unicef.org/infobycountry/>
- 11 Ball HL, Evolutionary paediatrics: a case study in applying Darwinian medicine, (book chapter for forthcoming publication)
- 12 Ball HL, Ward-Platt MP, Heslop E, Leech SJ, Brown KA, "Randomised trial of infant sleep location on the postnatal ward", *Arch Dis Child* 2006;91:1005-1010
- 13 Ball HL, Klingaman K, "Breastfeeding and Mother-Infant Sleep Proximity: Implications for Infant Care", in forthcoming book, *Evolutionary Medicine (2nd Edition)* Edited Trevathan W, Smith EO, McKenna JJ, Oxford University Press 2007
- 14 Nelson EAS, Taylor BJ, "International Child Care Practices Study: infant sleeping environment", *Early Human Development* 62 (2001) 43-55
- 15 Clements MS et al, "Influences on breastfeeding in southeast England", *Acta Paediatr*. 1997 Jan;86(1):51-6.
- 16 Ball HL, "Breastfeeding, Bed-Sharing, and Infant Sleep, *Birth* 30:3 September 2003 181-188

- 17 Blair PS and Ball HL, "The prevalence and characteristics associated with parent-infant bed-sharing in England", *Arch. Dis. Child.* 2004;89;1106-1110
- 18 Ford RP, Mitchell EA, Scragg R, Stewart AW, Taylor BJ, Allen EM. "Factors adversely associated with breast feeding in New Zealand", *J Paediatr Child Health.* 1994 Dec;30(6):483-9 (abstract)
- 19 Willinger M et al, "Trends in Infant Bed Sharing in the United States, 1993-2000, *Archives of Pediatrics & Adolescent Medicine*, Vol. 157 No. 1, Jan 2003
- 20 McKenna JJ, Mc Dade T, "Why babies should never sleep alone: A review of the co-sleeping controversy in relation to SIDS, bedsharing and breast feeding", *Paediatric Respiratory Reviews* (2005) 6. 134-152, citing McCoy et al, "Frequency of bed sharing and its relationship to breast feeding", *Developmental and Behavioral Pediatrics* 2004; 25: 141-149
And
McCoy et al, "Population-based study of bedsharing and breastfeeding", *Pediatric Research* 2000; 47: 154A
- 21 US Department of Health and Human Services, "Infant Mortality – United States, 1993, Table 1", <http://www.cdc.gov/mmwr/preview/mmwrhtml/00040643.htm>
- 22 US Department of Health and Human Services, "National Vital Statistics Report, Vol. 50, No. 15, Table 35. Number of infant deaths and infant mortality rates for 130 selected causes by race: United States, 2000 – Con."
- 23 Gessner BD, Porter TJ, "Bed Sharing With Unimpaired Parents Is Not an Important Risk for Sudden Infant Death Syndrome", *Pediatrics* Vol. 117 No. 3 March 2006, pp. 990-001
- 24 Baddock SA, Galland BC, Taylor BJ, Bolton DPG, "Sleep Arrangements and Behavior of Bedsharing Families in the Home Setting", *Pediatrics* 2007; 119;200-207
- 25 Wikipedia, John Lennon
- 26 Kociumbas J, "Australian Childhood – A History", Allen & Unwin 1997
- 27 Flandrin JL, "Families in Former Times: Kinship, Household and Sexuality", New York: Cambridge University Press, 1979
- 28 Aries P, "Centuries of Childhood", Penguin Books 1973
- 29 Stone L, "The Family, Sex and Marriage in England, 1500-1800", New York, Harper and Row 1977
- 30 Kingston B, "The World Moves Slowly – a documentary history of Australian women", 1977 Cassell Australia Ltd
- 31 Kellum BA, "Infanticide in England in the Later Middle Ages", *History of Childhood Quarterly: The Journal of Psychohistory* 1974;1(3):367-388
- 32 Ball H, "Parent-Infant Bed-Sharing Behavior – Effects of Feeding Type and Presence of Father", *Human nature*, fall 2006, Vol. 17, No. 3, pp. 301-318
- 33 McKenna J, "Cultural Influences on Infant and Childhood Sleep biology, and The Science that Studies It: Toward a More Inclusive Paradigm", *Asleep and Breathing In Children: A Developmental Approach* J Loughlin, J Carroll, C Marcus (Eds.) Marcell Dakker 2000, pages 199-230
- 34 The Consultative Council on Obstetric and Paediatric Mortality and Morbidity, "Annual Report for the Year 2004 – Incorporating the 43rd Survey of Perinatal Deaths in Victoria"
- 35 Data prior to 1981: Australian Bureau of Statistics "Cause of Death" publications for the states of Victoria, New South Wales, and Queensland. (State Library of Victoria)
Data for 1981-2000: Australian Bureau of Statistics, "SIDS Information Paper", August 2003,
Data for 2001-2004: Australian Bureau of Statistics, "Cause of Death" Publications
- 36 ABORTION DATA – I have confidence that the rates are well-representative of the experience of the populations where abortion is legal or quasi-legal (as in some states of Australia). I am not sure if there is any illegal abortion in Ireland, and haven't pursued this.
Characteristics of Women Obtaining Abortion, Perspectives on Sexual and Reproductive Health
"Contraception in Teenagers", *Drug Ther Bull.* 2002 Dec;40(12):92-5, Entrez Pubmed
Anthuber S, "Contraception in adolescents—address on the occasion of the FBA 2002", *Zentralbl Gynakol.* 2003 Dec;125(12):480-3, Entrez Pubmed
Bender SS, Geirsson RT, Kosunen E, "Trends in teenage fertility, abortion, and pregnancy rates in Iceland compared with other

Nordic countries, 1976-99", *Acta Obstet Gynecol Scand* 2003; 82: 3-47

Botting B, Dunnell K, Demography and Health National Statistics, "Trends in fertility and contraception in the last quarter of the 20th century", *Population Trends* 100 Summer 2000

Dutch Abortion Clinics Foundation, "Abortion in the Netherlands 1993 - 3000",

Family Planning Queensland, "Teenage Pregnancy Indicators - Live Births and Abortions", www.fpq.com.au/factsheet

Family Planning Victoria "Unplanned Pregnancy Kit, 2.1 Abortion Statistics"

Federal Statistical Office Germany, "Health - Abortions by the age of women and ratio per 10 000 women", www.destatis.de/basis/e/gesu/gesutab17.htm

Finer LB, Henshaw SK, "Abortion Incidence and Services In the United States in 2000", *Perspectives on Sexual and reproductive Health*, 2003, 35(1):6-15

Health Insurance Commission, *Terminations Victoria and Tasmania*, Australia

ISD Scotland National Statistics, "5 Abortions by local council area of residence and age 31/12/01", "7 Abortions by age group", "6 Abortions performed in Scotland and on Scottish residents in England & Wales", www.show.scot.nhs.uk/isdonline/sexual_health/Abortion/

Mcgee M, "Comparing European and U.S. approaches to adolescent sexual health", *Educ Update*. 1998 Dec;3(3):1-3, Entrez Pubmed

MMWR Surveillance Studies CDC, "Abortion Surveillance - United States, 2000", www.cdc.gov/mmwr/preview/mmwrhtml/ss5212a1.htm

Office for National Statistics; Department of Health, "Table 1, Table 2, Table 24a Legal abortions - numbers...", Series AB no. 27 General and demographic, Residents and non-residents www.statistics.gov.uk/downloads/theme_health

Office for National Statistics; Department of Health, "Table 2, Table 24a Legal abortions - numbers...", Series AB no. 28, Residents and non-residents, website as above

Office for National Statistics; Department of Health, Figure 2.19 "Abortion rates: by age", Timeseries 1969 - 2000, Table 2.18 "Teenage conceptions: by age at conception and outcome 2001", website as above

Population Today, "Looking Back at the Century of Population", Population Reference Bureau, V28, No 1, January 2000

Sexual Health information networking & education SA inc, "Teenage Pregnancy - A Historical Perspective", www.shinesa.org.au

Singh S, Darroch JE, Guttmacher Institute, "Adolescent Pregnancy and Childbearing: Levels and Trends in Developed Countries", *Family Planning Perspectives*, 2000, 32(1):14-23

Spain, "Births, Deaths and Legal Abortions" ?

Statbank Denmark, "Legal abortions by region, age and time", www.statbank.dk/statbank5a/SelectVarVal/saveselections.asp

Statistics Canada, "Pregnancy outcomes by age group", www.statcan.ca/english/PGDB/hlth65b.htm

Statistics New Zealand, "Ethnic differentials in Induced Abortions in New Zealand", www.stats.govt.nz/products-and-services/Articles/EthDiffAbortion.pdf

Statistics New Zealand, "Teenage fertility in New Zealand - article", www.stats.govt.nz/products-and-services/Articles/teen-Sep03.htm

Statistics Norway, "Statistical Yearbook of Norway 2004, Table 131: Induced abortions, by age", www.ssb.no/english/yearbook/tab/t-030120-131.html

The National Board of Health and Welfare, Sweden, "Statistics - Health and Diseases - Abortions 2001" www.sos.se/FULLTEXT/42/2002-42-8/2002-42-8.pdf

UNSTATS, "13. Legally induced abortions: 1993 - 2001" and Notetable 13.doc, <http://unstats.un.org/unsd>

UNSTATS, "14. Legally induced abortions by age and number of previous live births of woman: latest available year" and Notetable 14.doc, <http://unstats.un.org/unsd>

37

SUDDEN INFANT DEATH DATA – Some of these points need revision – I have run out of time before the submission due date! I believe them to be very broadly representative. The outlying point of New Zealand is an accurate reflection of the reported experience, and the point for Ireland to the extreme left is also representative of the Irish on-line cause of death reporting system. Some of the inherent difficulties of SIDS data is as follows: Populations have different cause of death coding practices. For example, some pathologists are more inclined to label a death as "unascertained" rather than "SIDS" (which means the same thing – "we don't know"). So reported SIDS rates can be lower as a result. South Australia's SIDS rates have always looked very good for this reason. Other pathologists will label any death which occurs in an adult bed as an "overlay" or "asphyxiation" death, even if there was no adult in the bed at the time of death, whereas other pathologists are more inclined to label them as "SIDS", although not ruling out other causes. This problem is generally termed "Diagnosis Drift". When I've calculated SIDS rates from 'scratch' I've generally included all of the "unascertained" deaths (R95-R99), not just the Sudden

Infant Death Syndrome (R95) deaths, but not any deaths which have been coded to accidental causes. I haven't sought out precise year of occurrence data, either of the births or of the deaths, except for Australia where this data is readily available (although delayed).

38 In this case "Abortion Ratio" = Terminations of Pregnancy / (Live Births + Terminations of Pregnancy)

An estimate of Australia's likely Abortion Ratio was derived from many sources ('exact' reports for SA and WA) and some opinions. The Chan and Sage article, "Estimating Australia's abortion rates" 1985-2003, MJA 2005; 182 (9): 447-452 confirmed the reasonableness of the estimate.

Of 22 developed populations for which abortion data was reported, the only population with a ratio exceeding the Australian estimate was Hong Kong, although some populations (Sweden, USA) were within possible error ranges of the estimate. All the sources for the other population data are too many to list for this purpose, but are certainly available on request.

39 ABS Catalogue number 3301.0 Births, Australia 2005

40 From EIA. Table 11.1 World Primary Energy Production by Source, 1970-2004

World estimates before 1970 based on USA production numbers from EIA,
Table 8.2a Electricity Net Generation: Total (All Sectors), 1949-2005

41 This particular set of Global Temperature Anomaly data came from the USA's National Climatic Data Centre <http://www.ncdc.noaa.gov/oa/climate/research/2005/ann/global.html#Gtemp>

There are a number of alternate datasets – most take on the same basic shape. Those from the Hadley Centre contain probability ranges.

42 The data came from <http://web.dmi.dk/fsweb/solarterrestrial/sunclimate/SCL.txt>, of Thejll. P. and K. Lassen, 2000: Solar forcing of the Northern Hemisphere land air temperature: New data. *J. Atmos. Solar-Terrestrial Phys.* 62,1207-1213. Referred to in the IPCC Third Assessment Report Chapter 12 Detection of Climate Change and Attribution of Causes, and used in the Bureau of Meteorology's "The Greenhouse Effect and Climate Change", Figure 18.

43 Intergovernmental Panel on Climate Change (IPCC) Third Assessment Report. Chapter 2 Observed Climate Variability and Change, Figure 2.9 Annual Surface Temperature Trends etc...(adapted from Jones et al) 2001.

44 Hollenbach DF, Herndon JM, "Deep-Earth reactor: Nuclear fission, helium, and the geomagnetic field", PNAS, September 25, 2001, Vol. 98 No. 20 11085-11090. Herndon has published widely on this subject over a number of years.

45 World Health Organisation: Global Strategy for Infant and Young Child Feeding http://www.who.int/child-adolescent-health/NUTRITION/global_strategy.htm

46 Energy Information Administration, Net Generation by State by Type of Producer by Energy Source (EIA-906), http://www.eia.doe.gov/cneaf/electricity/epa/generation_state.xls

47 Densities were derived using land areas for the states of the USA from The Times Atlas of the World, Times Books, London, 1999

48 National Vital Statistics Reports, Vol. 52, No. 19, May 10, 2004, "Trends in Characteristics of Births by State: United States, 1990, 1995, and 2000-2002, Table 1. Births by race and Hispanic origin of mother"

49 Department of Health and Human Services (USA), "Racial and Socioeconomic Disparities in Breastfeeding – United States, 2004", MMRW Weekly, March 31, 2006/55(12);335-339, <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5512a3.htm>

50 United Nations Statistics Division, "Statistics on Women and Men", <http://unstats.un.org/unsd/demographic/products/indwm/>

51 Finer LB, Henshaw SK, "Abortion Incidence and Services In the United States in 2000", Perspectives on Sexual and Reproductive Health, 2003, 35(1):6-15

52 The time period 1992-2000 was chosen simply because these were the years for which consistent abortion data was available. Breastfeeding, nuclear power generation and population data were available for all years.