



LETTER TO THE EDITOR—CORRESPONDENCE

Traffic deaths before and after birth

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Traffic deaths before and after birth



Dear Editors,

We found that the risk of a fetus death from a traffic crash during the nine months of the mother's pregnancy is five times the risk during the first nine months of a baby's life.

Our result was derived using United States data documenting 33,561 road deaths in 2012 [1]. This total ignores an additional source of traffic fatalities, namely, fetus deaths.

Using national datasets and applying plausible assumptions about rates of pregnancy and traffic fatalities, we calculated the number of unborn babies lost traffic in 2012 (Table 1). Two main assumptions were: (1) pregnant and non-pregnant women of the same age have equal chances of becoming traffic fatalities; (2) the death of a pregnant woman leads to the death of her unborn child. We compute that 227 pregnant women die per year in US traffic crashes, a finding that compliments estimates based on samples of fatally injured fetuses [2].

Our estimate of 227 fetuses killed in traffic contrasts with 60 babies aged less than one year killed in traffic crashes in 2012 [1], equivalent to 45 deaths in a the nine month period corresponding to pregnancy. Thus the risk of fetal death during pregnancy is $227/45 = 5.04$ times the risk after birth for equal exposure times. This ratio likely underestimates the disparity because the risk of crashing is increased during pregnancy [3], and we have ignored the many cases in which the mother survives but the fetus does not [4].

The 227 fetus traffic deaths are easily overlooked because they constitute so small fraction of the approximately 25,000 fetal deaths that occur annually in the United States. They are an even smaller fraction of total traffic deaths. The main argument justifying more attention is that these fetus deaths can be so easily reduced.

All United States traffic deaths can be reduced sharply by US safety policy becoming more based on safety science, as has already occurred in many countries. For example, if US traffic deaths had declined by the same percent as occurred in the Netherlands, US traffic deaths in 2012 would have been reduced by 68% [5]. If the US had safety policies like those in the Netherlands, then 72 instead of 227 fetuses would have been killed. The key to major risk reductions for all road travelers, born and unborn, is sensible traffic safety policy sensibly enforced in ways the public embraces because they really understand that the largest risk to their families is from traffic [5].

Given the current situation, physicians can advise patients that the priority in protecting a fetus in traffic is the same as protecting the mother, and everyone else. The advice is simple. Do not rush in traffic – plan to leave 5 min earlier for your appointments. Pay close attention to traffic. When driving, slow down – this is crucial, obey traffic law, and keep foremost in mind your precious cargo. Beware at all times that a few percent of other drivers create threats you must actively avoid. The father should receive similar advice, because when he is the driver, mother and fetus are likely exposed to increased risk.

Table 1
Demographic data, traffic data, calculated losses.

Female age (years)	Live births	Female population	Probability that woman gives birth	Probability that woman is pregnant	Women killed in traffic	Potential fetal losses
<15	3672	6,084,305	0.00060	0.00045	123	0.06
15	10,908	2,021,942	0.00539	0.00405	78	0.32
16	26,278	2,031,672	0.01293	0.00970	164	1.59
17	49,237	2,072,180	0.02376	0.01782	166	2.96
18	85,310	2,112,698	0.04038	0.03028	225	6.81
19	133,655	2,140,810	0.06243	0.04682	241	11.28
20–24	916,811	11,019,761	0.08320	0.06240	1063	66.33
25–29	1,123,900	10,537,573	0.10666	0.07999	804	64.31
30–34	1,013,416	10,412,254	0.09733	0.07300	662	48.32
35–39	472,318	9,771,042	0.04834	0.03625	553	20.05
40–44	109,579	10,564,396	0.01037	0.00778	636	4.95
45–49	7157	10,956,338	0.00065	0.00049	616	0.30
50–54	600	11,494,854	0.00005	0.00004	741	0.03
Total	3,952,841	91,219,825			6072	227.3

All data for United States in 2012.

Wide age range to show youngest and oldest values make negligible contributions.

Col_1: Age categories.^A

Col_2: Live births (multiple births contribute multiple counts).^A

Col_3: Female population of childbearing age.^B

Col_4: Probability that a woman will have one or more live births in a year (Col_2/Col_3).

Col_5: Probability that a woman is pregnant at random time during year (Col_4 × 9/12).

Col_6: Number of women killed in motor vehicle traffic crashes. The 6072 total comprises 3240 drivers and 1903 passengers of motor vehicles in transport, 825 pedestrians, 63 bicyclists killed in crashes involving other vehicles with engines, and 41 fatalities in other categories.^C

Col_7: Number of pregnant women killed in traffic (Col_5 × Col_6).

Data sources: ^ABirths: Final Data for 2012. Martin JA, Hamilton BE, Osterman MJK, Curtin SC, Mathews TJ. National vital statistics reports. National Center for Health Statistics, vol. 62 (9), December 30, 2013. http://www.cdc.gov/nchs/data/nvsr/nvsr62/nvsr62_09.pdf [accessed 09.03.15].

^B2012 National Population Projections, United States Census Bureau. <http://www.census.gov/population/projections/data/national/2012.htm> [accessed 09.03.15]. Data in one year increments at http://www.census.gov/population/projections/files/downloadables/NP2012C_D1.csv [accessed 09.03.15].

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Traffic safety is an established part of pediatric care and the low rates of motor vehicle traffic fatalities during infancy indicate that such efforts are effective. The current data highlight that such prevention needs to start even earlier as a part of standard prenatal care. Specifically, pregnant women should be advised by their physicians on the even greater importance of road safety before the baby is born.

Conflict of interest

Neither author reports any conflicts of interest.

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