

# Philadelphia Street Trash

March 13, 2017

## Street Trash = Illegal Dumping + Loose Litter + Trash Day Spillage

Philadelphia has a street trash problem that is often mislabeled as a litter problem. We all understand litter, newspaper, soda bottle or snack food wrapper that is tossed on the sidewalk. Unfortunately we tend to use litter for all "street trash", both gross illegal dumping and the discarded snack food wrapper.

"**Street trash**" is a better label for the street-sidewalk-vacant lot-park space debris, including: tires, TVs, mattresses, bulky items - furniture, residential trash bags as well as pedestrian - vehicular snack food wrappers.

We can use Philly311 service request data to help us understand the trends, types and locations of street trash.

### Philly 311 Trash Service Requests

Philly311 uses 50 service codes to log and track field service requests, 6 of these codes include trash related issues. This table shows the top 11 service codes that accounted for 141,314 of the 181,600 field service requests in 2016. Six are fully or partially trash related and 5 are non-trash related. Three of the six trash related are 100% trash related while the other 3 are partially trash related.

Philly311 Field Service Requests - 2016					
Trash Related Requests					
Service Code	Field Service Request	Number 2016	% All Field SRs	Est Trash Related	
				%	Number
SR-LI21	Maintenance Residential or Commercial	25,245	14%	20%	5,049
SR-ST03	Rubbish/Recyclable Material Collection	19,290	10%	100%	19,290
SR-ST02	Illegal Dumping	17,390	9%	100%	17,390
SR-PD01	Abandoned Vehicle	17,079	9%		-
SR-ST18	Salting	13,451	7%		-
SR-CL01	Graffiti Removal	12,449	7%		-
SR-ST01	Street Defect	10,232	5%		-
SR-ST04	Street Light Out	7,884	4%		-
SR-CL02	Vacant Lot Clean-Up	7,096	4%	50%	3,548
SR-LI27	Vacant House or Commercial	6,849	4%	20%	1,370
SR-ST19	Sanitation / Dumpster Violation	4,349	2%	100%	4,349
	Top 11 of 50 Field Service Requests	141,314			
	All Field Service Requests	186,100		27%	50,996

*Working paper on the extent, severity and trends of our street trash crisis and discussion on steps that the Mayor, City Council and City residents can take to stem the trash tide that is overwhelming our great City.*

I estimate that about 27% of all Philly311 field service requests are trash related.

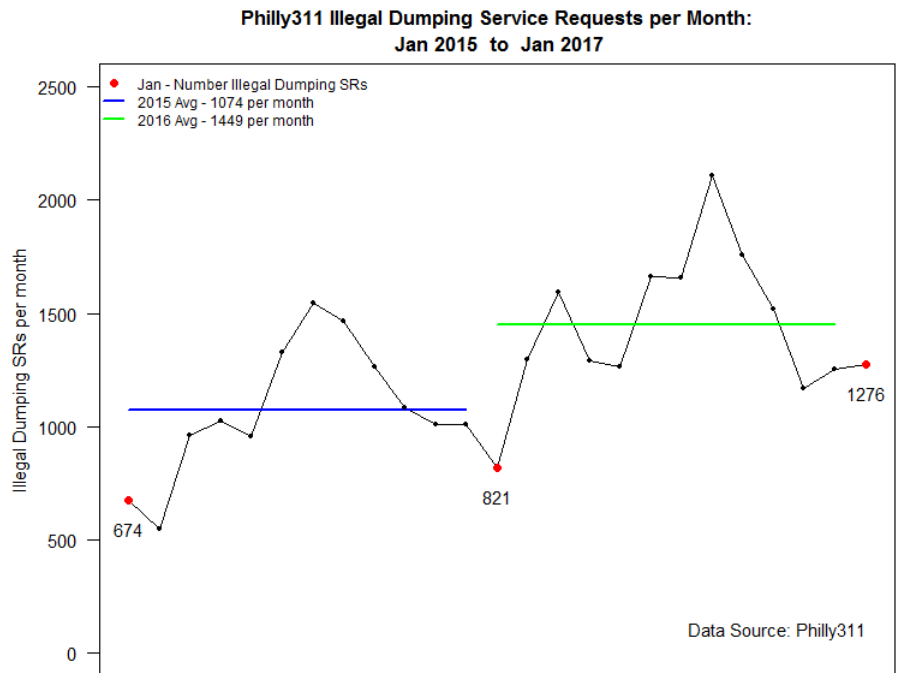
Philly311 does not include information on what trash related action was taken (trash removed, violation notice issued, transferred to another Department, other). Philly311 does not include information on the quantity or nature of the material removed (tires, mattresses, residential trash etc.) Philly311 does not track frequent – chronic trash hot spots.

City officials are aware of these Philly311 trash data shortcomings and are working on enhancements that will increase the City’s trash data analysis capabilities.

### Philly311 Trash Data Analysis

While not perfect, we can use the Philly311 data to get a handle on the nature of the street trash problem. Illegal dumping service requests provide useful data on the frequency and location of residents calls and/or on-line notifications.

The chart to the right shows the monthly illegal dumping service request from January, 2015 through January, 2017. There has been a marked increase in monthly illegal dumping requests, with 2016 levels nearly 35% greater than 2015 levels.

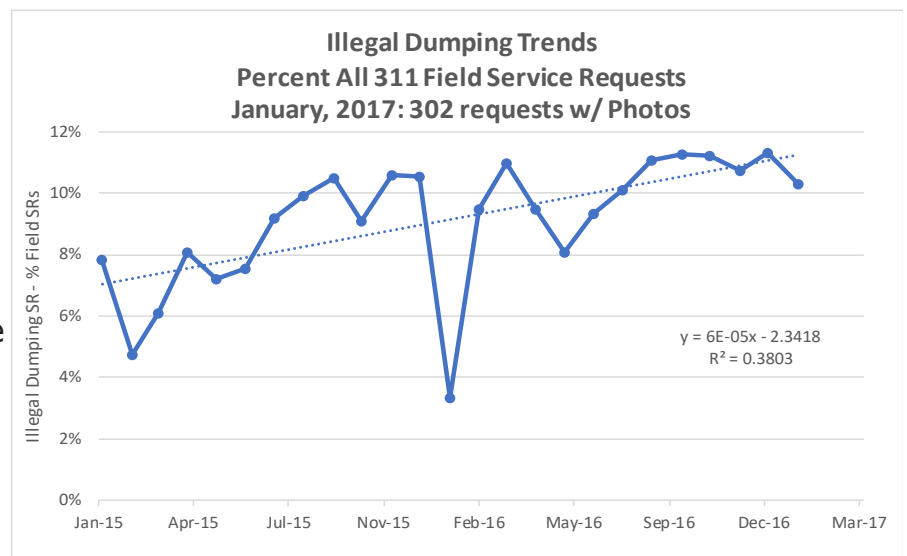


Kelly O'Day - <http://mtairy.me>

03/11/2017

The lower chart on the right shows the illegal dumping trend as a percent of all Philly311 field service requests. In 2015, 8% of all field service requests were for illegal dumping. In 2016, 10% of all field service requests were for illegal dumping.

Illegal dumping service requests are increasing both in total numbers and as a fraction of Philly311 field service requests.



## Philly311 Illegal Dumping Service Request Trash Types

Since Philly311 does not record the quantity or type of trash found in an illegal dumping service request, I downloaded all January, 2017 illegal dumping service requests (302) with photos and manually coded them by trash type.

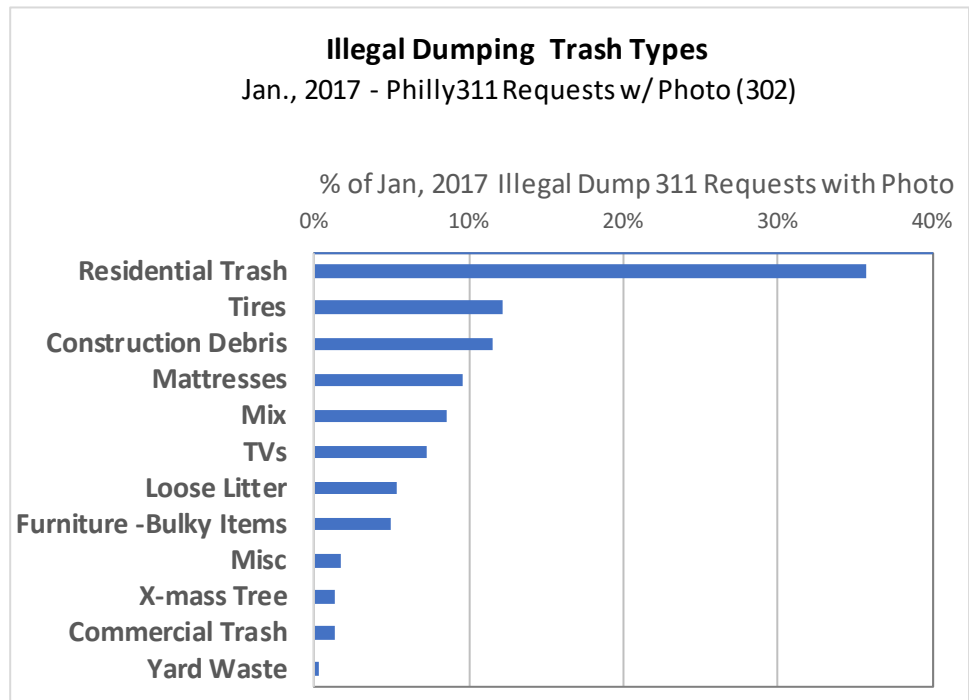
The chart on the right shows the percent of the 302 illegal dumping photos that contained the 12 types of trash used for the manual classification.

Residential trash, more accurately bagged trash, was visible in 36% of the January, 2017 photos. Tires, construction debris, Mattresses, Mix and TVs rounded out the top 6 trash types.

The 302 photos were also classified by location and event type. 66% of the illegal dumping occurred on sidewalks, followed by 15% near vacant buildings and 5% in the street.

The table to the right shows how the dump site were classified (single event, chronic site, etc.) 58% of the dump sites were judged to be single event sites, 27% of the sites had several dump events. Only 5% were judged to be chronic dump sites.

Overflowing Big Bellies and Loose Litter Accumulation represented 5% each of the photos.



**Jan, 2017 Illegal Dumping by Dump Type**

Dump Descrip	Count	Percent
Single Event	176	58%
Several Dump Events	82	27%
Loose Trash Accumulation	16	5%
Big Belly	14	5%
Chronic Dumping	14	5%
Total	302	100%

## **Hot Spot Analysis of Illegal Dumping Service Requests**

The Philly311 database includes the latitude and longitude as well as address and request type of each service request, making it relatively simple to map 311 service requests by type, date and location.

There were 17,384 illegal dumping service requests in 2016. The hot spot analysis map on the next page classifies the City illegal dumping into hot spots, cold spots and Not Significant areas based on the clustering of requests. The hot spots area have significant dumping clustering, the cold Spots areas have disperse dumping and the not significant areas have random dumping.

The hot spot analysis subdivides the City in 9,130 equal size grid cells, 17.8 acres each. 23.8% of these grid cells (2,182 out of 9,130) were rated as hot spot areas.

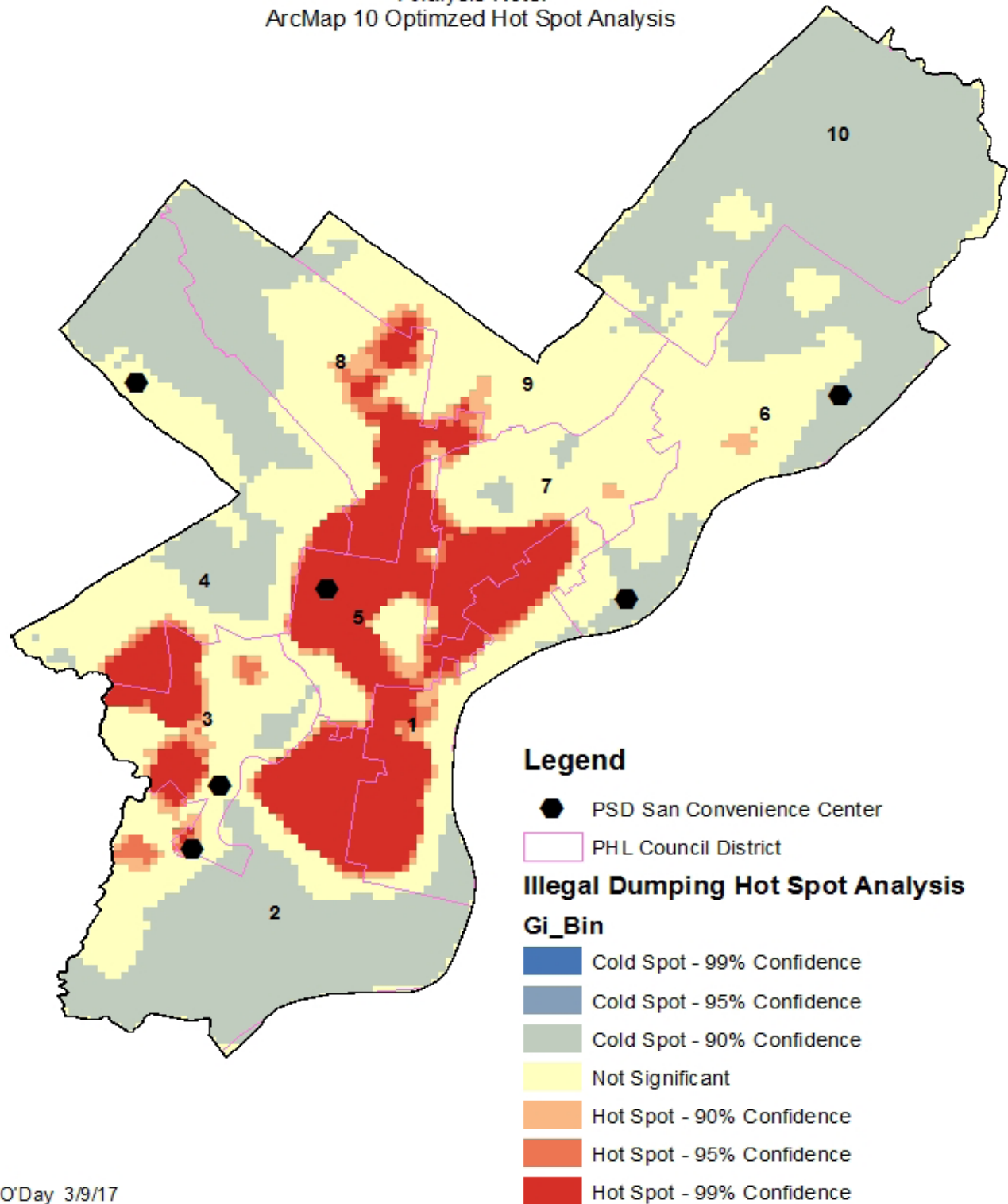
This illegal dumping hot spot analysis demonstrates that Philadelphia's street trash problem varies by area, indicating that solutions will also need to vary by area. We need to tailor our solutions to the problem areas rather than have a uniform solution across the City.

## **Sanitation Convenience Centers**

Philadelphia has 6 Sanitation Convenience Centers where residents can drop-off residential trash, TVs and other electronics, tires, mattresses and bulky items 6 days a week. The hot spot analysis map shows the 6 Centers as an overlay to the Illegal Dumping Hot Spot Analysis. This illegal dumping hot spot analysis demonstrates that Philadelphia's street trash problem varies by area, indicating that solutions will also need to vary by area. We need to tailor our solutions to the problem rather than have a uniform solution across the City.

# Illegal Dumping Hot Spot Analysis 2016 Philly311 Service Requests & 6 Sanitation Convenience Centers

Analysis Note:  
ArcMap 10 Optimized Hot Spot Analysis



K O'Day 3/9/17

## Conclusions

### **1. Philadelphia has a trash collection frequency problem in some neighborhoods that leads to residential trash dumping**

Philadelphia's weekly residential trash collection is not adequate in many of our densely populated neighborhoods. High density housing units do not have adequate trash storage for many families who do not have adequate outside space to properly and safely store trash until the next collection day.

### **2. Philadelphia does not have adequate street trash receptacles (Big Bellys, Wire Baskets) because of residential trash dumping concerns.**

City officials, businesses and others have recognized that trash receptacles can become a magnet for residential trash dumping and often eliminate the receptacles to prevent this dumping. The root cause of the receptacle dumping is inadequate trash collection services.

### **3. Philadelphia needs additional Sanitation Convenience Center Services**

Philadelphia's 6 Sanitation Convenience Centers provide an excellent service, unfortunately they are not necessarily convenient for those residents who most need these services. Key issues include:

- o Many residents do not know about the 6 Convenience Centers
- o Many residents are not able to drive to the Convenience Centers
- o Large, bulky items like TVs, tires, old furniture, mattresses require a pick-up truck

Only 1 of the 6 Convenience Centers is located within an Illegal Dumping Service Request Hot Spot area, the other 5 are in Cold Spot or Not significant areas.

Philadelphia should assess the optimal number and locations of Sanitary Convenience Centers to minimize illegal dumping. In the past several years, the Streets Department has experimented with Saturday yard waste and Christmas collections by placing trucks at major intersections to simplify residents leaf or Christmas tree drop off.

These efforts should be reviewed and careful optimizations studies should be conducted to optimize the use of trash - recyclables drop-off sites to minimize illegal dumping.

### **4. Trash Control is spread across multiple City Agencies with no single responsible agency or manager**

Streets, L&I, Parks & Recreation, CLIP, Philly311 and other agencies all have a role in Philadelphia street trash issue. The Mayor's Zero Waste and Litter Cabinet is a major step in improving the coordination and cooperation among agencies which will lead to improvements.

Each agency has their own data management systems to support their operational needs. It will be critical for the Cabinet to facilitate development of a City-wide trash

monitoring system that will provide integrated information on the street trash problem.

## **5. Enhanced Philly311 Would Improve City's Street Trash Management Capabilities**

Modest enhancements to the Philly311 system will make it even more effective as a Street Trash Management Reporting System.

- a. Philly311 develop an "umbrella code" to identify, track and report on all trash related field service requests.
- b. Philly311 obtain information on actual field trash service request actions, including either issuance of violation notice(s) or collection and removal of trash, including type and quantify.
- c. Philly311 obtain information on frequent, chronic trash dumping spots so that corrective action plans can be developed for each site and dumping activity can be monitored at these trash hot spot locations.
- d. Developing a consolidated Street Trash Monitoring Report to track trends, quantities and types of street trash on a monthly basis.