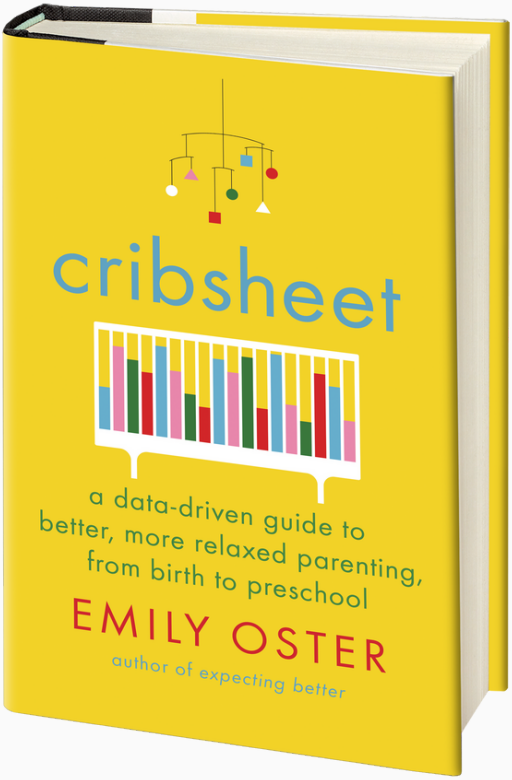

Following pages are excerpted from Cribsheet by Emily Oster

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Breast Is Best? Breast Is Better? Breast Is About the Same?

The hospital at which I delivered Penelope had a lot of pre-delivery classes, one of which was about breastfeeding. I asked a friend with a slightly older baby if I should take it; she scrunched up her face and said, "You know, it's really not the same with a doll."

Boy, was that right. I am going to tell you the truth. For many women, including myself, breastfeeding was hard. (This doesn't mean the classes aren't useful, just that they aren't a panacea.)

When Penelope lost weight in the hospital, we had to supplement with formula. This might have been unnecessary. But what seemed even crazier was the very elaborate setup the nurse suggested for avoiding the dreaded "nipple confusion."

Rather than just handing me a bottle and suggesting I try that, I found myself hooked up to a system in which a tube was taped to my breast and the formula bottle was held above my head. We tried to nurse that way, with the formula being delivered through the tube, but neither Penelope nor I had any idea what we were doing.

They offered to send this system home with us, but I declined; if we needed to feed Penelope formula, it was going to come from a bottle.

My milk did eventually come in, but that wasn't the end of it. Much of the time, it still seemed like I didn't have enough. Before going to sleep at night, Penelope would eat and eat and eat, mostly from the bottle. I felt terrible. Everyone said, "Oh, if she still seems hungry, just let her keep trying to nurse. Your supply will catch up!" But she was clearly starving (at least, that's what it seemed like).

At the same time, I was trying to pump, to increase my supply and to have some backup for when I went back to work. But when to do this? Should I pump right after feeding her? What if she needed to eat again? Should I pump an hour after feeding her while she was napping? What if she woke up right after I finished and needed to eat again?

And worst, Penelope seemed to hate breastfeeding, and getting her to latch on was a struggle every time. When she was seven weeks old, we went to my brother's wedding, and I remember sitting in a back closet at the restaurant, where it was approximately one billion degrees, trying desperately to get her to latch on as she screamed and screamed. Eventually, we left the closet and I fed her a bottle in the air conditioning.

Why did I continue? With hindsight, I have no idea. Eventually, around three months, she finally just seemed to accept that I was not giving up and just started nursing one day without a lot of objections.

Breastfeeding isn't always like this, even from one baby to the next. With Finn, nursing was a breeze (other things were complicated). My milk came in faster, there was more of it, and he never had trouble figuring it out. And for some people, it's like this the first time.

But any struggle we experience is made worse by the emphasis—societal, familial, personal—on the many benefits of breastfeeding.

Here, for example, is a list of the *claimed* benefits of breastfeeding, which I pulled from a couple of websites.[1] (I should note that this chapter is focused on the benefits of breastfeeding in the US or other developed countries, where the formula alternative is safe and can be made with clean water. In developing countries, breastfeeding benefits are larger and different, since the alternative is often formula made with contaminated water.)

The list is very long, so I've divided it into sections.

Short-Term Baby Benefits	Long-Term Child Benefits: Health	Long-Term Child Benefits: Cognitive	Benefits for Mom	Benefits for the World
▪ Fewer colds, infections ▪ Fewer allergic rashes ▪ Fewer gastro-intestinal disorders ▪ Lower risk of NEC ▪ Lower risk of SIDS	▪ Less diabetes ▪ Less juvenile arthritis ▪ Lower risk of childhood cancer ▪ Lower risk of meningitis ▪ Lower risk of pneumonia ▪ Lower risk of urinary tract infections ▪ Lower risk of Crohn's disease ▪ Lower risk of obesity ▪ Lower risk of allergies, asthma	▪ Higher IQ	▪ Free birth control ▪ More weight loss ▪ Better bonding with your baby ▪ Save money ▪ More stress resistant ▪ More sleep ▪ Form better friendships ▪ Lower risk of cancer ▪ Lower risk of osteoporosis ▪ Lower risk of postpartum depression	▪ Lower methane production from cows

You will note that one of these benefits is "better friendships." Really? Don't get me wrong—it can be lonely and isolating to be a new mom, and meeting other moms is a great idea. That's what stroller yoga is for. But I'm hard-pressed to figure out which of my friendships were enhanced by my attempts to feed a screaming baby in a hot closet.

And it is true that I can find no peer-reviewed evidence—reliable or otherwise—to suggest that friendships are enhanced by breastfeeding. Many of the benefits cited here do, however, have some basis in evidence, just not always especially *good* evidence.

In particular, as I mentioned in the introduction, most studies of breastfeeding are biased by the fact that women who breastfeed are typically different from those who do not. In the US, and most developed countries, more educated and richer women are more likely to nurse their babies.

This wasn't always the case. Breastfeeding has come in and out of fashion over the years, including over the past century. In the early part of the twentieth century, nearly all women breastfed, if they were physically able to, but the introduction of more "modern" formula starting around the 1930s led to a rapid decline in breastfeeding. This is likely, at least in part, because breastfeeding has always been hard. By the 1970s, the majority of women fed their babies with formula. But public health campaigns beginning at that time promoted the benefits of breastfeeding, pushing back against the trend of using formula. In response to this changed climate, formula manufacturers themselves did some breastfeeding promotion. Breastfeeding rates have increased since then. This increase has been greater in some groups than others, notably among more educated and richer women.[2]

The relationship between breastfeeding and education, income, and other variables is a problem for research. Having more education and more resources is linked to better outcomes for infants and children, even independent of breastfeeding. This makes it very difficult to infer the *causal* effect of breastfeeding. Sure, there is a correlation between nursing and various good outcomes—but that doesn't mean that for an individual woman, nursing her baby will make the child better off.

To give a concrete example, take one study, conducted in the late 1980s, of 345 Scandinavian children that compared IQ scores at age five for children who were breastfed for less than three months versus more than six months.[3] The authors found that the children who nursed longer had higher IQ scores—about a seven-point difference. But the mothers who breastfed longer were also richer, had more education, and had higher IQ scores themselves. Once the authors adjusted for even a few of these variables, the effects of nursing were much, much smaller.

The authors of this and other studies claim that once they adjust for the differences they see across women, the effects persist. But this as-

sumes that the adjustments they make are able to remove *all* the differences across women, and this is extremely unlikely.

For example, in most studies of breastfeeding, researchers do not have access to the mother's IQ. More commonly, they'll see a measure of the mother's education, which is related to IQ. On average, a woman with a college degree will perform better on an IQ test than a woman with less than a high school degree. But these education categories are not a fully accurate measure of IQ.

When we look at breastfeeding, we find that mothers with higher IQ scores are more likely to nurse their babies, even within groups of mothers of the same education level.[4] Those mothers with higher IQs, again among peers of the same education level, also have (on average) children with higher IQs.[5] Even if researchers are able to adjust for a mother's education, they are still left with a situation in which breastfeeding behavior is associated with other characteristics (in this example, maternal IQ) that may drive infant and child outcomes.

How do we get around this issue? Some studies are better than others, and we should look to those for answers. When I looked at the data for the effects of breastfeeding, I tried to tease out the good studies from the less-good ones, and I've based my conclusions only on the better studies. To link most obviously to the example above, a study that is able to adjust for maternal IQ is going to give more believable results than one that isn't.

As you know by now, this book is focused on evidence in the form of data and what we can learn from that data. But there is another type of evidence, one that you see a lot on the internet. I'd refer to this as "things people said" or "it happened once to my friend" evidence. You know: "My friend didn't breastfeed, and her kid went to Harvard." "My friend didn't vaccinate, and her kid is super healthy!"

Here is what we learn from this: nothing.

Heed the statistics mantra: anecdote is not data. (I might put that on a T-shirt.)

Now, as breastfeeding will take us more deeply into questions of data, a word on the types of studies I'll use throughout the book.

AN ASIDE ON RESEARCH METHODS

When researchers study breastfeeding—or any of the other things I talk about in this book—they are looking to learn about the effect of whatever they are studying while *holding everything else constant*. Our "ideal" experimental setup would be to see a child first after being breastfed, then the same child after not being breastfed, but with everything else exactly the same—same timeline, same parents, same parenting style, same home environment. If we could see that, we would just need to compare the child's later outcomes to know the effects of breastfeeding.

Of course, this is not possible. But when researchers conduct an analysis, this is what they are aiming for. How close they come depends a lot on how good their research methods are.

Randomized Controlled Trial

The "gold standard" for research methods is the randomized controlled trial. To run this kind of study, you recruit some people (ideally a lot of them) and then choose randomly which people will be "treated" as part of your study and which will be the "controls." For a randomized trial of breastfeeding, you'd want to have the "treatment group" breastfeed, and the "control group" not. Since you have chosen randomly who will be in which group, the groups are, on average, the same, other than the breastfeeding. You can then compare what happens for the breastfeeding group with what happens for the control.

A practical challenge with this type of study is that you typically cannot *force* people to do things, especially with their children. Instead, most studies I'll report on use an "encouragement design": One group is encouraged to do the behavior—breastfeed, or sleep train their child, or engage in some discipline program—and the other group is not. This

encouragement could, for example, take the form of telling the group about the benefits of that behavior, or giving them some training or guidance about how to accomplish the behavior successfully. Assuming that the encouragement changes how many people do the thing you are studying, you can draw causal conclusions.

Randomized trials are expensive to run, especially if they are big, and they can, of course, have problems with implementation. But they are the closest we're able to come to our ideal treat-the-same-kid-in-two-ways setup, so when I find them, I give them a lot of weight.

Observational Studies

A second, very large group of studies will fall under the "observational study" category. These studies compare, for example, children who are breastfed with those who are not, or those who are sleep trained with those who are not, *without* having randomly assigned people to groups.

The basic structure of these studies is similar. Researchers access (or collect) some data on children, either short- or long-term outcomes, along with some information on parental behaviors. They then analyze the differences between kids in different groups—comparing, say, the kids who are breastfed with the kids who are not.

This type of study will make up the vast majority of the data we have to work with, and they vary widely in quality. One source of variation is study size—some of these are bigger than others, and bigger is typically better. But more important, there will be a lot of variation in how close they can get to the ideal of comparing the same child across one variable in two otherwise identical scenarios.

When they do their comparisons, researchers have to adjust for inherent differences across families that make different parenting choices. Most studies do this by adjusting for some aspects of the parents, or of the child, but their ability to do this well depends on the quality of the data.

On one end, you have sibling studies, which compare two children within the same family who were treated differently on the variable you

care about. For example, one of the kids was breastfed, and one was not. Since these children have the same parents and grew up together, there is a strong argument that, other than the breastfeeding, they are similar. These sibling studies are not perfect—you have to ask, why nurse one kid and not the other?—but they have a lot of value in eliminating some of the most important problems in observational studies. There is likely some randomness in the choice to nurse, perhaps related to how much each baby takes to it (I'm thinking of my own experience here).

Many other studies do not compare siblings, but they do see *a lot* of information about parents: education, maybe IQ tests, income, race, other aspects of the home environment, characteristics of the child at birth, etc. Once the authors adjust for these variables, they can get closer to comparing two identical children. I'll often call these variables *controls*. The more things we control for—meaning, the more variables we can hold constant across children and families—the more confident we can be that we are really learning the effects of breastfeeding.

On the other end there are studies that have just one or two controls—that, say, adjust for differences in birth weight across children, but nothing else. These are more suspect.

Case-Control Studies

There is a final class of results that come from what are called case-control studies. These studies tend to be used when there is a rare outcome. Let's say you want to look at the relationship between reading to your child and your child learning to read *very* early (say, before the age of three). Learning to read before three is a very rare outcome. Even in a very large dataset, you might have only a few cases. This isn't enough data to learn about what determines this outcome.

With a case-control approach, researchers start by identifying a set of "cases"—people who had the rare outcome. In our example, that means they go out and actually look for children who could read fluently before age three, and they collect a bunch of data about them. They then look for

a set of controls—children who are similar on some dimensions but didn't read until later—and compare them. They ask whether some behavior—in this example, parents reading to the kids—are more common in the children who were early readers.

In general, these studies are worse than the other types. They have, first off, all the same problems as observational studies: the people who are in the case group may be different in many ways from those in the control group, and it is hard to control for those differences. This problem is often more extreme since the control group is typically recruited to the study in a different way from the treatment group.

There are other problems, too. These studies usually rely on asking parents about aspects of their behavior far in the past—parents may struggle to remember, and their memories may be affected by what has happened with their child in the intervening years.

Finally, these studies tend to be small, and the authors are often looking at many possible variables that might be associated with what they are studying. This can lead to spurious conclusions.

There will be times when these are the only studies we have to go on, and we do want to try to learn something from the data they contain. But I tend to approach these with caution.

BACK TO BREASTFEEDING

In the particular case of breastfeeding, we'll see all the kinds of studies described above. There is one large randomized controlled trial of breastfeeding, which was run in Belarus in the 1990s.[6] This study encouraged some women to breastfeed and not others, and there were differences across groups in breastfeeding rates. This study will be relevant for looking at some short-term health outcomes, and some longer-term things like child height and IQ.

There are also some very nice observational studies. There are a few that compare siblings, which is great, and others that were not able to use

siblings but do have a large sample size and observe a lot of data about kids and their parents.

Finally, for a few rare and tragic outcomes—childhood cancer, SIDS—we will have to look at some case-control studies, and try to learn what we can from them.

In the rest of this chapter, I'll go through the short- and long-term benefits of breastfeeding to kids and to moms in detail. I will leave aside the issue of methane and say only that it is true that cows produce methane, and it is also true that formula usually contains milk products, so in that sense this benefit is valid.

Oh, and I should say that even if you've decided to breastfeed, making it work is not always easy. To tackle that (stay out of hot closets!), check out the next chapter.

The Benefits

BREASTFEEDING AND EARLY-LIFE HEALTH

Breastfeeding and early-life health is the most well-studied set of relationships. It was the initial focus of the large randomized trial I mentioned earlier, and these are also the relationships with the most compelling set of mechanisms. We know breast milk contains antibodies, so it is therefore more plausible that it is protective against some illnesses.

We'll start with the randomized trial. This study, called PROBIT, was run in Belarus in the 1990s. It followed 17,000 mother-infant pairs across a number of sites in Belarus. The authors started with a sample of women who intended to breastfeed; half of these women were randomly chosen to receive breastfeeding assistance and encouragement. The rest were not discouraged, but they were not provided with support.

The encouragement had a big effect on breastfeeding. At three months, 43 percent of children of moms who were encouraged were exclusively breastfed, versus just 6 percent of children whose mothers were not. There were also differences in whether the babies got any breast milk at

this point. At a year, the any-breastfeeding rates were 20 percent and 11 percent, suggesting that the effects of the encouragement persisted.[7]

You'll notice that the encouragement didn't mean *all* the moms who were encouraged to breastfeed did, or that all the moms who were not encouraged didn't. The results, then, may be smaller than they would be if there were a larger difference in breastfeeding between the two groups.[8]

The study found two significant impacts: In the first year, breastfed babies had fewer gastrointestinal infections (i.e., diarrhea) and lower rates of eczema and other rashes. To put some numbers to it, 13 percent of the children of mothers in the group that wasn't encouraged to breastfeed had at least one diarrhea episode, versus only 9 percent of those whose mothers were encouraged. The rate of rashes and eczema was also lower in the group whose mothers were encouraged to breastfeed: 3 percent versus 6 percent.

These effects are significant, and as a share of the overall rates of these illnesses, they are reasonably big. For example, rashes and eczema were reduced by half. Having said that, the overall rates are worth keeping in perspective: even in the group that breastfed less, only 6 percent of children were reported to have this complication. It is also important to note that these are typically fairly minor illnesses.

There is one very serious early-life illness—also linked to digestion—that seems to be affected by breast milk. Necrotizing enterocolitis (NEC) is a serious intestinal complication that is a risk for very preterm babies (it is most common for babies weighing less than three and a half pounds at birth). Breast milk (from either the mother or a donor) has been shown to lower the risk of this condition in randomized trials.[9] This may bolster our confidence in the general links with digestion, although for full-term (or even nearly full-term) babies, NEC is vanishingly rare.

In the PROBIT trial, there were also many illness measures that didn't seem to be affected by breastfeeding, including respiratory infections, ear infections, croup, and wheezing. Indeed, the share of kids in each group who had these problems was virtually identical. It is important to

be clear on what this means. It does not mean we are *sure* breastfeeding has absolutely no effect on respiratory problems. These estimates come with statistical errors, what we call "confidence intervals," which give us a sense of how sure we are about the estimate we observe. In this particular study, we cannot reject the possibility that breastfeeding could matter in either direction—that it could decrease or increase respiratory infections.

What we *can* say is that the data doesn't support the claim of a reduction in respiratory infections as a result of breastfeeding.

Given these findings, why do we continue to see the "evidence-based" claim that breastfeeding reduces colds and ear infections? The main reason is there are many observational studies—which compare kids who are breastfed with those who are not, but not where breastfeeding is randomly varied—that do show that breastfeeding affects these illnesses. An especially large set of studies argues for an effect of breastfeeding on ear infections.[10]

Should we give any weight to this evidence once we have a randomized trial?

This is a complicated question. On one hand, all things being equal, randomized evidence is clearly better. We know that breastfeeding is not something people do on a whim, and we know that women who nurse have different circumstances from those who do not. This leads us to favor the randomized evidence.

On the other hand, the randomized trial is only one study. And it is not infinitely large. If there are small benefits from breastfeeding, they might not show up as significant effects in the randomized trial, but we would still like to know about them. I think it is reasonable, therefore, to look at the non-randomized data, especially when it comes to ear infections, which are widely studied, and where some of the evidence comes from very large and high-quality datasets.

For example, a study of 70,000 Danish women published in 2016 found that breastfeeding through six months reduced the risk of an ear infection from 7 percent to 5 percent over those months.[11] This study was very

careful and complete, with excellent data that allowed the authors to adjust for a lot of differences across mothers and children.

This effect isn't replicated everywhere. A similar study in the UK shows no impact on ear infections.[12] But in my view, the weight of overall evidence puts this in the plausible category.

In contrast, there isn't any study as compelling as this Danish ear infection study on colds and coughs. The studies on these symptoms are smaller and less statistically convincing, and the results are fragile. There seems to be less to learn here.

Where does this leave us? Certainly, it seems reasonable to conclude that breastfeeding lowers infant eczema and gastrointestinal infections. For the other illness outcomes, the most compelling evidence is in favor of a small reduction in ear infections in breastfed children.

BREASTFEEDING AND SIDS

I would be remiss to leave the discussion of breast milk and early-life health without discussing the relationship between breastfeeding and SIDS, the tragic cases in which an infant dies unexpectedly in the crib. The relationship of SIDS to breastfeeding, while frequently posited, is difficult to untangle.

The death of a child is among the worst things you can imagine as a parent. In this book, we will look at many questions that feel weighted, but nothing will compare to this horrific circumstance. This gives added emotional valence to even the suggested possibility of a relationship between breastfeeding and infant mortality.

SIDS is rare; ear infections and colds are common. Your kids will get colds for sure, whether you breastfeed or not. SIDS deaths, in contrast, occur in about 1 of every 1,800 births; among babies with no other risk factors (not premature, not sleeping on their stomachs), this is perhaps 1 in 10,000.[13]

This should reassure anxious parents to some extent, but it also makes the SIDS–breastfeeding relationship hard to study, since you need an

enormously large sample of babies to learn anything that can benefit other children.

To get around this, studies of this relationship use the case-control method: They identify a number of infants who have died of SIDS, interview the parents, then interview a set of control parents with living children. The characteristics of the parents and children are compared.

There are many of these studies.[14] And, on average, they do find that the living children are more likely to be breastfed. This causes them to conclude that not breastfeeding increases the risk of SIDS. The most recent analyses suggest that these effects are most pronounced for breastfeeding longer than two months.[15]

In my opinion, however, from a careful read of the data, this conclusion is not obvious. There are basic differences between the children who die and those who do not, differences that likely have nothing to do with breastfeeding but are driving many of the results. When the studies take into account things like a parent's smoking, whether the baby was premature, and other risk factors—all of which are correlated with breastfeeding and linked to SIDS—their effects are much smaller or disappear altogether.

Beyond this, some of the research papers with the largest effects also have a serious problem with their selection of the control group. A key component of designing these studies is to pick a control group that is as comparable as possible, and these studies are not always successful in this goal.

For example, it is common to select all infants who die of SIDS in an area as the treatment group, and then recruit parents of living children with letters or phone calls. But this means the people in the control group are chosen differently, and we know that people who want to participate in a study are fundamentally different—in ways we can see and ways we cannot—from people who do not choose to be involved.[16]

Reinforcing this concern, studies with a better selection of control babies—for example, one where the comparison group comprises babies who were visited by the same home-visiting nurse in England—do not show an elevated risk of SIDS from not breastfeeding.[17]

SIDS deaths are thankfully rare. Because they are so rare, it is impossible to fully rule out the possibility that breastfeeding decreases the risk of SIDS by a small amount. However, I do not believe the best data supports a significant link.

BREASTFEEDING AND LATER HEALTH

Most of the academic research on breastfeeding focuses on early-life outcomes—infections, for example, in the time period in which you might actually be breastfeeding. In the popular discourse, however, the focus seems to be much more on the long-term benefits. This is where the guilt stacks up.

You rarely hear people say, "It's great to breastfeed since it lowers the chances of diarrhea in the next six months!" Rather, they say things like, "It's great to breastfeed since that gives your kid the best start; they'll be smarter, taller, thinner!" This problem isn't limited to random people on the street: one woman told me her doctor had told her that by quitting breastfeeding, she was costing her child three IQ points.

The idea that choosing not to breastfeed might be something your child would suffer from for their whole life is far worse as a parent than simply thinking they might get one more ear infection.

The good news for guilt-ridden moms is that, even more than in the case of early-life health issues, I have not seen any convincing evidence for these long-term impacts.

We can begin with the set of outcomes studied in PROBIT. These researchers have continued to follow the children in the trial through the age of seven. They find no evidence of any long-term health impacts: no change in allergies or asthma, cavities, height, blood pressure, weight, or indicators for being overweight or obese.[18]

The results on obesity are worth pausing on, as this benefit of breastfeeding gets a lot of attention. (When I was pregnant with Finn, there was a very large poster in my midwife's office claiming that breastfeeding lowered obesity, a message underscored by the image of two ice cream scoops, each topped with a cherry so they looked like breasts. It was a neat visual,

although the point it was illustrating remains unclear to me. I suppose the idea was that you could eat more ice cream if you were breastfed.)

It is certainly true that obesity and breastfeeding are correlated, as kids who are breastfed are less likely to be obese later in life. But this correlation doesn't show causation—it doesn't prove that those kids who go on to become obese do so *because* they weren't breastfed. The randomized data from PROBIT shows no impact of breastfeeding on whether the child is obese at the age of seven or, in the latest follow-up, at close to eleven.[19] Bolstering this, studies that compare siblings who are breastfed to those who are not show no differences in obesity. These studies often demonstrate that breastfeeding seems to matter when you compare across families, but not *within* a family. This suggests that something about the family, not the breastfeeding, is impacting the likelihood of a child becoming obese.[20] In fact, when researchers look at many studies of obesity and breastfeeding together to get a fuller picture, they find that studies that carefully adjust for maternal socioeconomic status, maternal smoking, and maternal weight—even if they cannot compare siblings—also show no association.[21]

All these results come with some statistical error. Can we say *for sure* that breastfeeding does not impact obesity? No. But we can say that nothing compelling in the data supports a significant link.

A few long-term outcomes—for example, juvenile arthritis and urinary tract infections—could not be studied in PROBIT, but at least one or two studies have shown some link between these conditions and breastfeeding. The evidence on most of these links is simply very limited.[22] A significant relationship shows up in only one of many studies, or the research design is poor, or the population is very unusual—basically, we cannot learn anything from the data about whether there is a relationship.

More has been written on two more serious illnesses—type 1 diabetes and childhood cancer—but, again, given the limitations of the data, I do not think we learn much. More on these two in the endnote.[23]

In many of these cases—like others in the breastfeeding arena—even very limited and poorly done studies get a lot of attention. Media attention

tends to miss the nuance of published literature, even when the literature itself is good, which is often not the case. We see, again and again, aggressive headlines that often overstate the claims of the articles they report on.

Why is this?

One reason is that people seem to love a scary or shocking narrative. "Report: Formula-Fed Children More Likely to Drop Out of High School" is a more clickable headline than "Large, Well-Designed Study Shows Small Impacts of Breastfeeding on Diarrheal Diseases." This desire for shock and awe interacts poorly with most people's lack of statistical knowledge. There is no pressure on the media to focus on reporting the "best" studies, since people have a hard time separating the good studies from the less-good ones. Media reports can get away with saying "A new study shows . . ." without saying "A new study, with very likely biased results, shows . . ." And other than the few of us who get our dander up on Twitter, people are mostly none the wiser.

It is hard to sort out study quality from this initial media coverage, although it's probably easier in the age of the internet. Many media reports will now link to the original study. If the "Formula-Fed Children More Likely to Drop Out of High School" article is based on a study of forty-five people surveyed about their breastfeeding behavior when their now twenty-year-old children were infants, you can probably let it go.

SMARTY-BOOBS: BREASTFEEDING AND IQ

Breast milk is optimal for brain development, right? Nurse your way to a successful child! So they say. But is this true? Will breast milk make your kid smarter?

Let's start by returning from the land of magical breast milk to reality. Even in the most optimistic view about breastfeeding, the impact on IQ is small. Breastfeeding isn't going to increase your child's IQ by twenty points. How do we know? Because if it did, it would be really obvious in the data and in your everyday experience.

The question is, really, whether breastfeeding gives children some

small leg up in intelligence. If you believe studies that just compare kids who are breastfed to those who are not, you find that it does. I talked about one example of these studies on page 68, and there are others. There is a clear correlation here—breastfed kids do seem to have higher IQs.

But this isn't the same as saying that breastfeeding *causes* the higher IQ. In reality, the causal link is much more tenuous. We can see this by looking carefully at a number of studies that compare children who were breastfed to their siblings who were not. These studies tend to find no relationship between breastfeeding and IQ. The children who were nursed did no better on IQ tests than their siblings who were not.

This conclusion differs fundamentally from the studies without sibling comparisons. One very nice study gives us an answer to why.[24] The key to this study is that the authors analyze the same sample of kids in a bunch of different ways. First, they compare children who are breastfed with those who are not with a few simple controls. When they do this, they find large differences in child IQ between the breastfed kids and those who are not. In the second phase, they add an adjustment for the mother's IQ, and find that the effect of breastfeeding is much smaller—much of the effect attributed to breastfeeding in the first analysis was due to differences in the mothers' IQs—but does still persist.

But then the authors do a third analysis where they compare siblings—children born to the same mother—one of whom was breastfed and one who was not. This is valuable because it takes into account *all* the differences between the moms, not just their performance on one IQ test. In this analysis, researchers see that breastfeeding doesn't have a significant impact on IQ. This suggests that it is something about the mother (or the parents in general), not anything about breast milk, that is driving the breastfeeding effect in the first analysis.

PROBIT also looked at the relationship between breastfeeding and IQ. For this sample, the measurement of IQ was done by researchers who knew whether a child was in the breastfeeding-encouraged treatment group. There were no significant effects of breastfeeding on overall IQ or on teachers' evaluations of the children's performance in school. The

researchers did see small impacts of breastfeeding on verbal IQ in some of their tests, but further analysis suggested that this may have been driven by the people doing the measurement—knowing which children were breastfed might have influenced their evaluation.[25] Overall, therefore, this study doesn't provide especially strong support for the claim that breastfeeding increases IQ.[26]

In conclusion, there is no compelling evidence for smarty-boobs.

BENEFITS FOR MOM

For some women, breastfeeding makes them feel empowered and happy. It's convenient to have a ready food source anywhere they go, and they find nursing their baby to be a peaceful and relaxing time. That's great!

For others, breastfeeding makes them feel like a cow. They hate lugging the breast pump around if they have to pump. It's hard to tell if the baby even likes to nurse or is getting enough food. Their nipples hurt, and the experience basically sucks.

All this is to say that many of the purported benefits of breastfeeding for moms are really subjective. I have been on both sides of this, as have most of my friends. There were definitely moments—especially with Finn—when I thought it was a superconvenient and awesome option. And then there were others—I am thinking in particular of an experience pumping in the bathroom at LaGuardia Airport—when the whole thing seemed like a farce.

One of the things on every pro-breastfeeding list is "saves money." This really depends. Yes, formula is expensive, but so are nursing tops, nipple creams, nursing pads, and the fourteen different breastfeeding pillows you need to make it work. And, more important, there is your time, which is valuable.

Another claimed benefit is "stress resistance." Does breastfeeding make you more resistant to stress? Again, pretty subjective. Stress is very often linked with sleep disturbance. Will you get more sleep if you nurse your baby? This depends on more than just breastfeeding.

As mentioned earlier, "better friendships" has also been touted as a

benefit. You'll need to decide for yourself if your friendships will be enhanced by breastfeeding. (It probably depends on your friends.)

These are just a few of the "benefits" of breastfeeding for which there is just no evidence. A few claimed benefits, however, do potentially have some basis in fact. The first is the claim that breastfeeding is "free birth control." Here is the truth: you are less likely to get pregnant if you breastfeed, but it is not—I repeat, *NOT*—a reliable birth control method, especially as your child ages and if you ever go more than a few hours without feeding or pumping. I do not have enough space in this book to list all the people I know who got pregnant while breastfeeding (shout-out here to my medical editor, Adam, his wife, and his second child). If you definitely do not want to get pregnant, you need to use some real birth control.

A second claimed benefit with some evidence is "weight loss." I'm sorry to report that, at best, any weight loss effects are small. One large study from North Carolina showed that at three months postpartum, weight loss was similar in moms who breastfed and those who did not. At six months postpartum, the breastfeeding moms had lost about 1.4 pounds more.[27] Issues with this paper mean this is likely an overestimate of the effect of breastfeeding on weight loss, but at any rate, it is still very small.

You may be wondering, *Doesn't breastfeeding burn calories? Didn't I hear something about how you use five hundred calories a day nursing?* This is true, but women who are nursing tend to eat more. Burning more calories is effective as a weight-loss strategy only if you do not make those calories up in what you eat. When I was nursing, I had a policy of eating an egg and cheese bagel sandwich at ten thirty every morning. This type of behavior pretty much guarantees you will replace the calories you burn.

The evidence of the effect of breastfeeding on postpartum depression is similarly noncompelling. Studies of this relationship show mixed results, and it's a hard question to evaluate since the causality goes both ways. Mothers suffering from postpartum depression are more likely to quit breastfeeding, which makes it look like breastfeeding relieves postpartum depression, when actually, the causality is the other way around.[28] And the claim of lowered risk of developing osteoporosis and improved

bone health is also not apparent in large datasets.[29] Evidence on diabetes is also mixed, and likely confounded with differences across women.

There is one benefit that does have a larger and more robust evidence base: the link between breastfeeding and cancers, in particular breast cancer. Across a wide variety of studies and locations, there seems to be a relationship here, and a sizable one—perhaps a 20 to 30 percent reduction in the risk of breast cancer. Breast cancer is a common cancer—almost 1 in 8 women will have a form of it at some point in their lives—so this reduction is big in absolute terms.

This data isn't perfect—for one thing, the controls for maternal socioeconomic status are almost always missing—but the case for causality is bolstered by a concrete set of mechanisms. Breastfeeding changes some aspects of the cells of the breast, which makes them less susceptible to carcinogens. In addition, breastfeeding lowers estrogen production, which in turn can lower the risk of breast cancer.

After all that focus on the benefits of breastfeeding for kids, it may be that the most important long-term impact is actually on *Mom's* health.

THE VERDICT

We can now return, at long last, to our table of significant benefits, and try to weed out those for which we did not find compelling evidence.

In some cases, things drop out of the table because there is simply no data on them—better friendships, for example. It's not that we have compelling evidence to reject this, it's just that no one has actually run any studies about it. In other cases—obesity, say—the facts show that people have studied this, and the best data doesn't support a link.

For the relationships that were dropped from the table, nothing in the data suggests they are really linked. Put differently, you might equally plausibly link breastfeeding to a wide variety of other outcomes—being a fast runner or good at playing the violin. This doesn't mean it can't be true, just that there is nothing in the data to suggest it is. You can take the relationship on faith, but you shouldn't take it as evidence.

Our list of benefits supported by evidence is now more limited,

Short-Term Baby Benefits	Long-Term Child Benefits: Health	Long-Term Child Benefits: Cognitive	Benefits for Mom	Benefits for World
▪ Fewer allergic rashes ▪ Fewer gastro-intestinal disorders ▪ Lower risk of NEC ▪ Fewer ear infections (maybe)			▪ Lower risk of breast cancer	▪ Lower methane production from cows

although not entirely empty. There do seem to be some short-term benefits for your baby, and maybe some longer-term benefits for you. And don't forget the methane! But relative to the initial list, this one is a lot shorter.

The pressure on moms to breastfeed can be immense. The rhetoric makes it seem like this is the most important thing you can—and need—to do to set your child up for success. Breastfeeding is magic! Milk is liquid gold!

This just isn't right. Yes, if you want to breastfeed, great! But while there are some short-term benefits for your baby, if you don't want to nurse, or if it doesn't work out, it's not a tragedy for your baby, or for you. It is almost certainly worse if you spend a year sitting around feeling bad about not nursing.

When I was writing this book, I looked back at the books my mother and grandmother used when they had children. My mother was a fan of *Dr. Spock's Baby and Child Care*, a book written in the 1940s and updated periodically; I have her version from the mid-1980s.

Dr. Spock addresses the issue of breastfeeding by suggesting that moms try it to see if they like it. He says something brief about possible protection from infection for babies, and then says, "The most convincing

evidence on the value of breastfeeding comes from mothers who have done it. They tell of the tremendous satisfaction they experience from knowing that they are providing their babies with something no one else can give them . . . from feeling their closeness."

At least for me, this resonated very strongly. I am happy I nursed my children because—aside from some of the early hot-closet incidents—I enjoyed it. It made for many nice moments with them, doing something we could only do together, watching them fall asleep. This is a great reason to do it, and a good reason to try. It's also a good reason to support women who want to try, and to not shame women who breastfeed in public. But this is not a good reason to judge yourself if you decide breastfeeding isn't for you.

The Bottom Line

- There are some health benefits to breastfeeding early on, although the evidence supporting them is more limited than is commonly stated.
- There are likely some long-term health benefits, related to breast cancer, for Mom.
- The data does not provide strong evidence for long-term health or cognitive benefits of breastfeeding for your child.