

Portrayal of HFCS

In analyzing opinions about the health effects of sweeteners, we recorded the type of sweetener that was discussed, the type of effect discussed, and the nature of the relationship posited by the source or reporter. Statements were coded as affirming a causal relationship if they stated that such a relationship exists without using any qualifiers or speculative language, e.g., “a new study shows that HFCS causes obesity.” Statements were coded as suspecting a causal relationship if they expressed a more speculative or qualified connection between cause and effect, e.g., “a new study suggests that HFCS may be linked to obesity;” “new evidence suggests consumers should avoid HFCS.”

Finally, statements were coded as rejecting a causal relationship when they clearly and without qualification denied a cause and effect relationship between a sweetener and a health condition, or denied that the evidence is sufficient to prove such a relationship, e.g., “a new study challenges the alleged link between HFCS and obesity.”

Table 3 summarizes the focus and nature of opinions about the health effects of HFCS consumption.

Table 3
Health Effects of HFCS Consumption

<i>Effect</i>	<i>Affirmed as Cause</i>		<i>Suspected as Cause</i>		<i>Rejected as Cause</i>		<i>Total</i>
Unspecified harms	37	30%	68	56%	16	13%	121
Obesity	17	38%	15	33%	13	29%	45
Diabetes	8	32%	14	56%	3	12%	25
Weight gain	8	33%	9	38%	7	29%	24
Cardiovascular problems	8	73%	2	18%	1	9%	11
Mercury contamination	3	38%	2	24%	3	38%	8
Addiction	2	29%	5	71%	0		7
Aggravates other diseases	2	50%	2	50%	0		4
GMO contamination	2	100%	0		0		2
Interfere with satiety	2	67%	1	33%	0		3
Tooth decay	1	100%	0		0		1
Hyperactivity	0		1	100%	0		1
All others	4	100%	0		0		4
<i>Total</i>	94	37%	119	46%	43	17%	256

The unspecified claims of harm dominate discussions of HFCS. This reflects the vague nature of many discussions of HFCS and sugars in general. Unspecified harms include phrases like “it’s bad for you,” and “HFCS is unhealthy.” These sorts of claims

may raise concerns among news consumers without providing any information about the nature of their actual risks.

More than half (56 percent) of these vague claims were presented in a speculative style. These were often statements that told consumers to “avoid HFCS to stay healthy” or to “drop HFCS from their diet” and similar broad prescriptions. In fact, there were more of these unspecified speculative claims about HFCS than there were about any specific harm. Reflecting the vagueness of these claims, a majority (56%) concerned suspected harms. Three in ten (30%) affirmed a causal relationship, while one in eight (13%) were rejected.

When discussions were more specific, the most common points of concern were HFCS’s effects on obesity (45 opinions), diabetes (25 opinions) and weight gain (24 opinions). Discussions of these claims were more evenly split. Combining concerns over obesity and weight gain yields a clearer picture of the overall phenomenon. HFCS’s effects on weight were affirmed in 36 percent of claims, while an additional 35 percent viewed the connection in more speculative terms. The remaining 29 percent of opinions rejected a connection between HFCS and weight gain.

Discussions of how HFCS might cause Type II diabetes were treated most frequently as a speculative connection (56 percent). This was driven in part by research results, as well as the acknowledged difficulties in pinning down a single cause. Almost a third of the opinions (32%) on the link between HFCS and diabetes saw a clear causal connection. The remaining 12 percent rejected any link.

The connection between HFCS and heart disease and other cardiovascular problems was addressed in 11 opinions. Nearly three fourths (73%) of these opinions saw a causal link between HFCS and cardiovascular issues. One in six opinions (17 percent) speculated on a link between HFCS and cardiovascular problems, and the remaining nine percent rejected a connection to cardiovascular problems.

Several sources that affirmed or suspected a linkage expressed concern that HFCS might lead to higher cholesterol and/or triglyceride levels and cause cardiovascular problems. Beyond these top five concerns attention fell off quickly, with no other claim breaking out of the single digits. Concerns about mercury contamination in HFCS drew eight opinions, while discussions of HFCS and addiction were the subject of seven opinions.

Portrayal of Sweetened Beverages

While there was a significant amount of discussion of HFCS, it was dwarfed by the attention given to sweetened beverages. Table 4 provides a breakdown of health concerns linked to sweetened beverages, which in some ways look very similar to the results for HFCS.

Table 4
Health Effects of Sweetened Beverage Consumption

<i>Effect</i>	<i>Affirmed as Cause</i>		<i>Suspect as Cause</i>		<i>Reject as Cause</i>		<i>Total</i>
Unspecified harms	46	21%	175	78%	3	1%	224
Obesity	40	21%	112	59%	37	20%	189
Weight Gain	24	17%	98	71%	16	12%	138
Diabetes	8	24%	25	76%	0		33
Cardiovascular problems	7	26%	20	74%	0		27
Interferes with satiety	5	63%	3	37%	0		8
Tooth decay	2	33%	4	67%	0		6
Addiction	3	100%	0		0		3
Hyperactivity	0		1	33%	2	67%	3
Metabolic syndrome	0		2	100%	0		2
Depression	0		2	100%	0		2
Cravings	0		1	100%	0		1
<i>Total</i>	135	21%	443	70%	58	9%	636

Once again unspecified claims of harm lead the way, accounting for more than one third of all debate (35%). More than three fourths (78%) of these opinions speculated on a linkage between sweetened beverages and some vague threat to health. As with discussions of HFCS, many of these comments were linked to advice to reduce or eliminate soda consumption. These comments were also prompted by policy debates over eliminating sweetened beverages from vending machines in schools and efforts in New York City to limit soda sales to 16 ounce containers.

Separately, obesity and weight gain ranked second and third in the discussion of harms. Combined, concerns over weight management accounted for 327 opinions and would take the lead role in the debate over sweetened beverages. (These two categories alone exceed the entire number of opinions about all alleged health effects of HFCS.) Interestingly, the connection between sweetened beverages and obesity was more speculative than the linkage between HFCS and obesity.

Three out of five opinions (59%) linking sweetened beverages to obesity were speculative, versus one out of three for HFCS. Seven out of ten opinions (71%) speculated on a linkage between sweetened beverages and weight gain. HFCS was a suspected cause of weight gain in 38 percent of opinions. The more speculative nature of opinions on sweetened beverages is most likely the result of the casual use of this term. Sweetened beverages became a catchall referent for all the purported evils of soda and other popular beverages.

Beyond these three concerns, debate fell off sharply. Diabetes (33 opinions) and cardiovascular problems (27 opinions) were the only other health effects to receive double digit coverage. Three quarters of opinions (76%) about sweetened beverage consumption and diabetes proposed a possible link, while the remaining 24 percent confirmed a linkage.

Opinions about the effects of sweetened beverages on cardiovascular health followed a pattern very similar to diabetes discussions. Almost three fourths (74%) raised a speculative link to cardiovascular health problems, while the remaining 26 percent affirmed a causal linkage. The remaining discussions of harm were few in number and largely speculative.

Portrayal of Fructose

Fructose was rarely discussed on its own, as the subject of only 68 opinions. Table 5 details the breakdown of these opinions.

Table 5
Health Effects Linked to Fructose Consumption

<i>Effect</i>	<i>Affirmed as cause</i>		<i>Suspected as cause</i>		<i>Rejected as cause</i>		<i>Total</i>
Cardiovascular problems	2	10%	14	74%	3	16%	19
Unspecified harms	4	24%	11	69%	1	7%	16
Interferes with satiety	0		11	100%	0		11
Weight gain	1	12%	7	88%	0		8
Obesity	0		8	100%	0		8
Diabetes	2	50%	2	50%	0		4
Aggravates existing disease	1	50%	1	50%	0		2
<i>Total</i>	10	15%	54	79%	4	6%	68

Unlike HFCS and sweetened beverages, the most frequently discussed effect of pure fructose consumption was its effect on the cardiovascular system (19 opinions). Three quarters of these opinions (74%) framed the link in speculative terms. Cardiovascular effects were followed by unspecified harms with 16 mentions. Over two thirds of these (69%) were suspected linkages to fructose consumption. Rounding out the top three health concerns linked to fructose were claims that it interfered with the body's hormone system indicating satiety. But the number of opinions is too low to be the basis of firm conclusions.

Portrayal of Unspecified Sugars

Media coverage of sugars other than HFCS was also notable for its vagueness. Rather than specifically addressing sucrose or even the vernacular of table sugar, we found discussion dominated by undifferentiated mentions of "sugar." Table 6 presents a breakdown of the health effects linked to unspecified sugar consumption.

Table 6
Health Effects of Unspecified Sugar Consumption

<i>Effect</i>	<i>Affirmed as cause</i>		<i>Suspected as cause</i>		<i>Rejected as cause</i>		<i>Total</i>
Unspecified harms	61	22%	206	75%	6	2%	273
Weight gain	16	32%	30	60%	4	8%	50
Obesity	10	36%	16	57%	2	7%	28
Diabetes	11	55%	7	35%	2	10%	20
Cardiovascular problems	8	47%	9	53%	0		17
Addiction	10	63%	6	37%	0		16
Cravings	7	50%	6	43%	1	7%	14
Hyperactivity	1	9%	8	73%	2	18%	11
Tooth decay	3	33%	6	67%	0		9
Interfere with satiety	4	50%	4	50%	0		8
Depression	0		4	100%	0		4
Aggravates other diseases	1	33%	2	67%	0		3
Metabolic syndrome	1	50%	1	50%	0		2
GMO contamination	1	100%	0		0		1
<i>Total</i>	134	29%	305	67%	17	4%	456

Debates over sugar were dominated by claims of unspecified harms – a whopping 273 opinions, once again larger than the number of opinions about all named and unnamed health effects of HFCS combined. Three out of five opinions (60%) about the effects of sugar consumption focused on these unspecified concerns. To compound the vagueness of these discussions, three quarters (75%) of the claims were framed in a speculative fashion.

Concerns over weight gain and obesity placed a distant second and third in discussions of sugar consumption with 50 and 28 mentions respectively. Three out of five opinions (60%) speculatively linked sugar consumption to weight gain and an additional 32 percent saw a clearly causal connection. Discussions of obesity were slightly more likely to make a definite causal connection (36%), but a majority of opinions were more speculative (57%).

Diabetes placed fourth among concerns linked to sugar consumption with 20 opinions. A majority of sources (55%) unequivocally linked sugar consumption to diabetes. An additional 35% suspected a connection between sugar consumption and diabetes. Concerns about sugar's effects on cardiovascular health rounded out the top five points of debate about sugar consumption. A majority of these opinions (53%) suspected there was a connection between sugar consumption and impaired cardiovascular health. All the

remaining opinions voiced a definitive link between sugar consumption and cardiovascular health.

The next two concerns about sugar consumption are related in their exploration of how sugar consumption may rise beyond our conscious control. Addiction to sugar was mentioned 16 times, and nearly two-thirds of these opinions (63%) portrayed sugar as definitely addictive. The remaining opinions (37%) suspected that sugar was addictive. Not a single opinion challenged the notion that sugar is addictive. The idea that sugar consumption could cause cravings was discussed 14 times. Half of these opinions (50%) held that sugar consumption caused food cravings. Suspected connections between sugar consumption and food cravings were expressed in 43 percent of opinions. Only seven percent questioned this connection.

The only other effect to receive more than ten mentions was concern that sugar might cause hyperactive behavior, particularly among children. Of the 11 opinions addressing a link to hyperactivity, three quarters (73%) expressed suspicion that sugar consumption is linked to hyperactivity. Eighteen percent of opinions rejected any connection between sugar and hyperactivity, while the remaining nine percent maintained a clear causal linkage.

Comparing Health Effects of Sweeteners

Our analysis of the various health effects of different sweeteners reflects the complexity of the media debate, but it may be so finely detailed as to make overall comparisons difficult. To provide a clearer view of the big picture, we turn now to an overview of the totality of opinions presented about the most frequently debated categories of sweeteners. Specifically, we compare the percentage of all opinions that affirmed, suspected, or rejected negative health effects attributed to HFCS, sweetened beverages, and otherwise unspecified sugars (presumably sucrose). The results of this comparison appear in Table 7.

Table 7
Distribution of Opinion on Health Effects

	<i>Affirm</i>	<i>Suspect</i>	<i>Reject</i>	<i>Total</i>	<i>N</i>
HFCS	37%	46%	17%	100%	256
Beverages	21%	70%	9%	100%	636
Sugar	29%	67%	4%	100%	456

For all three sweeteners, the largest number of opinions posited a suspected harm, the second largest number affirmed a causal connection, and the lowest number questioned or rejected the relationship between sweeteners and health effects. However, there are subtle but suggestive differences in the profiles of different sweeteners. HFCS attracted the largest proportion of opinions that affirmed a causal relationship with harmful health

effects (37%), but also the largest proportion that rejected such a relationship (17%). At the other end of the scale was sugar, with over seven times as many affirmations as rejections of harm (29% vs. 4%).

This suggests that there was a more active debate over the health outcomes of HFCS, with some stories presenting pro and con opinions. (Nonetheless, affirmations of unhealthy outcomes more than doubled expressions of doubt.) By contrast, general admonitions against consuming sugar have become so routine that they are rarely questioned in the media.

Notably, sweetened beverages occupy an intermediate position between HFCS and sugar, with the fewest affirmations of harm but a similar two-to-one split between affirmations and rejections, similar to what we found with HFCS. This may reflect the fact, noted above, that the principal sweetener in sweetened beverages is in fact HFCS. Thus, whether or not journalists are aware of it, the media debate over these beverages has largely been a referendum on HFCS by another name.

This pattern becomes even clearer when we examine only the effects of sweeteners on weight gain and obesity, which collectively make up the largest specified harmful outcome attributed to all three categories of sweetener. These results appear in Table 8.

Table 8
Distribution of Opinion on Weight/Obesity

	<i>Affirm</i>	<i>Suspect</i>	<i>Reject</i>	<i>Total</i>	<i>N</i>
HFCS	36%	35%	29%	100%	69
Beverages	20%	64%	16%	100%	327
Sugar	33%	59%	8%	100%	78

Once again, HFCS attracted the largest proportion of opinions claiming a causal relationship with excess weight – 36 percent, compared to 33 percent for sugar and 20 percent for sweetened beverages. And HFCS again attracted the largest proportion of opinions rejecting such a relationship – 29 percent compared to 16 percent of opinions about beverages and only eight percent of opinions about unspecified sugars.

In fact, opinion on HFCS was nearly a three-way even split among affirmation, suspicion, and rejection of the posited effects of weight gain and obesity, with the number of rejections slightly lower than the others. Once again, opinions on sugar were heavily weighted toward affirmations of negative health outcomes. And once again, sweetened beverages had the largest proportion of speculation that sweeteners are harmful, but a fairly even split between affirmations and rejections of a causal relationship (20% vs. 16% respectively). All this suggests an active media debate about the effects of HFCS on excess weight, while these are taken for granted with regard to sugar.

Comparing Properties of HFCS and Sucrose