San Jose Miscalculates Plastic Bag Litter Reduction in Storm Drain System

Error In Spread Sheet Formula Results in Misinformation Propagated Worldwide

By Anthony van Leeuwen
February 12, 2015

Ten months after the City of San Jose implemented their Plastic Bag Ban, Kerrie Romanov, Director of Environmental Services for the City of San Jose, issued a Memorandum dated November 20, 2012 to the San Jose City Council claiming success of the "Plastic Bag Ban" (San Jose ordinance #28877). Romanov claimed this success based upon a 59% reduction in plastic bag litter on city streets and neighborhoods, a 60% reduction in plastic bag litter in creeks, and an 89% reduction of plastic bag litter in storm drains.

These statistics, particularly the 89% storm drain plastic bag reduction, have been widely quoted by bag ban proponents as empirical evidence that bag bans are effective in reducing plastic carryout bag litter and that bag bans "work".

In the San Jose memo, Table 1, the 89% reduction in plastic bag litter in the storm drain system was calculated from a reduction in the Pre Ban average rate of 3.6 single-use plastic bags per inlet per year to the Post Ban average rate of 0.4 single-use bags per inlet per year.

The Pre Ban and Post Ban average rate of single-use plastic bags per inlet per year were calculated in a spreadsheet containing storm drain litter survey results, a copy of which was obtained through a public records request. The spreadsheet incorrectly calculated the Post Ban average rate of single-use plastic bags per inlet per year by referencing the wrong column (column L, which is gallons/day) instead of the correct column (column J, which is bags/day). In other words the Post Ban average rate of 0.4 is not single-use bags per inlet per year but 0.4 gallons per inlet per year resulting in the erroneous calculation of an 89% reduction in plastic bag litter in the storm drain. The correct value for the Post Ban average rate is 1.4 single-use bags per inlet per year. Therefore, the correct reduction of plastic bag litter in storm drains should be calculated from the reduction in the Pre Ban average of **3.6** to the Post Ban average of **1.4** for a **62%** reduction in plastic bag litter in storm drains.

The storm drain surveys measured litter by weight, volume, and count of items such as plastic bags. Because the survey period (time period from last cleanup to the survey) for Pre Ban and Post Ban storm drain assessments were dissimilar therefore the numbers of plastic bags found were divided by the number of days since the last cleanout to establish a rate of bags per inlet per day. These rates were averaged for all inlets Pre Ban and Post Ban and multiplied by 365 days to produce a yearly average number of plastic bags per inlet. This gives us Pre Ban average of 3.6 and a Post Ban average of 1.4.

The Pre Ban survey period averaged 323 days per storm drain inlet and the Post Ban survey period averaged 96 days. A total of 80 plastic bags were obtained from 25 storm drain catch basins over an

average survey period of 323 days and 9 plastic bags were obtain from same storm drains over an average period of 96 days. What this means is that the 9 plastic bags found Post Ban were found during a survey period much shorter than the Pre Ban survey period. If we correct the number of plastic bags found Post Ban to account for the shorter survey period the number of bags would be 30.28. Hence, a reduction from 80 to 30.28 which would give us a **62.1% reduction in plastic bag litter in storm drains**.

The question that should be asked, why did city officials not recognize the error? After all, an 89% reduction of plastic bag litter in storm drains inlets compared to a 59% reduction on city streets should have drawn the attention of city officials who should have investigated to come up with an explanation for the difference. Had they investigated they may very well have discovered the spreadsheet error before making the information public.

In an earlier article titled, "Rebuttal of the San Jose Bag Ban Results" our analysis of the storm drain plastic bag litter reduction, we did not account for the shorter Post Ban survey period and identified 23 instead of 25 storm drain catch basins that were surveyed before and after the bag ban and where the 80 plastic bags were found Pre Ban and 9 plastic bags were found Post Ban. However, we do stand by our conclusion that litter results for 25 storm drain inlets is a very small sample size for a city having more than 30,000 inlets/catch basins citywide. (Williams & van Leeuwen, 2013) But we acknowledge that some data is better than no data. The reduction in storm drain plastic bag litter of 62% compares very favorably with the 59% reduction on city streets and the 60% reduction in creeks.

On 27 January 2015, the author submitted an online contact form to San Jose Environmental Services with the following description of the spreadsheet error:

> *Kerrie Romanow in a memo to the To Transportation and Environmental Committee dated November 20, 2012 "Bring Your Own Bag Ordinance Implementation Results and Actions to Reduce EPS Foam Food Ware" (located at http://www3.sanjoseca.gov/clerk/CommitteeAgenda/TE/20121203/TE20121203_d5.pdf) reports that single-use plastic bags were reduced by 89% in storm drain system. The memo, in Table 1, for Storm Drain Catch Basin Litter Surveys shows that the Pre-Ordinance average rate of 3.6 single-use plastic bags/inlet/year and the Post-Ordinance average rate of 0.4 single-use bags/inlet/year. The reduction in plastic bags in storm drain system is then computed as an 89% reduction. This communication, informs you that the 89% reduction was incorrectly calculated and should be 62%. In the spreadsheet (San Jose Stormdrain Catch Basin Trash Characterization Summary Table.xlsx) incorrectly calculates the Post-Ordinance average rate of single-use plastic bags/inlet/year. The spreadsheet formula in cell D113 uses data from the wrong column (column: L which is gallons/day) instead of the correct column (column: J which is bags/day). Therefore the correct reduction should be calculated from 3.6 to 1.4 for a 62% reduction. It is requested that you check and verify the spreadsheet error. It is further requested that you notify me and provide me a corrected spreadsheet. Since the erroneous 89% reduction in storm drain plastic bag litter has been used by bag ban proponents all over California to show that bag bans work, it is requested that you set the record straight and publish the corrected data on your website.*

On 29 January 2015, an email was received from the City of San Jose Environmental Services Department with the following message: “We have received your email regarding the City's Plastic Bag ordinance. We are looking into your request, and will get back to you in the next 7 working days.”

On 12 February 2015, an email was received from the City of San Jose Environmental Services Department that forwarded a letter dated 12 February 2015 from the Santa Clara Valley Urban Runoff Pollution Prevention Program. The letter acknowledged the spreadsheet error and that the original estimate for the reduction of plastic bag litter in the storm drain system has been revised downward from 89% to 62%. The letter also indicated that the original 89% estimate is now considered a “preliminary” estimate that relies on limited data collected in 2012. (Olivieri, 2015) Unfortunately, the November 20, 2012 from Kerrie Romanov, cited above, did not indicate that this or any of the other plastic bag reduction numbers were “preliminary” information. In fact, this information was used as empirical evidence in multiple venues about the effectiveness of the city’s bag ban. The letter also stated that an additional study of the storm drain system to provide more specific data is planned for this year.

The February 12, 2015 letter from the Santa Clara Valley Urban Runoff Pollution Prevention Program acknowledged the spreadsheet error and that the original estimate for the reduction of plastic bag litter in the storm drain system has been revised downward from 89% to 62%.

The 12 February 2015 letter from the Santa Clara Valley Urban Runoff Pollution Prevention Program also contains the following statement:

> *It is our understanding that San Jose utilizes a combination of metrics to evaluate the overall effectiveness and trends of the plastic bag ordinance including such factors as performance of retailer compliance, consumer behavior change, and the amount of trash removed from local waterways.*

One reader even pointed out that the three factors cited in the above quote were troubling:

The first factor is “retailer compliance”. It should be noted that retailers comply because of financial penalties imposed by the plastic bag ordinance. So is “compliance” by retailers really a measure of the effectiveness of the plastic bag ordinance? Of course it is not.

The second factor is “consumer behavior change”. San Jose’s own survey data show that 42.5% of customers walk out of the store with no bag. Is that a sign of success or failure? It is a sign of failure, the failure to find a solution acceptable to all shoppers. But more importantly, here you have it in black and white; the goal of the ordinance was to change consumer behavior. In other words, this is an admission that the government is assuming the role of parent over its own citizens, or what some would call the Nanny State! It’s all about CONTROL and taking away our God given freedom and liberty to make our own choice in how we take our purchases home.

The third factor is “the amount of trash removed from local waterways”. In an article titled "San Jose’s Bag Ban Useless in Solving Litter Problems – Should be Rescinded" we show that the San Jose’s bag ban failed to reduce litter in Creeks and local waterways. In other words, this factor is also a complete failure. (van Leeuwen, 2015)

We give the City of San Jose and the Santa Clara Valley Urban Runoff Pollution Prevention Program credit for admitting the error. However, the city of San Jose knows very well that this erroneous data has been used far and wide in California and nationwide to promote bag bans and needs to do more to set the record straight.

A copy of the letter from the Santa Clara Valley Urban Runoff Pollution Prevention Program can be viewed on the following page or by clicking on the following link: **CSJ trash letter 2-12-15-1**

About The Author

Anthony van Leeuwen *is the founder of the* ***Fight the Plastic Bag Ban*** *website and writes extensively on the subject. He holds a bachelors and master's degree in Electronics Engineering and has over 40 years of experience working for the federal government.*

Bibliography

Olivieri, A. W. (2015, February 12). *Letter from Santa Clara Valley Urban Runoff Pollution Prevention Program.* Retrieved from Fight The Plastic Bag Ban: https://fightttheplasticbagban.files.wordpress.com/2015/02/csj-trash-letter-2-12-15-11.pdf

van Leeuwen, A. (2015, January 19). *San Jose’s Bag Ban Useless in Solving Litter Problems – Should be Rescinded.* Retrieved from Fight The Plastic Bag Ban: https://fightttheplasticbagban.files.wordpress.com/2015/01/san-jose-discovers-bag-ban-does-not-solve-litter-problems.pdf

Williams, D., & van Leeuwen, A. (2013, August 23). *Rebuttal of the San Jose Bag Ban Results.* Retrieved from Fight The Plastic Bag Ban: http://fightttheplasticbagban.files.wordpress.com/2013/10/san_jose_bag_ban_report_rebuttal.pdf

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February 12, 2015

To Whom It May Concern:

This letter is prepared in response to a City of San Jose staff request to clarify a recently identified concern related to the preliminary estimate of single use plastic bags observed in storm drain inlets in the City of San Jose prior to and after the City's bag ban ordinance went into effect. This preliminary information was provided to San Jose in October 2012 and relies on limited data collected as part of the Bay Area Stormwater Management Agencies Association (BASMAA) regional trash generation rate study that was conducted in compliance with the Municipal Regional Permit.

The original preliminary estimate of 89% effectiveness has been re-estimated because of a formulation problem indentified in a spreadsheet cell and is now estimated to be 62%. The correction has been made and an additional study of the storm drain system to provide more specific data is planned for this year.

As we have discussed with the City staff, it is important to utilize several metrics as part of a weight-of-evidence approach to evaluate trends and effectiveness of programs such as the bag ban ordinance. It is our understanding that San Jose utilizes a combination of metrics to evaluate the overall effectiveness and trends of the plastic bag ordinance including such factors as performance of retailer compliance, consumer behavior change, and the amount of trash removed from local waterways.

Please understand that the Santa Clara Valley Urban Runoff Pollution Prevention Program maintains the highest level of quality assurance review of data collected and made available to the public. We apologize for any confusion that has occurred due to the use of this preliminary estimate.

Sincerely,

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