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STARTS WITH
ONE**

CITY OF PHILADELPHIA
ZERO WASTE AND LITTER CABINET

ONE PERSON. ONE COMMUNITY.
ONE BUSINESS. ONE CITY.



Zero Waste & Litter Cabinet

2019 Litter Index Report

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Introduction

Residents rated litter as the second most pressing problem facing our city in the Philadelphia Chief Administrative Office's 2017 Residents Survey. Litter is one of Philadelphia's most complex issues, and in order to solve a complex problem, you must first understand it.

Philadelphia's Zero Waste and Litter Cabinet released its Action Plan in August 2017 to put Philadelphia on a path toward becoming a Zero Waste, litter-free city by 2035. The plan laid out 31 recommendations for how to accomplish this, along with a slate of behavioral science opportunities and engagement strategies. Through this process, a City-wide Litter Index was identified as the one unifying dataset necessary for understanding the how, why, where, and what of litter in Philadelphia and identifying proactive and collaborative solutions to address this issue.

In 2007, the City conducted litter surveys on randomly selected streets within each police district. This survey used a rating system and metrics developed by Keep America Beautiful, assigning litter scores on a 1-4 scale, with 1 being the cleanest and 4 being the most littered. While this exercise yielded useful data, it was limited in the following ways:

- The surveys were performed only on street segments by sanitation staff on trash trucks.
- The limited staff could only perform limited surveys on randomized routes.
- The surveys were taken on paper forms and data had to be manually inputted into spreadsheets.
- This data was used only by the Streets Department.

The formation of Philadelphia's Zero Waste and Litter Cabinet in 2017 created a structure of collaboration and streamlined resources, allowing the City to develop and launch a new City-wide Litter Index survey incorporating the following improvements in 2017:

- Zero Waste and Litter Cabinet members the Community Life Improvement Program (CLIP), Philadelphia Water Department (PWD), Philadelphia Parks and Recreation (PPR), SEPTA, and the School District of Philadelphia joined the Streets Department in performing surveys, allowing the surveys to cover much more publicly-owned land in the city and greatly expanding the City's dataset on Philadelphia's litter conditions.
- Thirty-seven staff members were dedicated across these six departments to ensure that nearly every possible data point in each department's land inventory was covered, reducing the need for randomization.
- The City's Office of Innovation and Technology (OIT) assisted the Cabinet in developing a digital survey to streamline and increase the data collection capacity for this undertaking. Far more sophisticated data aggregation was also used to calculate neighborhood and block-level litter scores.
- Many City departments that sit on the Cabinet, including the six that conduct litter surveys, are using the Litter Index data in innovative ways and taking proactive steps to abate and prevent litter. This data is also accessible to community users through the Zero Waste and Litter Cabinet's digital platforms and is freely available for public download and use.

We are very proud to produce this overview and comparative analysis highlighting key points in the 2017-2018 data and discussing some of the ways City departments, community partners, and Philadelphia residents are using the City-wide Litter Index to clean up our city.

Litter Index Survey Process and Methodology

Litter Index Rating System



1 Little to no litter



2 Litter in the amount
that can be collected by
a single person



3 Litter in the amount that
would require collection
by a team



4 Litter in the amount that
would require collection
by a large team of
people and/or heavy
machinery

This 1-4 rating system was derived from the Keep America Beautiful Community Appearance Index.

One of the first steps the Zero Waste and Litter Cabinet took when drafting its Action Plan in 2017 was to research what made other cities successful in addressing litter. After speaking with professionals in New York, Los Angeles, and San Francisco, we discovered that litter indexing was a central part of each city's strategy to make more data-informed decisions when assessing litter control programs and litter conditions. In light of this insight, the Cabinet prioritized revamping the City-wide Litter Index. Using better technology and engaging more City departments, we now have the most comprehensive dataset ever collected on litter conditions in Philadelphia.

Philadelphia's Litter Index was redesigned in 2017 into a map-based survey of litter conditions across the city's streets, vacant lots, parks and recreation sites, public school sites, green stormwater infrastructure, riverways, transit stations, and other public rights-of-way. The index uses map-based GIS locations on cloud-based surveys developed by the Office of Innovation and Technology that City staff access and synchronize across mobile devices. The Litter Index rating system was derived from the Keep America Beautiful Community Appearance Index and allows surveyors to assign a 1-4 rating based on the litter conditions they observe.

The survey also allows surveyors to indicate that a site "Requires Immediate Attention," which automatically sends a service request to Philly311 with all pertinent information. This button is used for ratings of 4 and/or heavy illegal dumps where conditions appear unsafe for public health or impede the right-of-way.

Pilot and 2017 Litter Index

In spring of 2017, the Cabinet piloted the revamped Litter Index design in two Philadelphia neighborhoods—Brewerytown and Port Richmond. The Brewerytown pilot area's borders stretched from Broad Street to 33rd Street and Montgomery Avenue to Poplar Street, and the Port Richmond pilot area's borders stretched from Somerset Avenue to Castor Avenue and Kensington Avenue to the Delaware River. The pilot Litter Index surveying was conducted by all six participating City departments. Over the course of the pilot, the Cabinet's Data Subcommittee compiled

Department Litter Index Property Responsibilities

Each department taking part in the City-wide Litter Index survey is responsible for certain assets within the survey area. The following are the areas of responsibility for each department:

- **Streets: All property in the public right-of-way (sidewalks, streets curb to curb)**
- **CLIP: All vacant lots both public and private, within the property lines***
- **PPR: All PPR neighborhood parks and recreation centers within the property lines**
- **PWD: All PWD-maintained green stormwater infrastructure (GSI) assets and public shorelines**
- **School District of Philadelphia: All School District sites, within the property lines (This does not include private or parochial schools.)****
- **SEPTA: All trolley, elevated and subway train platforms, mezzanines and surrounding sidewalks, and regional rail stations**

*** SERVE Philadelphia also assisted with surveying vacant lots for the 2018 Litter Index survey.**

**** The School District participated in the 2017 Litter Index survey but not the 2018 survey due to staffing/funding issues.**

feedback from field staff, department data analysis staff, and IT staff to refine the survey and process for collecting information. This feedback led to development of a final survey that was expanded city-wide for the 2017 City-wide Litter Index survey.

After being trained on the surveying process, 37 staff from the six participating City departments and agencies surveyed the City assets and property their departments are responsible for from August to December of 2017. After the 2017 survey was complete, OIT aggregated the data before it was published publicly on CleanPHL.org and Open Data Philly in February of 2018. Now, residents can visit the website, type in an address, and view block and neighborhood-level Litter Index scores. They can also find information on the resources available to help them keep their neighborhoods clean and learn how to get involved, such as the area's average recycling diversion rate, the neighborhood's trash and recycling day, whether the block has a Block Captain, and the nearest Park Friends Group. 2017's litter indexing also provided additional insights on how the surveying process could be streamlined and improved.

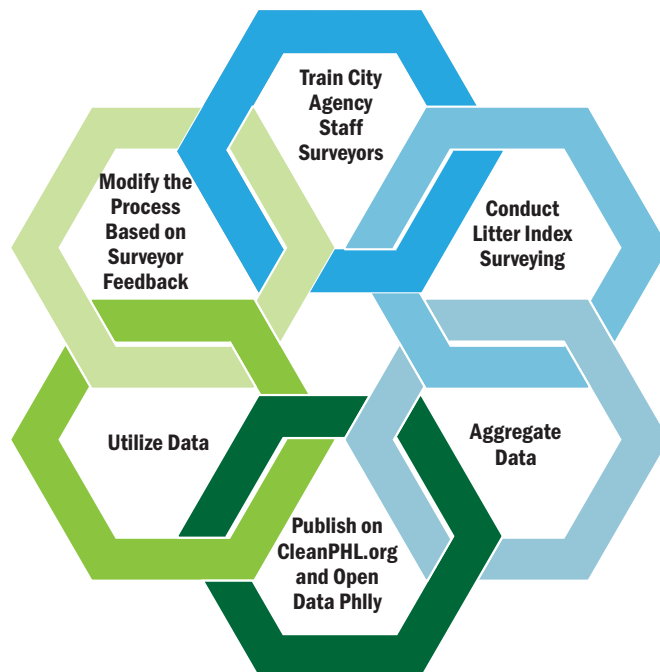
Based on this feedback, several changes were made to the Litter Index survey process, including:

- Surveyors would no longer record a "Litter Count," as it took the surveyor too much time to estimate, and this data was not a major factor once fully analyzed.
- Instead of estimating litter counts, surveyors would identify the types of litter present at each site. This information is helpful to the City departments deployed to clean up heavy dump sites and allows us to develop an overall understanding of commonly littered items and the locations where they are most commonly seen.
- The survey was modified to improve the location accuracy of each survey, which would save surveyors time, more easily track surveyors' progress, and reduce duplication of surveyed sites. Certain survey fields were also modified to streamline the surveying process. This improvement came from developing a new process that incorporated two cloud-based tools, Survey123 for ArcGIS and Collector for ArcGIS, to conduct surveys.

2018 Litter Index

The Cabinet held a staff training in July of 2018 where staff from all participating departments were trained on the new survey process and scoring system. A training manual and detailed information on each rating in the 1-4 system were provided to surveyors to standardize the way litter ratings were being assigned across all survey staff. The Zero Waste and Litter Cabinet worked with Philly311 to create a Litter Index training video, which was also used to train City staff surveyors on the Litter Index and rating system. Due to staffing issues, the School District of Philadelphia did not participate in the 2018 Litter Index, but the other five departments and agencies that had participated in the 2017 Litter Index surveying also participated in 2018.

Litter Index Process



AT&T 64% 67% 3:48 PM

Litter Survey 2018

Location *

39°57'N 75°10'W ± 21.401 m

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Litter Rating *

Litter Types

Address *

Photos *

Requires Immediate Action *

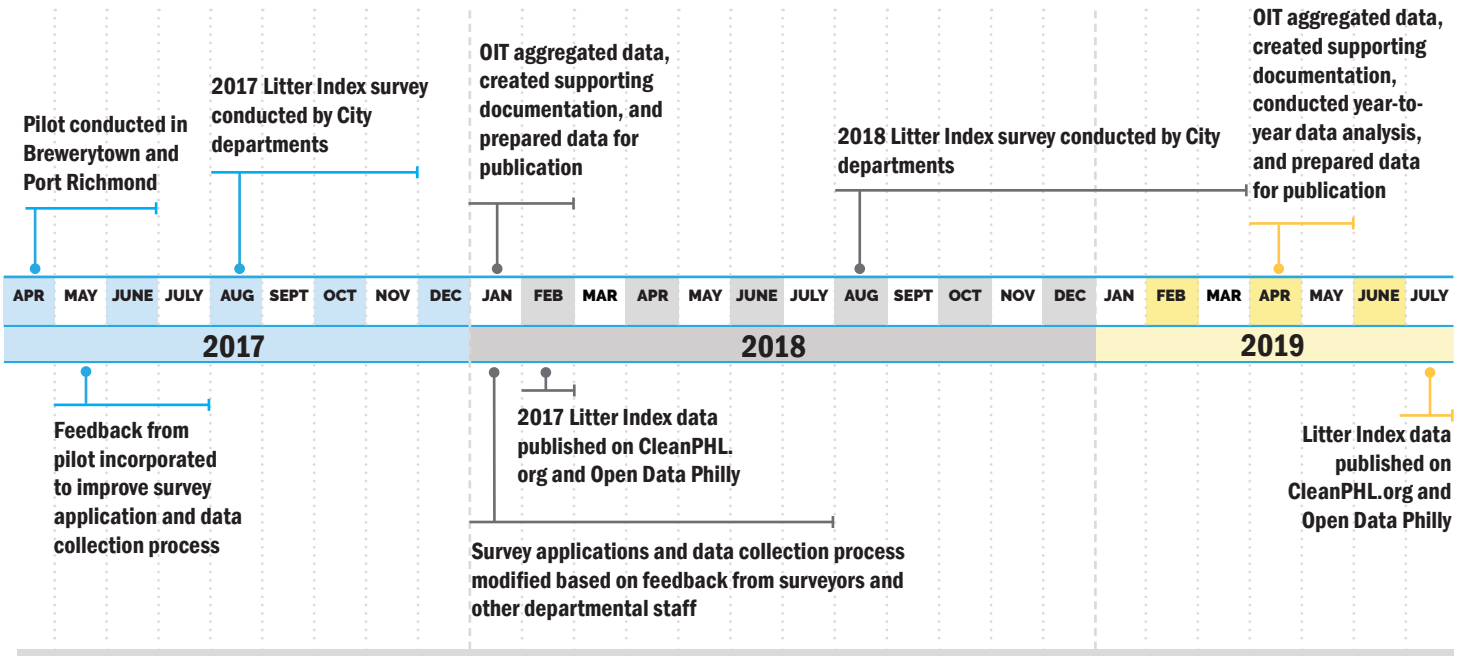
No

Fields with a red asterisk (*) are required before submitting a survey.

After being trained, field staff began surveying for the 2018 Litter Index in early August of 2018. The participating departments conducted surveys until December, 31, 2018, with the exception of CLIP, which conducted surveys on vacant lots until March 31, 2019. The data was aggregated and analyzed in April-June of 2019 before being published publicly.

The remaining sections of this report describe what the first two years of city-wide Litter Index data tell us about litter conditions in Philadelphia and highlight examples of how the data is being used.

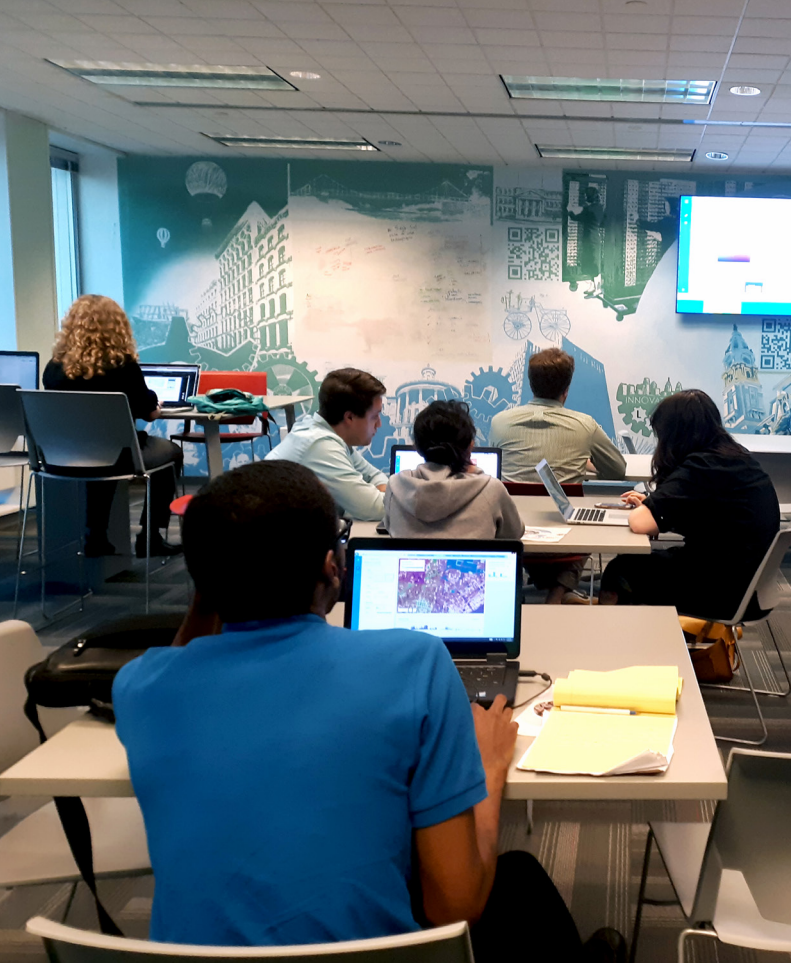
Timeline



Philadelphia Parks & Recreation's Detailed Litter Index Ratings Matrix

Feature	1	2	3	4
Overall	Little to no litter	Litter in the amount that can be collected by a single person	Litter in the amount that would need a team and/or vehicle to clean up and dispose of items	Litter in the amount that would require a large cleanup effort and/or heavy machinery (in addition to hauling vehicle) to remove debris
Density	No more than 1% of the area contains litter	No more than 5% of the area contains litter	No more than 25% of the area contains litter	25% or more of the area is affected
Human Capacity	Indexer could remedy issue on the spot	Would require one or two individuals to dedicate several minutes to an hour for cleanup	Cleanup of litter requires scheduling of people and resources	Cleanup of litter requires immediate scheduling of people and resources
Material Capacity	Amount for park would not fill an entire trash bag	Litter can be contained within one or two trash bags	Material cannot be hauled off-site without a vehicle	Requires vehicle and many items are too large to bag
Functionality	Litter doesn't impede use of space	Litter degrades quality of space without impeding use	Litter impedes walkways or use of space	Has rendered one or more areas inaccessible
Health & Safety	Poses no health or safety hazard	Poses no health or safety hazard	Potential threat to health and/or safety	Threatens health and/or safety

Philadelphia Parks & Recreation developed this detailed matrix for its surveyors to use when assigning litter scores, providing surveyors with additional scoring criteria and ensuring standardization of assigned scores.



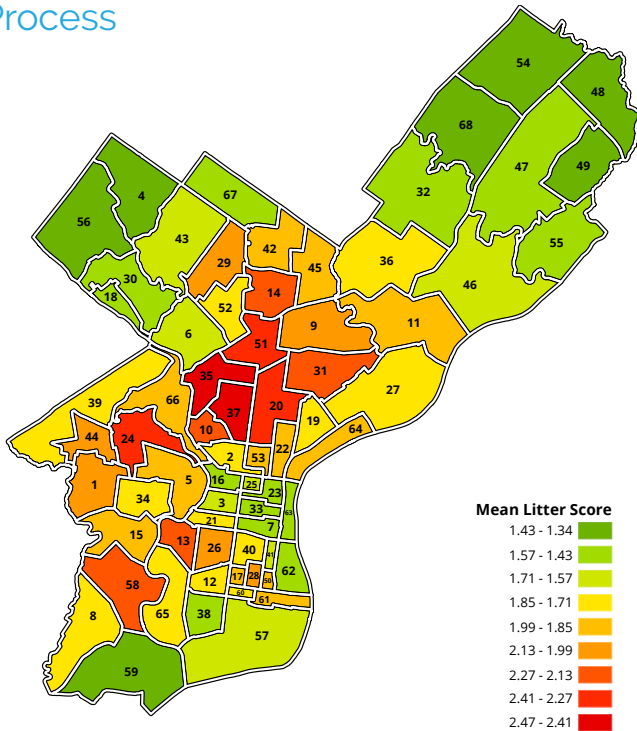
Applications of Litter Index Data

City government and external partners are employing the Litter Index data to learn more about litter conditions in Philadelphia and develop data-informed strategies for making our city cleaner.

The City-wide Litter Index data has been widely utilized by City departments and agencies to inform the development of data-driven strategies and policies for addressing litter in Philadelphia. External partners, including community groups and academic researchers, are also using the Litter Index data to conduct their own analyses. This section highlights how both City government and external partners are employing the Litter Index data to learn more about litter conditions in Philadelphia and develop data-informed strategies for making our city cleaner.

These case studies highlight the wide scope and scale of applications of the Litter Index dataset. From providing City departments with data to support strategic operational improvements, to supporting the efforts of community-based organizations, to helping Philadelphia residents better understand litter conditions in the city and how they can get involved to help improve them, the Litter Index dataset has proven to be a powerful and well-utilized tool for understanding litter conditions and how they change over time, thus helping to progress toward a cleaner Philadelphia.

2017 Neighborhood Cluster Map For Neighborhood Litter Control Plan Process



Neighborhoods with Highest 2017 Litter Index Scores (Most Littered Areas)

- North Central Philadelphia/Strawberry Mansion**
- Temple Area**
- Parkside**
- Nicetown/Hunting Park**
- West Kensington/Fairhill**
- Southwest Philadelphia**
- Kensington/Harrowgate**
- Grays Ferry**
- Brewerytown/Sharswood**
- Logan**

Neighborhoods with Highest 2018 Litter Index Scores (Most Littered Areas)

- West Kensington/Fairhill**
- Temple Area**
- North Central Philadelphia/Strawberry Mansion**
- Southwest Philadelphia**
- Nicetown/Hunting Park**
- Cobbs Creek**
- South Germantown**
- Kingsessing**
- Kensington/Harrowgate**
- Parkside**

Zero Waste & Litter Cabinet

Neighborhood Litter Control Plans

In partnership with the Streets Department, other City agencies, and community partners, the Cabinet is developing neighborhood-specific plans for controlling litter (Neighborhood Litter Control Plans). Each plan identifies interventions for addressing litter and illegal dumping in individual Philadelphia neighborhoods and establishes a process for continued coordination and monitoring over time. Areas of the city with the highest Litter Index scores and most problematic litter conditions are being prioritized in this process, which includes engaging residents and community-based organizations working in specific neighborhoods through community meetings, using their feedback to develop the plans, implementing services, and continued data collection, monitoring, and follow-up. This process is underway in three neighborhoods: Southwest Philadelphia, Kensington, and North Philadelphia/Strawberry Mansion.

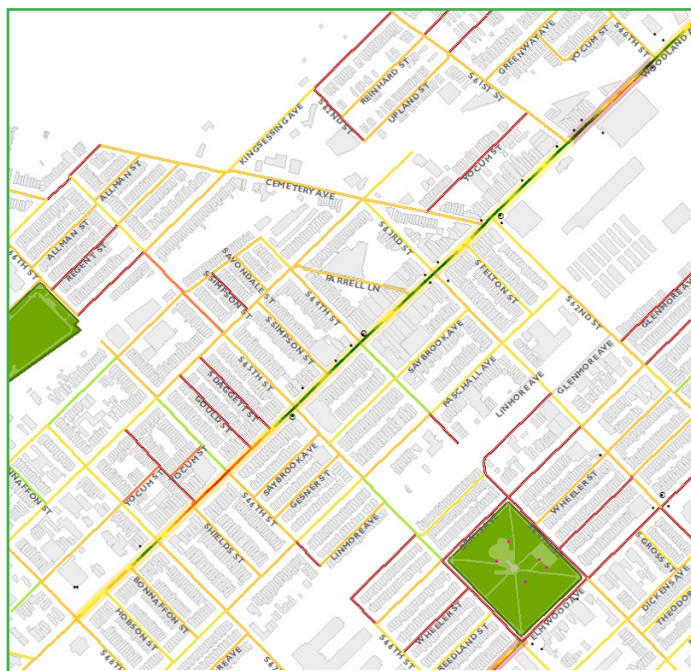


districts sign agreements with the City to place and maintain wire mesh litter cans in designated locations along Philadelphia commercial corridors. The City works with each group to identify where the cans should be placed to most effectively reduce litter and illegal dumping, coordinates with other City agencies, assists the organizations with branding, and helps to manage the implementation process. The Community Sponsor Organization is responsible for any future maintenance or operations of the Community Cans. Through this consultation process, the City has identified a set of best practices based on corridor-specific analyses of Litter Index data and current trash can coverage: trash cans should be placed at every major intersection and otherwise at every other intersection, they should be placed no more than 100 feet apart in high foot traffic areas and no more than an average of 200 feet apart overall, there should be balanced distribution of cans on both sides of the street, and public recycling cans should also be made available where possible.

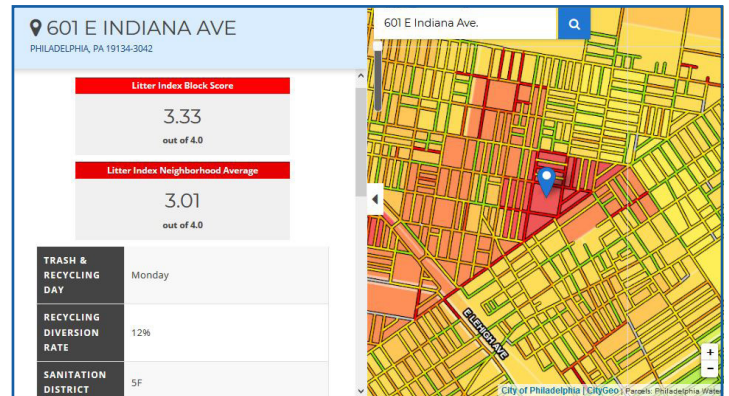
Community Cans Program

Waste receptacles are an important component of litter management. However, long-standing institutional knowledge and prior peer-reviewed studies have yielded conflicting and inconclusive opinions about best practices. To develop an objectively informed strategy for optimizing waste receptacle placement around the city, the Cabinet partnered with GovLabPHL and academic partners to conduct behavioral studies around trash can placement in parks and commercial corridors (see page 19). Additionally, staff from various City departments mapped public and private trash and recycling receptacles within city parks and along major streets and commercial corridors to compare against the 2017 Litter Index data, analyzing the connections between trash can density, placement, maintenance, and litter. These analyses concluded that the availability of trash cans that are regularly emptied and kept in good condition reduces litter. The City then looked to identify ways to strategically increase trash can coverage in Philadelphia's public right-of-way with the goal of reducing litter and illegal dumping.

This led to the development of the Community Cans Program, a public-private partnership between the City of Philadelphia and community organizations to support clean business districts and commercial areas in Philadelphia neighborhoods. Through this program, participating community organizations, community development corporations, and business improvement



Southwest CDC is one of the community groups that the City has consulted with for the Community Cans Program. During these consultations, Litter Index data is overlaid with the locations of trash cans along neighborhood commercial corridors to determine the best placements for Community Cans. This map shows waste receptacle locations and 2017 Litter Index scores for Woodland Avenue from 60th to 68th Street. Analysis of these datasets together helps determine optimal placements for Community Cans.



When a CleanPHL.org visitor uses the Litter Index map search function to search for a specific address, the block and neighborhood-level Litter Index scores appear, along with a navigable Litter Index map and a sidebar with engagement opportunities for keeping that specific block clean.

As part of the improvements made to the Litter Index process in 2018, the Zero Waste and Litter Cabinet worked with Philly311 to create a Litter Index training video, which was used to train City staff surveyors on the litter rating system. It was also shared publicly to educate Philadelphians about the Litter Index. Parodying the style of a 1970s training film, it aims to educate the viewer about the Litter Index and how it works in a fun and engaging way. The video was viewed over 12,000 times across Facebook, Twitter, and YouTube and was also featured by local news outlet WHYY PlanPhilly. The video continues to serve as an engaging tool for educating Philadelphians on what the Litter Index is, how it works, and why it is important.



Screenshot from the "Litter Index Explained" training video

Public Communications & Outreach

The City launched CleanPHL.org in the summer of 2017 as a comprehensive resource site for residents to learn about trash and litter in the city. One of CleanPHL.org's main features is the Litter Index map, where users can search for an address to look up Litter Index scores for their block and neighborhood and find engagement opportunities to help keep their communities clean, including whether that block has a Block Captain, the block's trash and recycling day, the nearest Park Friends Group, and the area's recycling diversion rate. It is an overarching goal of the Zero Waste and Litter Cabinet for the Litter Index to facilitate bringing each individual neighborhood to the cleanest litter rating possible. Since the 2017 Litter Index data was published in early 2018, website visitors searched the Litter Index map more than 20,000 times. After learning that their blocks did not yet have Block Captains on CleanPHL.org, new Block Captains joined the program. Visitors to the website can now toggle between their 2017 and 2018 Litter Index scores to explore how their block and neighborhood scored each year. In future years, users will be able to look back over several years of surveys to see how their block and neighborhood scores have changed over time.

Philly311 provides information on Litter Index scores over the phone to residents who are unable to access their scores online at CleanPHL.org.



Philadelphia Streets Department

Identifying Sites for Installing Cameras for Illegal Dumping Enforcement

Working to expand enforcement efforts to combat illegal dumping, the Streets Department is installing surveillance cameras at targeted locations throughout Philadelphia. Litter Index data in conjunction with existing departmental data on known sites of consistent illegal dumping activity were used to prioritize where cameras will be installed. A total of 100 new surveillance cameras are planned to be installed by the end of 2019, after which the cameras will be monitored by enforcement staff in real-time. The Streets Department has partnered with the Philadelphia Police Department to catch illegal dumping violators in the act, with real-time photos that can be used in court for prosecution. Through the efforts of the Zero Waste and Litter Cabinet, the City has implemented new legislation, stricter fines, and new enforcement procedures that are making great strides to increase enforcement against violators that illegally dump materials. These efforts are expected to significantly increase the volume of arrests and successful prosecutions for illegal dumping crimes and improve the cleanliness of our city.

Identifying Neighborhoods for Street Cleaning Pilot

In April 2019, the City launched a pilot street cleaning program, which will run through November of this year. The six neighborhoods where the pilot is taking place were chosen by identifying highly littered areas indicated by the Litter Index data: West Philadelphia, Southwest Philly, Kensington, Strawberry Mansion,



Mayor Kenney speaks about increased illegal dumping enforcement efforts at a January 2018 press event announcing the installation of 100 illegal dumping surveillance cameras throughout Philadelphia.



PhilaCan Program Pilot in North Philly/Temple

and Logan. Streets Department workers use backpack blowers and hand brooms to clean each route, followed by mechanical brooms. The Kenney Administration has proposed a \$2.3 million annual investment in street cleaning to reduce litter on Philadelphia's streets and sidewalks, and the Streets Department will be conducting additional Litter Index surveys within the targeted areas to test the pilot's efficacy.



Streets Department staff performing street cleaning at 2500 N. 24th Street for the City's street sweeping pilot

PhilaCan Program Pilot

While the Streets Department provides weekly trash and recycling collection to residents, some Philadelphians grapple with finding space to store their trash between collection days. Inadequate trash storage is one of the major contributors to litter in our city. To address the need for additional trash storage, the Streets Department developed and is piloting the PhilaCan Program, which provides 64-gallon lidded trash bins to be stored in front of homes between collection days on blocks where at least 75% of residents opt into the program. The PhilaCan pilot aims to provide additional trash storage in one neighborhood where this is an issue—North Philly/Temple—to assess the effectiveness of this approach. The Streets Department utilized the Litter Index data to select the neighborhood for the pilot and is conducting localized Litter Index surveys to track whether the program is effective at improving litter conditions.



Analysis of Litter Index data for the neighborhoods where CLIP is providing direct services through the Philadelphia Resilience Project revealed that some areas with high levels of criminal activity and litter in that project's area had low levels of submitted service requests. The number of property owners contacting CLIP to bring their properties into compliance after receiving a notice of violation has also increased.

Community Life Improvement Program (CLIP) and Philly311

Proactively Identifying Areas with Underreported Cleanup Needs

CLIP has been comparing service requests that were submitted to the City by residents via Philly311 against Litter Index data to identify areas of the city that have problematic litter and illegal dumping conditions but where residents are not necessarily reporting those conditions to the City. Analysis of these datasets together revealed that the City received very few calls for services from certain areas with problematic litter scores. Inspections of the neighborhoods receiving direct services from CLIP through the Philadelphia Resilience Project also revealed that some areas with high levels of criminal activity and litter in that project's area had never submitted service requests. The Philadelphia Resilience Project is a joint emergency response from 35 City departments to the opioid crisis in the Kensington neighborhood and surrounding areas, and one of the project's seven key mission areas is reducing trash and litter.

Since CLIP began proactively entering these areas, requests for cleanup services in these areas have increased. CLIP has also experienced an increase in the number of property owners contacting their office attempting to bring their properties into compliance after receiving a notice of violation during an inspection. CLIP continues to monitor areas with the worst Litter Index scores to ensure that they are proactively providing services in those areas and is confident that their increased presence will encourage residents to reach out for the services they need.



Working with Community Groups to Reduce Street Litter Entering Inlets and Waterways

PWD is working with community groups to identify innovative solutions to help prevent trash at its source. Litter Index data was used to select two pilot neighborhoods to receive EPA Trash Free Waters grant funding to participate in the City's new Community Cans Program (see page 10). This grant funding is allowing for the purchase of trash cans to be placed along commercial corridors in the two selected neighborhoods, Juniata and Southwest Philadelphia. Community Cans aims to use local artwork to elevate trash cans from simple street furniture to a community engagement tool that inspires a sense of placemaking and community stewardship.



Philadelphia Water Department (PWD)

Guiding Site Selection for Water Department and Partner Cleanups

PWD works with partners to host and help organize volunteer cleanups near Philadelphia waterways, including suggesting locations in need of cleaning. This cleanup and public education effort promotes clean waterways by connecting Philadelphia residents to their impact on local waterways, as the Delaware and Schuylkill Rivers are Philadelphia's drinking water sources. Litter Index data has helped guide site selection for these cleanups to encourage transformation of areas in need that may not be well known.

Evaluating PWD Maintenance and Watershed Protection Programs to Determine Potential Waterway Dumping Spots

PWD is analyzing Litter Index data along with its own operational data to determine if additional waterway dumping hotspots should be added to its maintenance schedules and watershed protection programs. This data also helps PWD target certain areas for focused education and outreach around litter and water pollution.





Waste corral installed by Philadelphia Parks & Recreation

Philadelphia Parks & Recreation (PPR)

Identifying Priority Sites for Installing Updated Illegal Dumping Signage

PPR is looking at Litter Index data together with reports from site staff to identify the most dumped-on recreation centers and parks in its network. The sites identified through this analysis as highest need are being prioritized for receiving updated illegal dumping signage, which reflects increased fines for illegal dumping. At the time of this report's publication, 63 PPR sites received updated signage, and 75 signs were updated.

Identifying Priority Sites for Waste Corrals and Measuring Their Efficacy

To discourage illegal dumping at recreation centers and playgrounds, PPR is installing waste corrals, using Litter Index data along with staff observation and reporting of illegal dumping activity for site selection. The waste

corrals provide a designated, locked place for facilities to put their trash so that household waste is not added to facility-generated waste curbside. The department has installed waste corrals at 14 parks and recreation sites, with plans to add 15 additional corrals at sites throughout the city and to use Litter Index scores to test their efficacy.

Evaluating Recycling Collections

PPR is evaluating recycling collections at parks and recreation sites across the city. Litter Index data may be used to assess how specific operational details around recycling collections at different sites impact litter conditions.



The Litter Index dataset provides a clear, specific, and objective benchmark on litter conditions across Philadelphia.

Commerce Department

Evaluating the Commercial Corridor Cleaning Program

The Philadelphia Commerce Department is using the Litter Index data to evaluate its Commercial Corridor Cleaning Program, through which the City provides funding to approximately 18 community groups—mainly community development corporations—to perform regular, scheduled litter cleanup along neighborhood commercial corridors. The Litter Index is the performance metric the Commerce Department uses to evaluate whether areas that participate in the program are cleaner than comparable areas that are not cleaned, and whether the specific blocks that are cleaned are cleaner than neighboring blocks in the same neighborhoods.

In its current corridor cleaning RFP, the Commerce Department asked groups to plan for a program that provides enough regular cleaning to get their corridors to a Litter Index score between 1 and 2 during all regular business hours. This standardization of program goals

gives all participating groups the same target and asks them to determine the frequency of cleaning based on how littered their specific areas are, which varies based upon how busy an area may be, with major transit hubs requiring much more frequent cleaning than other areas.

Moving forward, the Commerce Department plans to use the Litter Index data to evaluate the performance of groups participating in the Commercial Corridor Cleaning Program. The Litter Index dataset has been valuable for the program because it provides a clear, specific, and objective benchmark for litter conditions. In the past, Commerce required groups to conduct their own litter indexing, which was completed inconsistently and proved to be prohibitively time consuming to the groups, distracting from the core activity of managing the cleaning. An annual Litter Index survey conducted internally by City departments makes evaluation easier for the Commerce Department and reduces strain on participating community organizations.

SEPTA

Monitoring Transit Station Litter Conditions and Identifying Areas for 2019 Cleaning Improvements

SEPTA is using the Litter Index data to monitor litter conditions in transit stations and their surroundings. These adjacent areas, while not managed by SEPTA, impact the overall transit customer experience. The Litter Index data has also helped SEPTA identify and track areas to focus on for 2019 cleaning improvements. Moving forward, SEPTA plans to collaborate with the Zero Waste and Litter Cabinet to determine how to address litter in the areas surrounding transit stations, which are often also littered.



SEPTA uses Litter Index data to identify and track areas to focus on for cleaning improvements.

SEPTA surveys litter conditions across all of its trolley, subway/elevated, and Regional Rail train station platforms, mezzanines, and surrounding sidewalks and parking lots. Pictured here is the Market-Frankford Line's Allegheny Station.

GovLabPHL's Philadelphia Behavioral Science Initiative

Supporting Behavioral Science Experiments Aimed at Increasing Recycling and Reducing Litter

Since February 2017, the Philadelphia Mayor's Office has led GovLabPHL, a multi-agency team centered on embedding evidence-based and data-driven practices into City programs and services through cross-sector collaboration. GovLabPHL has three streams of work: creating learning opportunities for City employees, piloting innovative programs and prototypes, and ensuring the public has access to learn about new initiatives and best practices. GovLabPHL also manages the Philadelphia Behavioral Science Initiative, which ensures City programs and services are effective and efficient by using evaluations based on the latest behavioral science research. To date, GovLabPHL has completed six research pilots and has 10 pilot studies currently in progress.

In 2017–2018, GovLabPHL worked with the Zero Waste and Litter Cabinet in coordination with several other City departments to design two studies focused on increasing recycling and reducing litter. The first experiment tested whether distributing lidded recycling bins had an effect on the amount of material recycled and neighborhood litter conditions. Lidded recycling bins were distributed along four recycling routes in two neighborhoods, and the weight of recycling collected was measured on a weekly basis on each route included in the experiment, as well as on the routes that did not receive recycling bins. Weekly Litter Index surveys were conducted on affected routes to determine whether the amount of litter present changed as a result of distributing recycling bins. Overall, distributing recycling bins resulted in an increase in the amount of recycling collected by over half a ton each week in one neighborhood.

The second experiment tested the effect of public waste receptacle availability on litter conditions and staff time spent cleaning litter. For this study, the number of public trash baskets available in certain parks and commercial corridors was changed, either by increasing or decreasing the number of baskets available by 75%. Litter Index surveys were conducted on a weekly basis to determine if the amount of litter changed as a result of changing the number of waste receptacles. The experiment found that an increase in available public waste receptacles led to a 30 minute decrease in time spent picking up litter by sanitation staff. The Litter Index dataset was integral to these experiments and supported experimental data collection goals.



External Applications of Litter Index Data

Helping Philly Organizations and Residents Use Litter Index Data

One of the City's goals is to have the public use the Litter Index data and the CleanPHL platform to conduct their own surveys and analyses. In July 2018, the Cabinet held a Litter Index Community Training in partnership with the Office of Open Data and Digital Transformation (ODDT) to give representatives from community organizations, data and technology professionals, and residents a basic understanding of the Litter Index, an overview of tools to understand and visualize City data, and guidance on how to conduct litter surveys in their communities. The Cabinet's hope is that groups and individuals utilize the data to conduct neighborhood-specific analyses, learn about how litter conditions are connected to other issues in Philadelphia neighborhoods, and advocate for funding for neighborhood cleaning and beautification projects.



Empowering Community Groups to Conduct Their Own Localized, More Frequent Litter Indexing

In an effort to promote uniform data collection on litter conditions throughout Philadelphia, the City has offered a standardized template of the Litter Index survey form to community groups, which they can use to track localized litter conditions and the impacts of their own cleaning efforts. N10, a community organization serving Philadelphia's Hunting Park and East Tioga neighborhoods, has utilized the City's template for conducting its own litter indexing. North

Broad Renaissance, a nonprofit that serves as a Special Services District for the North Broad Street corridor from City Hall to Germantown Avenue, also regularly surveys litter conditions along the North Broad corridor to measure and track conditions and characterize what litter is present.

Date Surveyed: _____ Surveyor Name: _____

Site Type	Block or Address	Litter Rating	Types of Litter Present													Needs Immediate Attention?			
			Cans or car parts	Clothing, towels, other fabric	Construction debris	Disposable cups, lids, or straws	Drink bottles or cans	Food waste	Furniture or mattress	Oversized	Paper or cardboard	Pet waste bags	Plastic bags	Stems, legs or woodpeckers	Syringes		Telexnet containers, disposable plates, bowls	Tires or inner tubes	Trash bags
Lot	4635 Market St	2				X							X	X					No

Clothing and other fabric includes shoes, hats, backpacks
Construction debris includes wood, piping, insulation, bricks/blocks, carpeting, scrap metal
Oversized = larger than a basketball

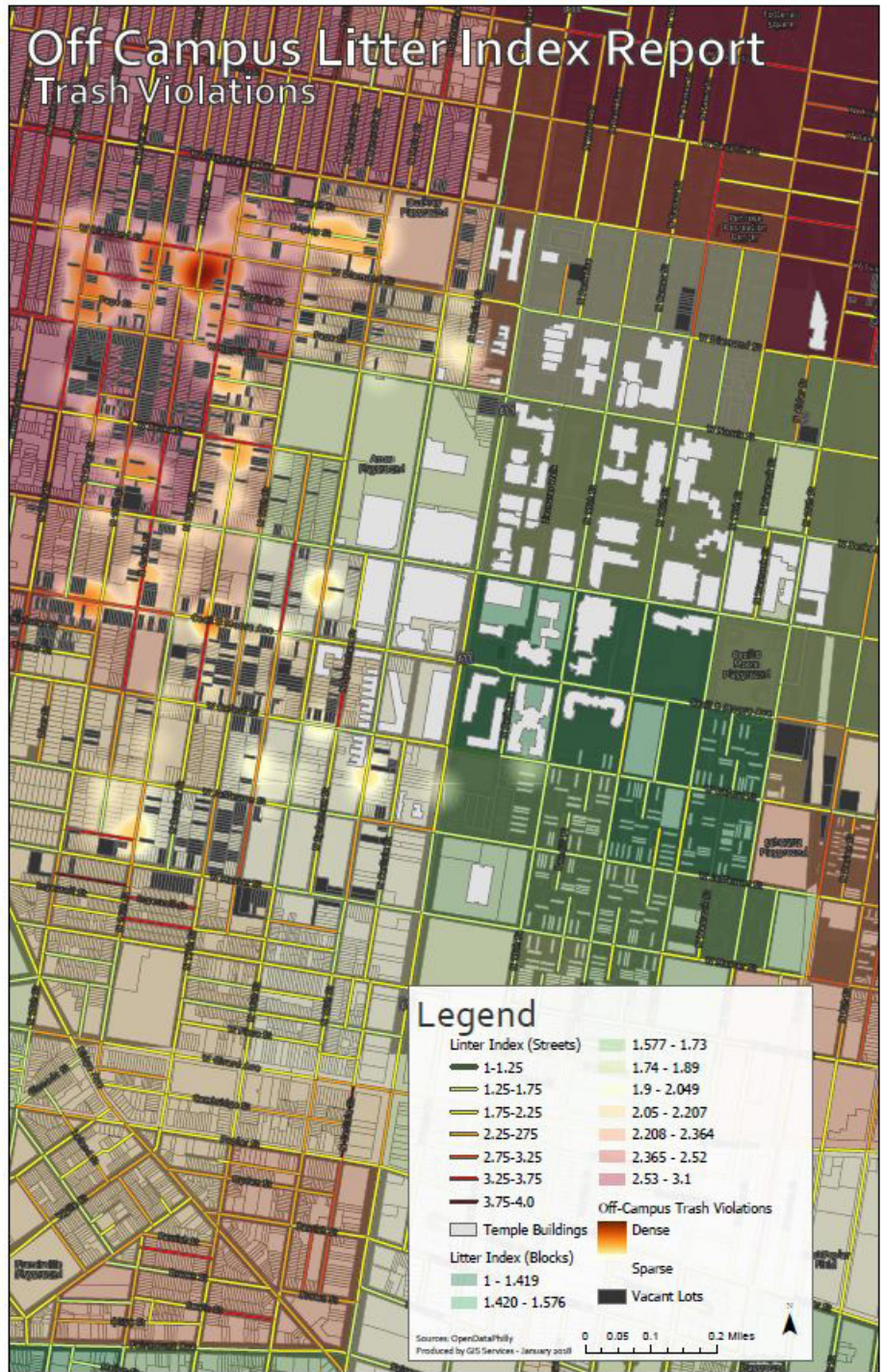
The City has offered this template of the Litter Index survey form to community groups to use to track localized litter conditions and the impacts of their own cleaning efforts, along with a spreadsheet file for tracking their data digitally.

Providing a Valuable Dataset for Academic Studies

In addition to serving as a powerful tool to help the City and local organizations develop a clearer understanding of litter conditions in Philadelphia and track changes over time, the Litter Index dataset has also been utilized in academic research studies. Researchers from Monmouth University produced a study titled "Locating litter: An exploratory multilevel analysis of the spatial patterns of litter in Philadelphia." This study involved the use of multilevel models to analyze the Litter Index data in order to identify both address-level and block-group level correlates of increased litter scores. The researchers found that, "being on an arterial or collector street, the late summer and early fall seasons, and exposure to food serving businesses and vacant properties are linked with the odds of increased litter, while proximity to a park is linked with decreased litter." The study also found that "increased block-group level disadvantage is directly related to increased litter and serves to moderate the relationships between some address-level predictors and litter."

Supporting Temple University's Peer Ambassador Program

Temple University's Good Neighbor Committee and Office of Sustainability utilized Litter Index data in developing the university's new pilot leadership program "Owls on the Block." As leadership fellows in Owls on the Block, selected students will serve as peer educators and will be tasked with raising awareness of trash and recycling collection days, City and university resources, and holiday schedule changes with other students living on the block. The fellows will organize welcome events, host block cleanups, provide information about move-out resources, and share tips on how to be a good neighbor. The team developing this program utilized the Litter Index data to identify blocks for the pilot program with both student residents and higher litter scores. Moving forward, the fellows will be trained on how to calculate Litter Index scores on their blocks and will be responsible for monthly updates of Litter Index scores as an indicator of their progress.

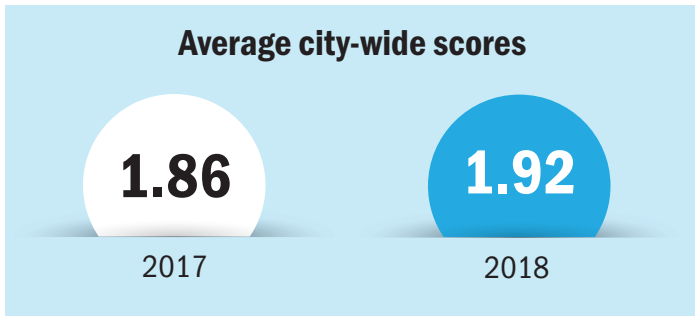


Temple University's Good Neighbor Committee and Office of Sustainability are utilizing Litter Index data in developing the university's new pilot leadership program

Data Analysis

Major Takeaways

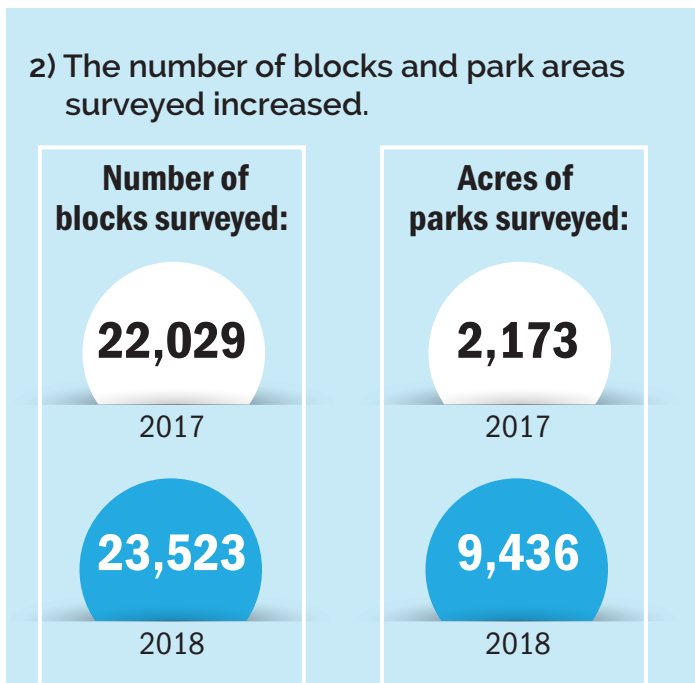
1) City-wide average Litter Index scores differed slightly between 2017 and 2018, by 0.06 on a 1-4 point scale.



Why the increase?

Surveying scope and improved training, as well as expected daily variation in litter conditions throughout the surveying period contribute to this change in average city-wide scores. Surveyors reached more blocks and more public parks in 2018, which in some cases meant documenting a moderately-to-heavily littered block or area that was not included in 2017. The best estimate of litter conditions across the city may not be the score in 2017 or 2018 on its own, but both together.

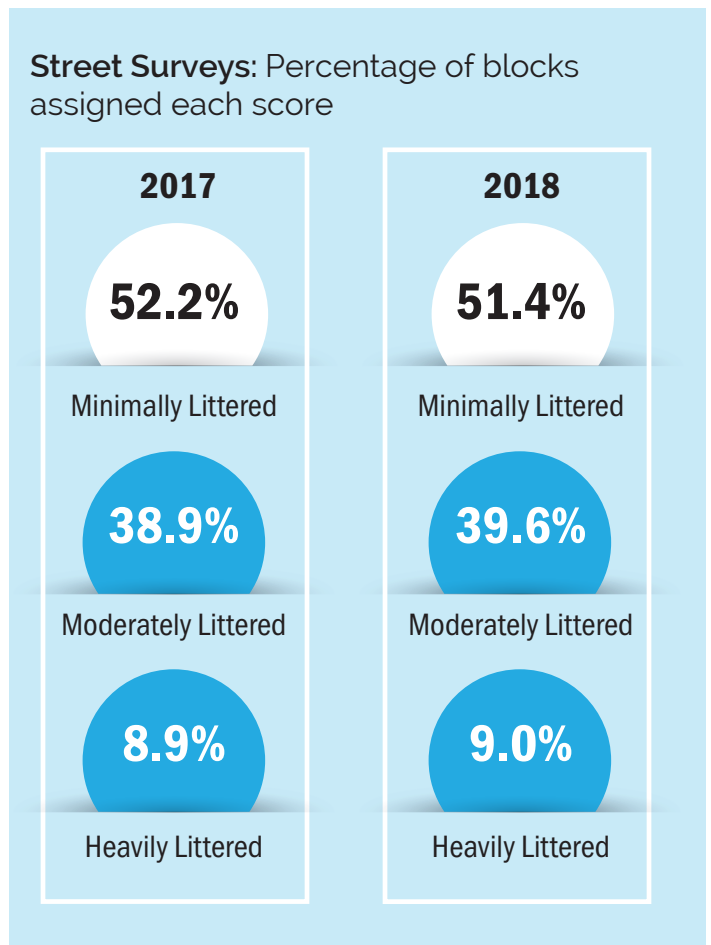
2) The number of blocks and park areas surveyed increased.



The parks and recreation sites included in the 2018 survey covered 10% of Philadelphia's land area. The number of surveyed parks and watershed areas expanded from 293 in 2017 to 648 in 2018. Much of the increase reflects the decision to partition very large parks into manageable zones for surveying purposes. Watershed parks were also included in the Litter Index for the first time in 2018.

3) Most blocks that were moderately or heavily littered in 2017 scored better in 2018, while a majority of blocks that were minimally littered stayed the same. Over half the city's blocks received the same score in 2018 as they did in 2017. Of those blocks where the score changed, blocks scoring a 2 or 3 were more likely to have received a better score in 2018 and more than 90% of blocks scoring a 4 in 2017 received a better score in 2018. Meanwhile, about a third of blocks scoring a 1 in 2017 scored worse in 2018. A majority of minimally littered blocks (those scoring a 1) maintained their good scores, while a minority had a worse litter score in 2018 than in 2017.

Street Surveys: Percentage of blocks assigned each score



4) In the 2018 survey, the most commonly reported litter type on heavily littered blocks (those with scores of 3 or 4) was **construction debris**. Construction debris was present on almost 60% of blocks that scored a 4. Overall, materials generally associated with illegal dumping (construction debris, trash bags with household waste, tires, mattresses, furniture, and car parts) were present on over a third of all blocks surveyed (with any score) that had some kind of litter, and made up the majority of litter that was not single-use items. This highlights the importance of the City's efforts to take timely, coordinated action to tackle illegal dumping.

5) In the 2018 survey, the most commonly reported types of litter were:



This shows the prevalence of single-use items like bottles, cans, takeout packaging, and plastic bags ending up as litter on Philadelphia's streets and in other public spaces.

2017 to 2018 Data Trends

Overall, comparing 2018 to 2017, litter scores in 2018 were slightly worse (higher). Comparing both the Streets Department's surveys and litter scores averaged over neighborhood areas, each shows a similar slight increase in the city-wide average.

Streets Department Surveys

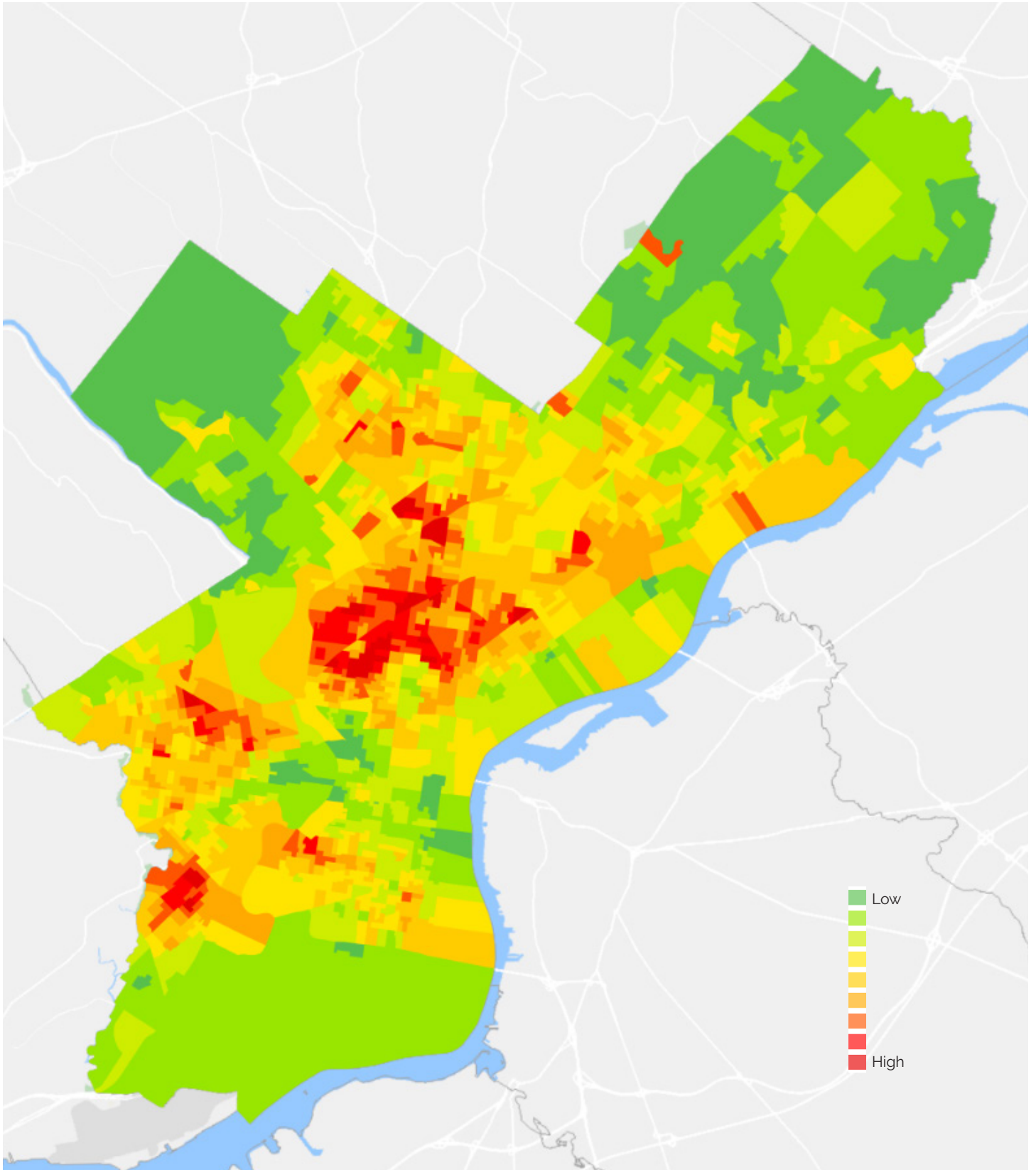
	2017		2018	
Total blocks surveyed by Streets Department	22,029		23,523	
1	11,498	52.2%	12,085	51.4%
2	8,563	38.9%	9,320	39.6%
3	1,844	8.4%	1,927	8.2%
4	124	0.5%	191	0.8%
City-wide average	1.57		1.58	

Neighborhood Score Averages

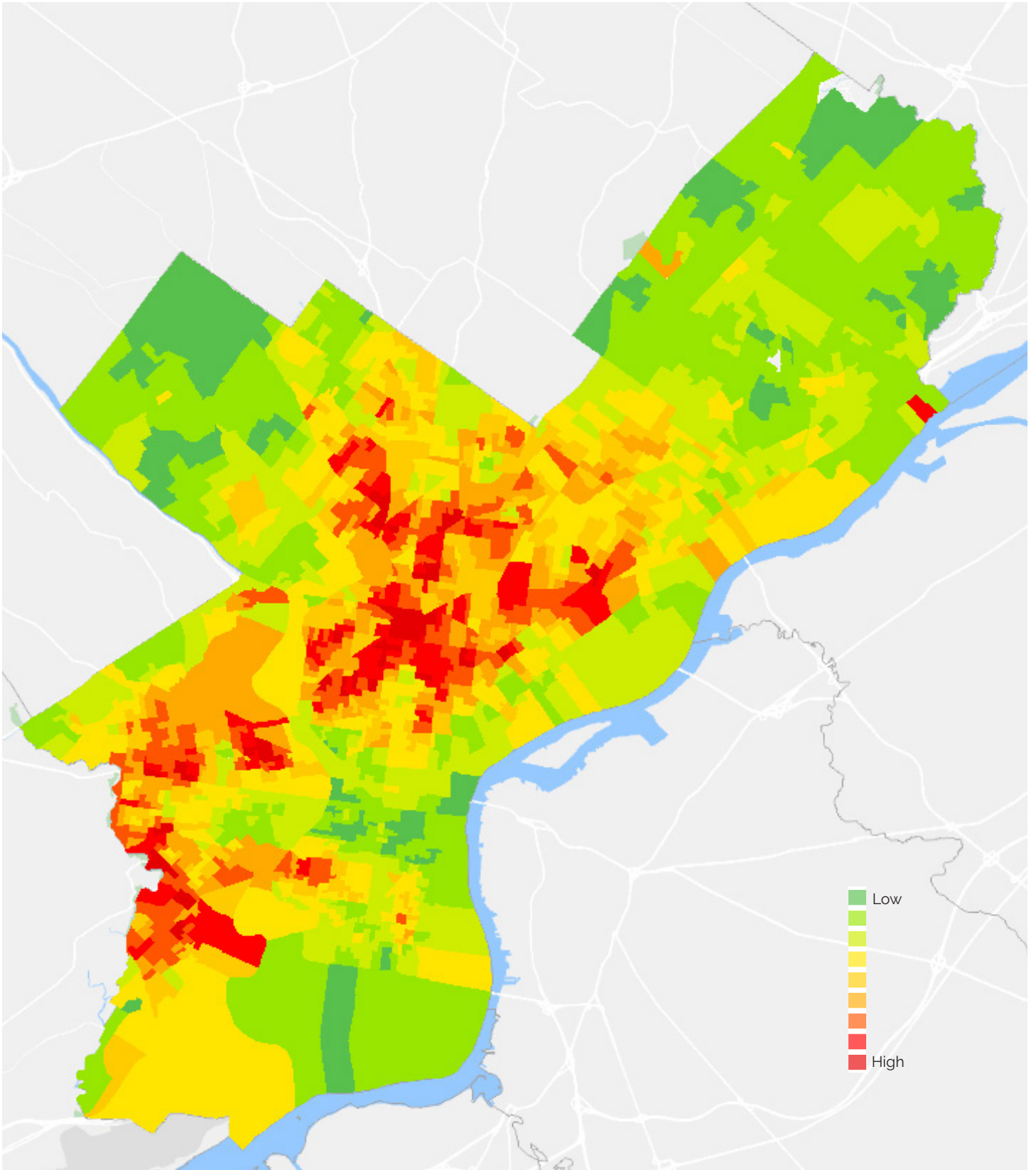
	2017		2018	
Total number of divisions scored	1,686		1,685	
1-1.65	586	35%	521	31%
1.65 - 2.05	596	35%	572	34%
2.05 - 2.4	346	21%	366	22%
2.4-4	158	9%	226	13%
City-wide average	1.86		1.92	

The score ranges above reflect the breakdown shown on the Litter Index map, based on standard deviation. Further information is published on metadata.phila.gov.

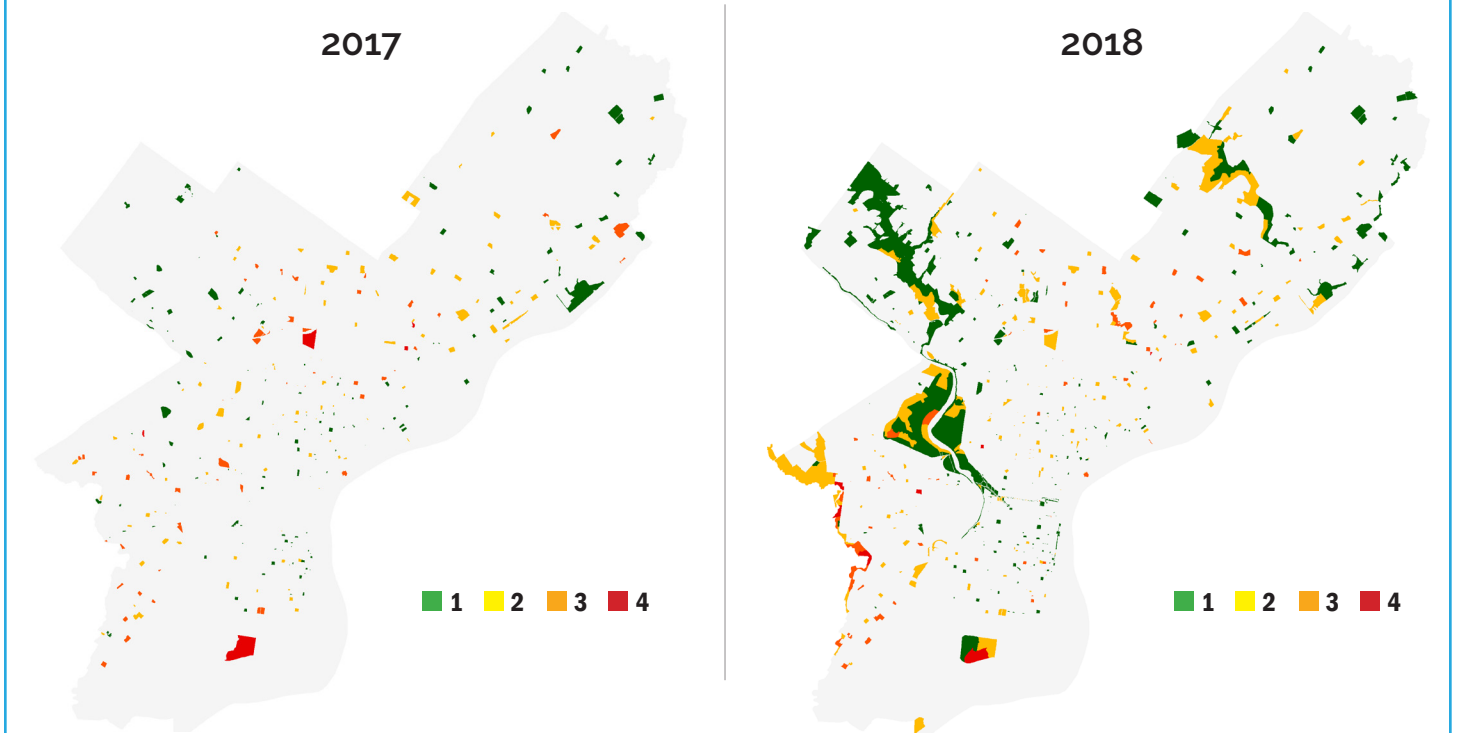
2017 Litter Index Map



2018 Litter Index Map



Parks Surveyed



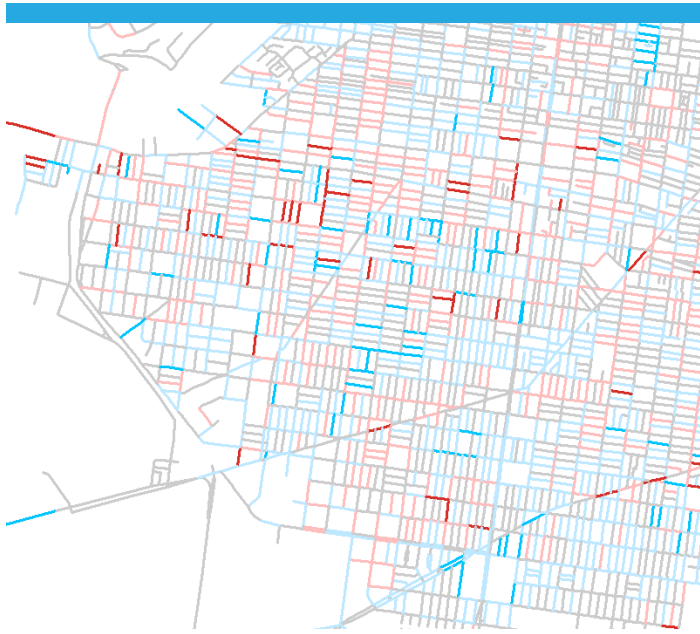
In 2018, the parks and recreation sites included in the survey covered 10% of Philadelphia's land area. The number of surveyed parks and watershed areas expanded from 293 in 2017 to 648 in 2018. This reflects the decision to partition very large parks into manageable zones for surveying. FDR Park, for example, was surveyed as one unit in 2017 but was divided and scored as six distinct areas in 2018. The city's watershed parks were also included in the Litter Index for the first time in 2018.

Across the City's parks system, the city-wide average litter score is lower (better) in 2018 than 2017, and both years it was better than the total city-wide average score. When considering only the sites surveyed both years, parks scored slightly higher (worse) in 2018 (1.74 vs 1.73 in 2017), similar to the pattern reported by the street surveys and overall neighborhood averages.

Parks & Recreation Surveys

	2017		2018	
	Total number of sites surveyed	293		648
1	138	47.1%	330	50.9%
2	101	34.5%	243	37.5%
3	49	16.7%	66	10.2%
4	5	1.7%	9	1.4%
City-wide average	1.73		1.62*	
Total acreage surveyed	2,173 acres		9,436 acres	

*2018 average includes additional areas not surveyed in 2017. City-wide average for sites surveyed both years is 1.74.



Detail of South Philadelphia block scores shown by the difference in score between 2017 and 2018.

- Red = litter score higher in 2018 than in 2017
- Blue = litter score lower in 2018 than in 2017
- Gray = litter score in 2018 is within +/- 0.1 from 2017 score

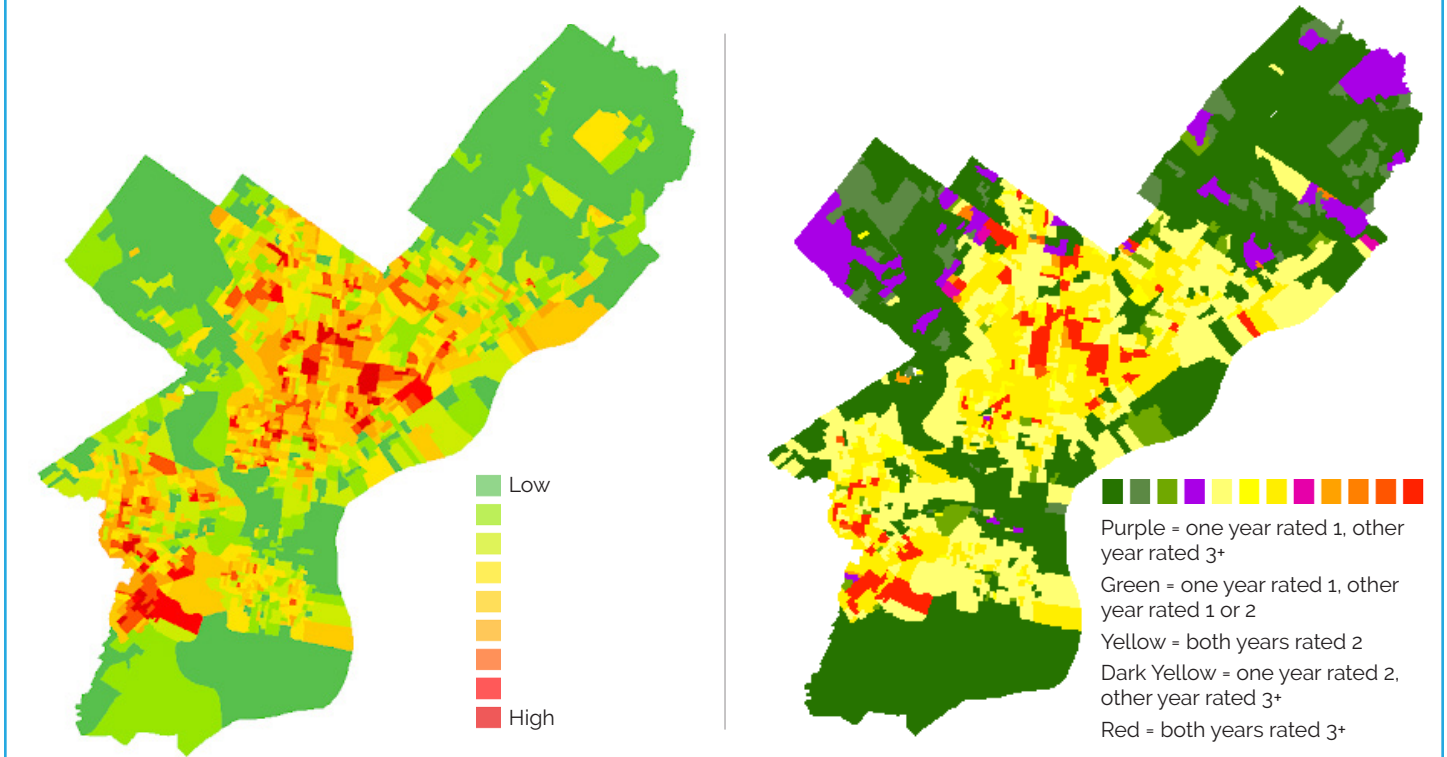
Why did city-wide average scores increase slightly in 2018?

We believe there are a few explanations for slightly increased scores in this year’s Litter Index, including expanded surveying scope and improved training, as well as expected daily variation in litter conditions throughout the surveying period. Surveyors reached more blocks and more public parks in 2018, which in some cases meant documenting a moderately-to-heavily littered block or area that was not included in 2017.

Both years, surveyors were trained to use the 1-4 litter rating scale; but in 2018, we improved the documentation and produced a memorable training video detailing the typical scenarios for assigning each score. In cases that were ambiguous, surveyors were asked to choose the higher score in most cases in order to avoid falsely underrating litter conditions. The pattern of block-level and neighborhood score differences between 2017 and 2018 shows highly normal (bell curve) variation, suggesting that many of the differences reflect the random effects of the variation in litter conditions on weekly or monthly timescales that an annual survey is not able to fully capture.

Looking at the block scores in a given neighborhood often shows a patchwork of slightly higher and lower scores between the two years. City-wide, blocks that scored a 2 or a 3 in 2017 were more likely to have received a better (lower) score in 2018. 35% of 2s and 80% of 3s received a lower score in 2018 compared with 13% and 3%, respectively, whose score increased. These decreases were offset by more than a third of blocks scoring a 1 in 2017 receiving a higher score and more than 90% of blocks scoring a 4 in 2017 receiving a lower score in 2018. The end result is that the city-wide proportion of blocks receiving each score in 2018 is within 1% of the proportions in 2017.

2017-2018 Combined Litter Scores



To capture the range of normal variability with greater confidence, we can combine the two years' scores in modeling scenarios. The best estimate of litter conditions across the city may not be the score in 2017 or 2018 on its own, but both together.

Directly comparing individual blocks surveyed by the Streets Department, the maps above use both years' scores to calculate a version of a neighborhood score. On the left, the map shows the average score in each neighborhood using the highest (worst) rating each block scored in either 2017 or 2018. On the right, the map shows the most common combination of scores in each neighborhood. Red areas have mostly scored 3s or 4s both years. Yellow areas mostly scored 2s both years. Areas in orange or dark yellow are predominated by blocks that scored 2 one year and 3 or 4 the other year. Green areas mostly scored 1s both years or scored a 1 one year and a 2 the other year. Purple areas have a high percentage of blocks that scored 1 one year and 3 or 4 the other year, which is a particularly striking phenomenon. This helps us understand that some blocks or areas may experience more variability in litter conditions than we would typically imagine.

Insights from Type/ Characterization Data

Starting with the 2018 Litter Index, surveyors identified types of litter they observed at each site in addition to assessing the overall litter score. They documented litter belonging to 16 pre-established categories:

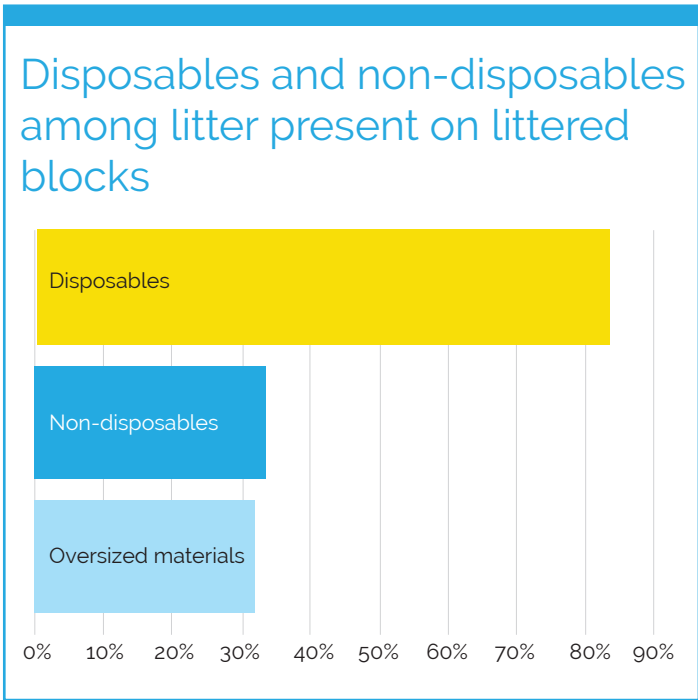
- Cars or car parts
- Clothing, towels, or other fabric (includes shoes, hats, or backpacks)
- Construction debris (includes wood, piping, insulation, bricks/blocks, carpeting, or scrap metal)
- Disposable cups, lids, or straws
- Drink bottle or can (includes plastic, glass, or metal)
- Food waste
- Furniture or mattress
- Other oversized (larger than a basketball)
- Paper or cardboard
- Pet waste bags
- Plastic bags
- Snack bags or wrappers
- Syringes
- Takeout containers or disposable plates/bowls
- Tires or inner tubes
- Trash bags

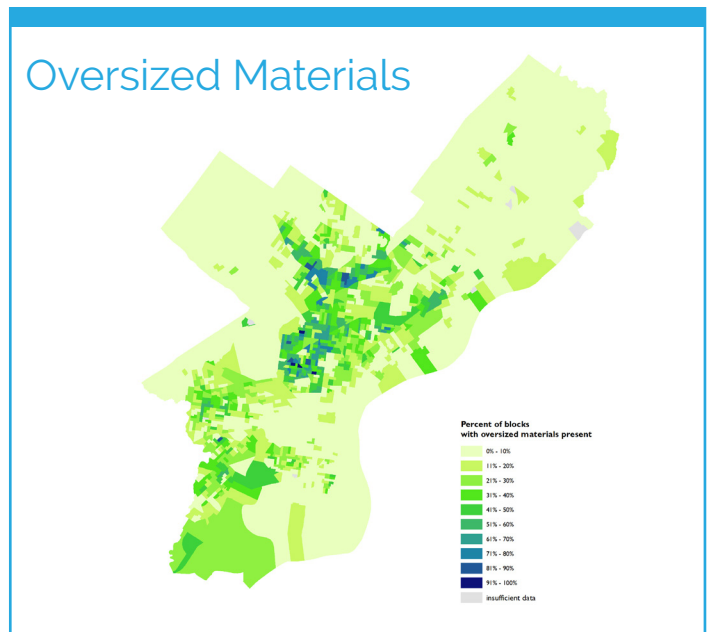
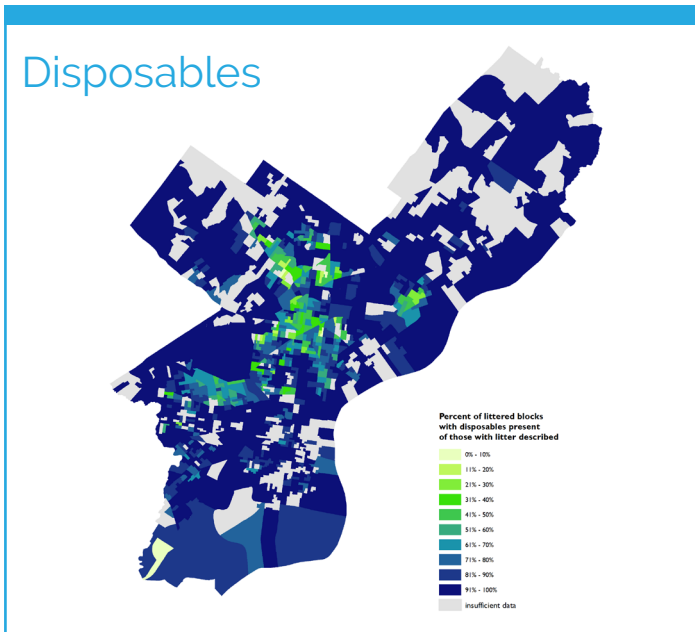
This list was developed by examining dozens of cleanup surveys worldwide, photos from the 2017 litter surveys, and input from the participating departments. It is intentionally not comprehensive (for example, cigarette butts would not be noted) in order to keep the list to a manageable number for surveyors working in the field. Occasionally, surveyors reported encountering types of litter not captured by any of these categories, and those will be considered for inclusion in future surveys.

Among 36,000 blocks surveyed in 2018, about 19,000 recorded some type of litter. About 3,450 of those not recording litter types were assigned a score of 2 or higher, meaning that some type of litter was present, but was not described. This represents roughly 10% of the blocks surveyed. This element of human error should be considered in evaluating the results.

Total blocks surveyed in 2018 Litter Index	36,073
Blocks with litter described	18,907
Blocks with this type of litter present:	
Any disposables	15,831
Paper or cardboard	9,070
Drink bottle or can	7,981
Takeout containers or disposable plates/bowls	7,952
Disposable cups, lids, or straws	7,556
Snack bags or wrappers	5,745
Plastic bags	4,599
Non-disposables	6,286
All oversized materials	6,059
Construction debris	3,084
Trash bags	2,190
Other oversized	1,198
Tires or inner tubes	1,038
Furniture or mattress	820
Cars or car parts	682
Food waste	633
Clothing, towels, or other fabric	511
Pet waste bags	211
Syringes	102

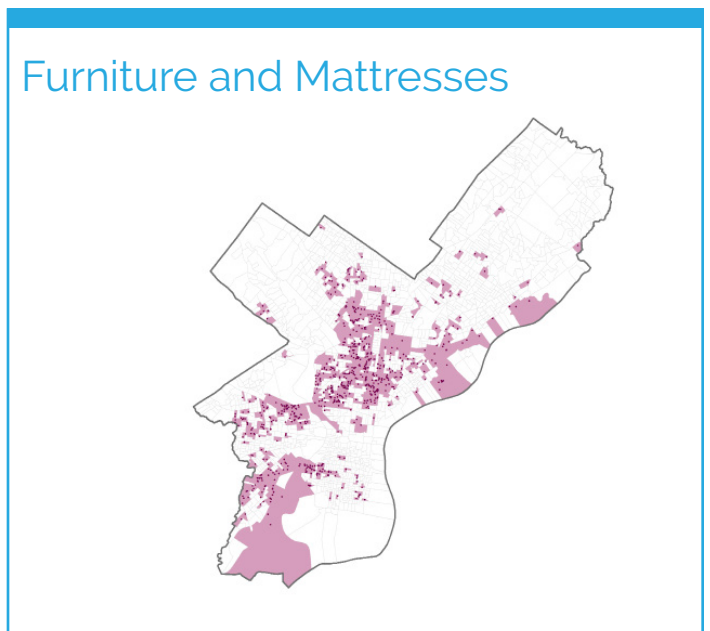
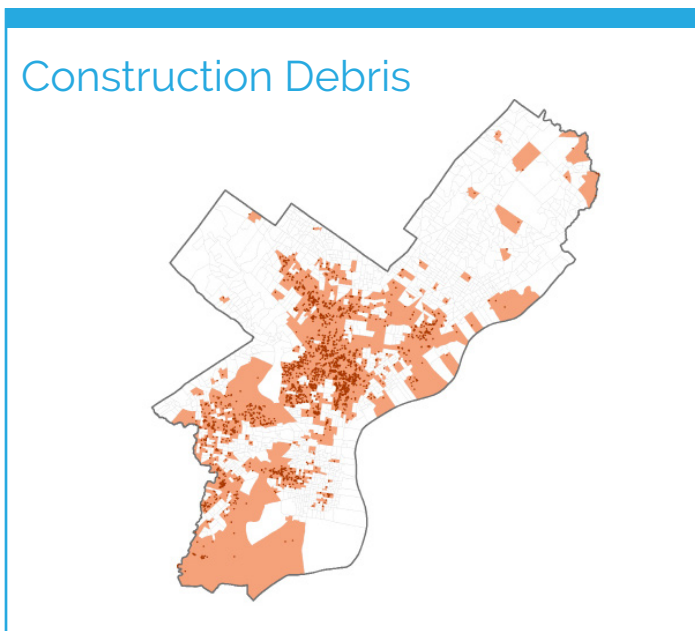
Examining the breakdown of litter types shows that single-use disposables (paper, cardboard, bottles, cans, takeout, straws, snack packaging, plastic bags) are among the most prevalent types of litter. Taken together, some kind of disposable was present on more than 80% of the blocks where litter was reported; this does not count disposable material within trash bags, so the contribution of single-use disposables to Philadelphia's litter is likely even greater. Meanwhile, oversized materials generally associated with illegal dumping (construction debris, trash bags with household waste, tires, mattresses, furniture, and car parts) were present on almost a third of all littered blocks and made up the majority of litter that is not single-use disposables.





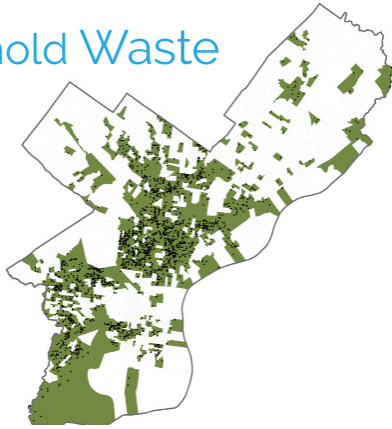
The geographic distribution of litter types shows that while disposable litter is present in nearly all neighborhoods city-wide, oversized materials are concentrated in a few areas that tend to have overall high litter scores.

Some key types of litter whose distribution is mostly concentrated in a limited number of areas include oversized materials like construction debris, mattresses, furniture, and tires, as well as less common but acutely impactful types like syringes and pet waste. Understanding the patterns of distribution of these materials can improve the ability to mitigate them through interventions like installing specialized waste receptacles or targeted illegal dumping enforcement.



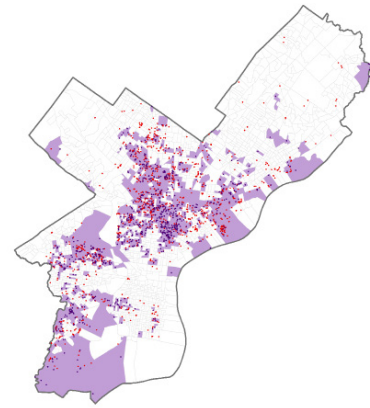
The distributions of construction debris and furniture or mattresses are similar, with a few notable differences. Construction debris was more commonly reported in the Southwest, far West, Germantown, Fishtown-Kensington, and Frankford neighborhoods. Overall, other areas of greatest concentration include much of North Philly, Grays Ferry, and Point Breeze/Graduate Hospital.

Household Waste



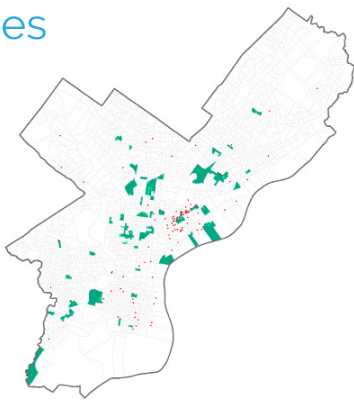
Trash bag dumping is concentrated in similar areas to the construction and mattress/furniture distributions, particularly concentrated in parts of North, West, and Southwest Philadelphia. Abandoned vehicles or vehicle parts were less commonly reported, but show a sharper concentration in parts of North Philly around Germantown Avenue, south of Hunting Park.

Tires



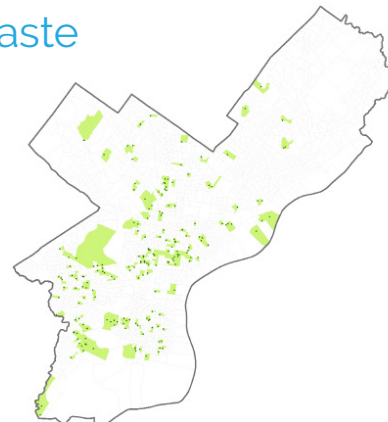
Illegally dumped tires represent a persistent component of illegal dumping reports in Philadelphia. Many people report illegal dumping to Philly311, but the Litter Index provides an opportunity for a systematic survey. Combining 311 reports of illegal dumping that mention "tires" (shown on the map above in red) with the litter surveys reporting tires shows areas of commonality and difference. By drawing on both resources, the City can better understand the scope of the problem.

Syringes



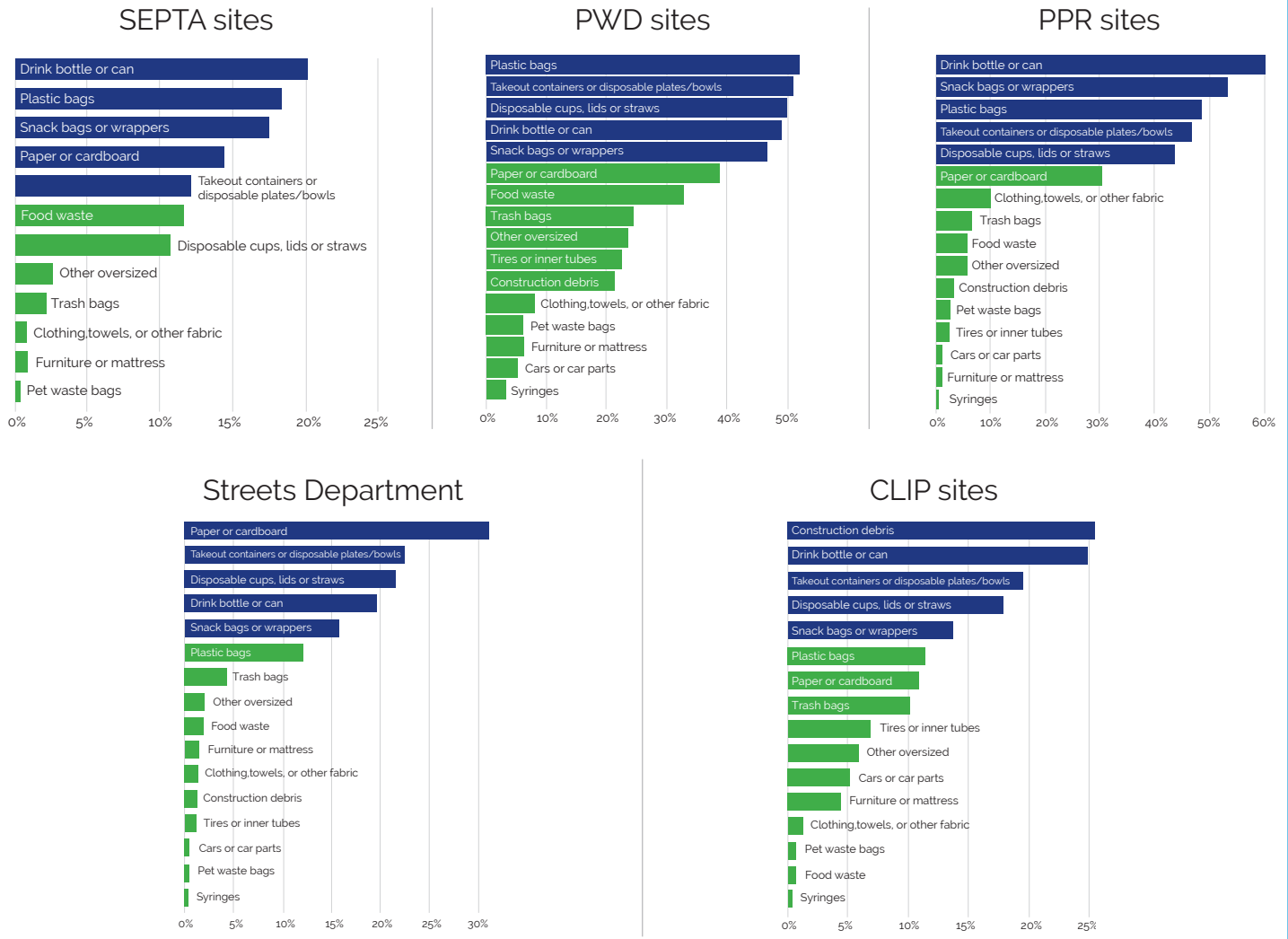
Pet waste and needles were both relatively infrequently reported in the litter surveys, but both have consequences for public health. Identifying syringes helps City staff clean up these sites safely. Comparing the prevalence of needles reported through the litter survey with 311 requests for cleanups mentioning any of several related keywords shows that 311 reports (shown on the map above in red) are most frequently in the Kensington area, while the litter surveyors observed syringes in several areas that had not been reported through 311; this allows the City to intervene proactively. The prevalence of pet waste and pet waste baggies is less similar to the distributions of other litter mapped above. Pet waste was more frequently reported in areas with otherwise low to moderate litter scores.

Pet Waste



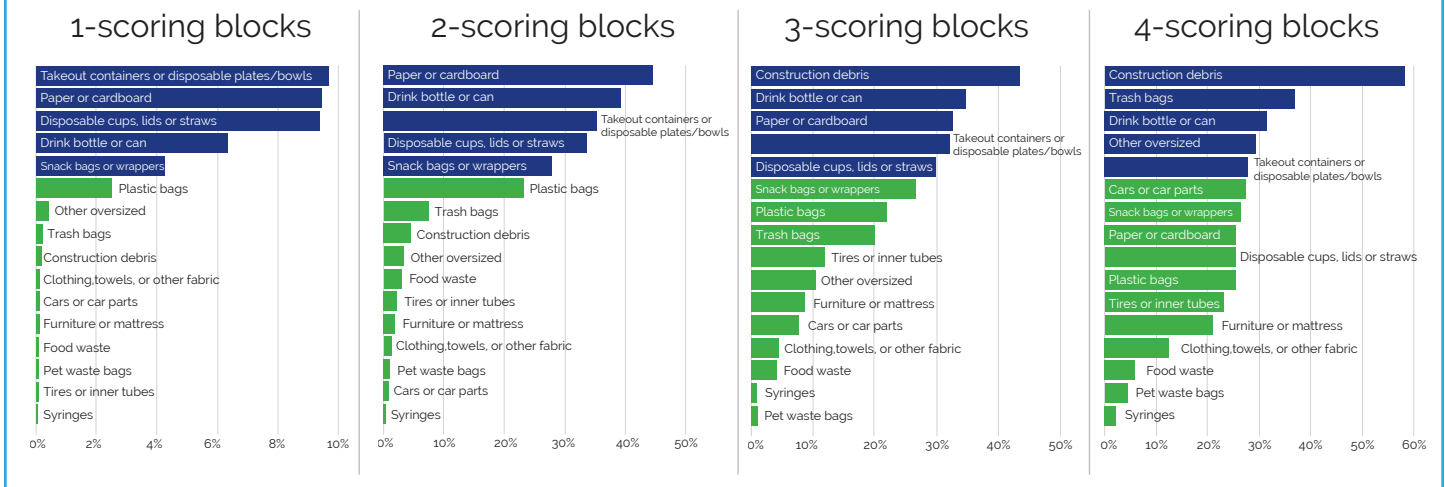
Each of the participating departments or agencies encountered similar types of litter, reflecting the types most frequently observed city-wide. However, they also encountered disproportionate prevalence of some types of litter, reflecting differences in the sites that they were responsible for. The graphs and table below illustrate the prevalence of different types of litter at each type of site and highlight the types of litter that were notably more or less frequently reported by each surveying department compared with the other participating departments in 2018.

Types of litter present in surveys by department



	Streets	CLIP	Parks & Recreation	SEPTA	Water
More Common Than Average	Paper/cardboard	Construction debris Trash bags Tires Car parts	Clothing/towels/ fabric Trash bags Pet waste	Food waste	Plastic bags Food waste Trash bags Oversized Construction debris Clothing/towels/fabric
Less Common Than Average	Construction debris	Food waste		Construction debris Trash bags	

Types of litter present by block score



Finally, we can look at the types of litter found on blocks rated 1, 2, 3, or 4. This gives a sense of both what the ratings mean and the specifics of what is going on in places with these scores.

Of the nearly 18,000 blocks that scored a 1, 76% did not have any litter types described. Of those where litter was reported, the most prevalent types of litter were single-use disposables. All larger and non-disposable litter types were virtually absent, which is appropriate since we would normally expect the block to receive a higher (worse) litter score when those types of litter were present.

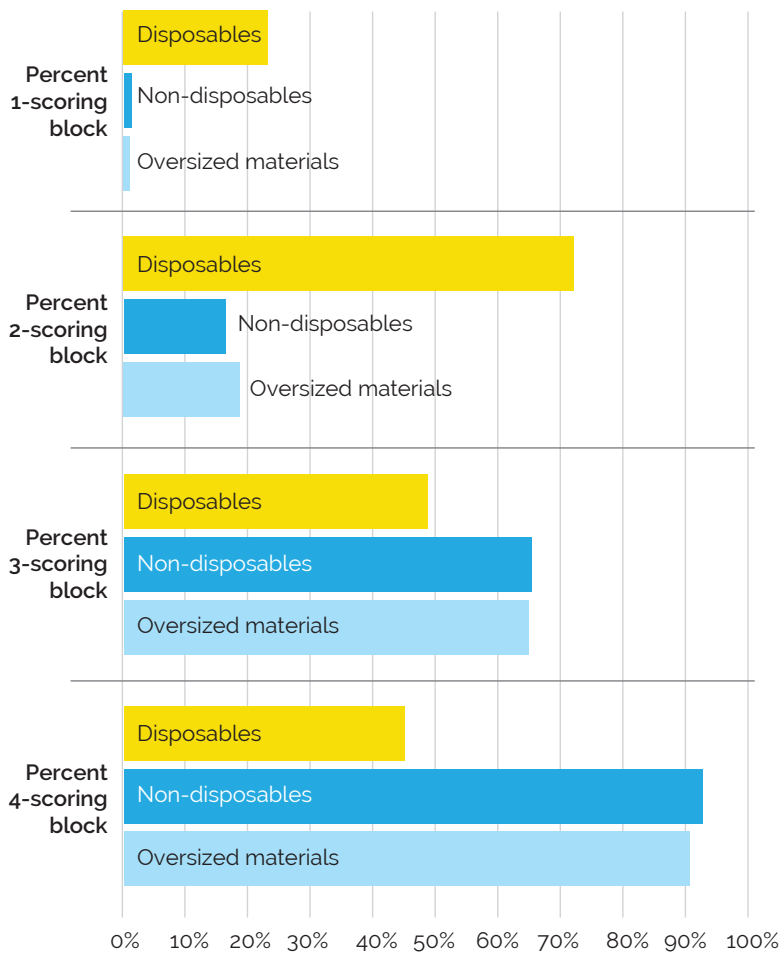
Blocks given a score of 2 show a similar pattern of prevalence of litter types to those scoring 1; however, many more blocks had litter types described (out of 12,600 blocks, about 23% were missing a description of litter types). Trash bags were the most prevalent non-disposable litter type, present on less than 10% of blocks.

Blocks that scored a 3 show the divergence between lightly littered blocks (1s and 2s) and heavily littered blocks (3s and 4s). More than 40% of blocks that were

rated a 3 had construction debris present, and about 20% had household waste (trash bags) present. Tires, furniture and mattresses, vehicular parts, and other oversized items hover around 10% of these blocks. Only 11% of blocks with a score of 3 lacked a description of litter types, out of about 4,800 blocks.

Blocks scoring a 4 are relatively rare; only 656 blocks (just 2% of the city's blocks) received this score. However, those that do get a 4 rating have the greatest variety and concentration of litter types. Construction debris was present on almost 60% of blocks that scored a 4. Most of the other litter types were present on at least 20% of all the blocks, except for discarded clothing, towels, or other fabric, which was reported on 12% of blocks; and food waste, pet waste, and syringes, which were each reported on fewer than 10% of blocks that scored a 4. With higher litter scores, it was slightly less common for surveyors to report disposable litter that is common on lightly littered blocks. This is likely a reflection of the prominence of larger debris obscuring the presence of lighter litter rather than a consistent absence of the smaller debris. Only four percent of blocks scoring a 4 were missing a description of litter types.

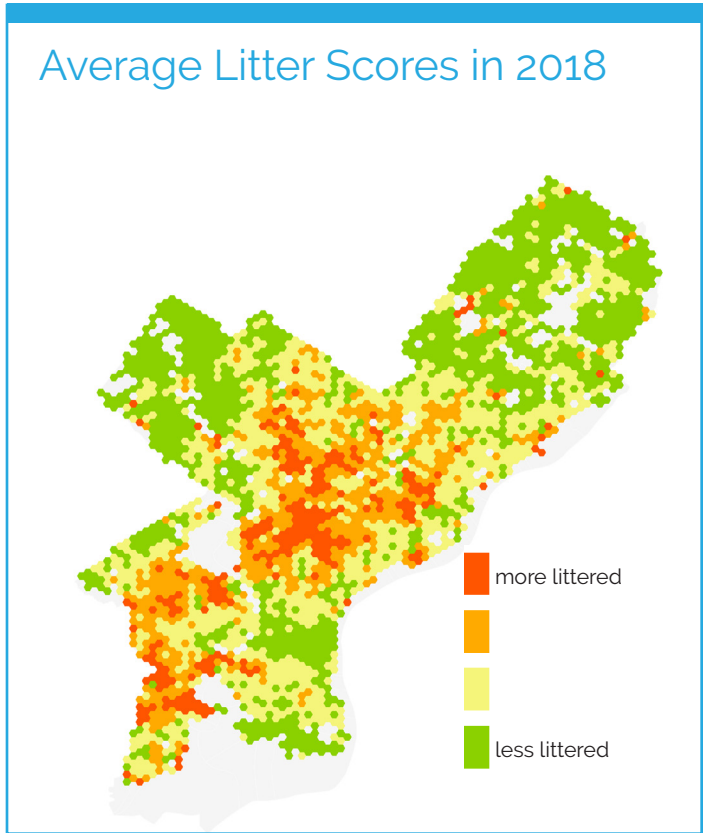
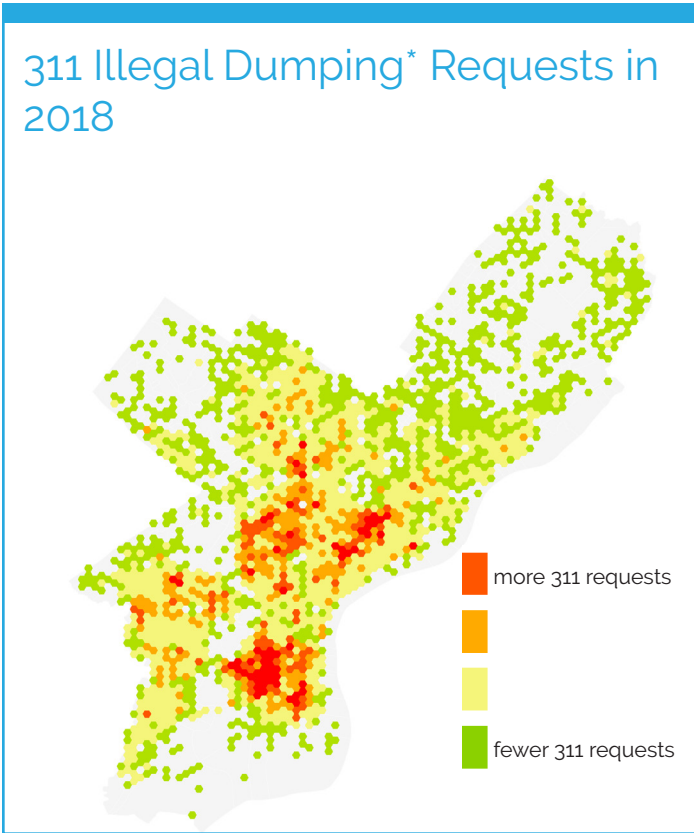
Disposables and non-disposables among litter present on block by block score



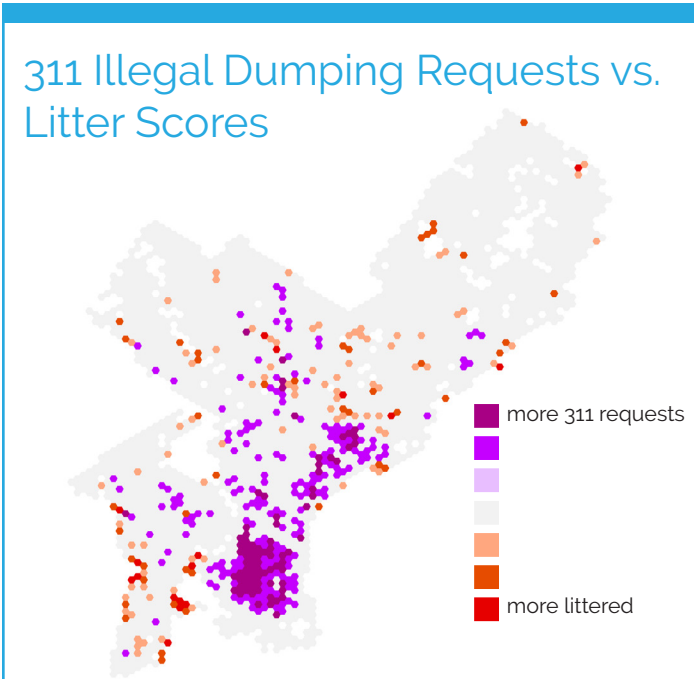
Overall, disposables are present among the litter on blocks scoring 1 or 2 far more frequently than larger non-disposable materials, and were identified on 23% of blocks scoring a 1 (that is, over 90% of 1-rated blocks that had any litter described) and over 70% of blocks scoring 2 (likewise representing 91% of all 2-rated blocks where litter was described). Oversized materials are more commonly observed on blocks scoring 3 or 4, reported on 65% of blocks scoring a 3 and over 90% of blocks scoring a 4. Disposables are still frequently among the litter observed on more heavily littered blocks (more than 40% of blocks rated 3 or 4 had some kind of disposable litter reported); however, this number is likely under-reported due to larger material obscuring lighter litter.

Case Studies

Litter Index Data and 311 Illegal Dumping Service Requests



*"Illegal Dumping" includes both Illegal Dumping and Vacant Lot Clean-up service requests.



Other than the Litter Index, the City's best data source for understanding trash and litter in Philadelphia comes from the service requests residents submit to Philly311. Two categories of requests primarily capture these issues: "Illegal Dumping" which is for trash or debris on a street or sidewalk and "Vacant Lot Clean-Up." The maps show the distribution of these requests in 2018 compared with the litter scores from the 2018 Litter Index. On the red/green maps, red indicates more litter or illegal dumping requests. On the comparison map, red means disproportionately fewer 311 requests, while purple means disproportionately higher numbers of 311 requests. Comparing the relative concentration of illegal dumping requests with the litter scores shows that in large areas of Center City and South Philly, and in parts

of University City and the River Wards, the number of illegal dumping requests is disproportionately higher than the degree of litteredness based on the Litter Index. Areas where relatively few requests are submitted but where litter scores are higher (worse) include areas of Southwest Philly, the Lower Northeast, and some sections of North Philly.

Areas that have many 311 requests and lower (better) litter scores could occur for a variety of reasons: reporting illegal dumping cases to be cleaned up could be why the area is cleaner! Some of these areas are particularly densely populated, where multiple reports are more likely, meaning there could be many reports but not as many incidents as other areas. More community outreach may be needed in areas with higher litter scores and fewer illegal dumping reports to encourage residents to report issues when they see them. Overall, the Litter Index provides a more objective and systematic record of litter conditions for long-term planning, while reports directly from residents help to capture changing conditions and pinpoint immediate needs.

	Has Friends Group	No Friends Group
Number of Parks & Recreation Surveys	216	438
Average Rating	1.55	1.70
% 1	56.0%	48.2%
% 2	35.2%	38.8%
% 3 or 4	8.8%	13.0%
Average Nearby Score	1.70	1.81
Average Neighborhood Score	1.79	1.92
% Lightly Littered	52.3%	38.6%
% Moderately Littered	34.3%	42.7%
% Heavily Littered	13.4%	18.7%

Litter Index Data and Park Stewardship Groups

Philly's parks and recreation sites are supported by a network of volunteer-based groups who organize as "Friends of" a park or recreation area. Friends groups host park cleanup and beautification days, organize recreational and educational programming, and advocate for park improvements, among other activities. On average, parks with Friends groups have lower (better) litter scores (1.55 with Friends groups versus 1.7 without) and fewer parks with high litter loads; parks scoring 3 or higher make up about 9% of parks with Friends groups compared with 13% of those without. However, parks without Friends groups are disproportionately located in heavily littered neighborhoods (about 13% of parks with Friends groups compared with 19% of parks without). This represents an opportunity for outreach to make a significant impact.



Litter Conditions in Neighborhood Litter Control Plan Areas in 2017 and 2018

In partnership with the Streets Department, other City agencies, and community partners, the Cabinet is using the Litter Index data to develop neighborhood-specific plans for controlling litter (Neighborhood Litter Control Plans). Each plan identifies interventions for addressing litter and illegal dumping in individual Philadelphia neighborhoods and establishes a process for continued coordination and monitoring over time. Areas with the highest (worst) Litter Index scores are being prioritized in this process, which includes engaging residents and community-based organizations working in specific neighborhoods through community meetings, using their feedback to develop plans, implementing services, and continued data collection, monitoring, and follow-up. This process is underway in Southwest Philadelphia, Kensington, and North Philadelphia/Strawberry Mansion.

Southwest Philadelphia

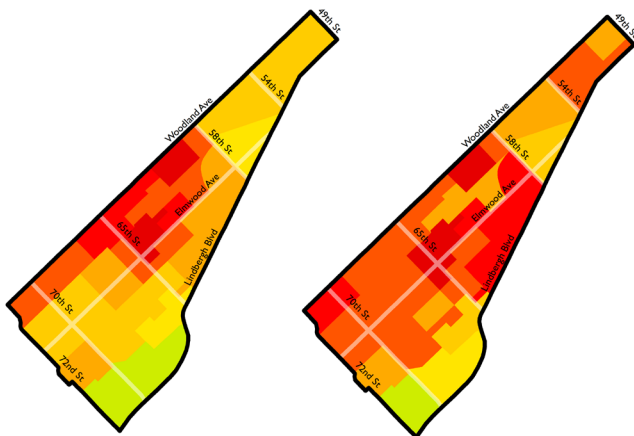
Southwest Philadelphia was the first area selected for the Neighborhood Litter Control Plan pilot, and the plan was published in September 2018. It was created in partnership with the Southwest Community Development Corporation (SWCDC) and many other organizations serving the southwest section of the city. The plan primarily focuses on the area from 49th to 72nd Streets between Lindbergh Avenue and Woodland Avenue.

Southwest Pilot Area

	2017		2018	
Total blocks surveyed	539		556	
1.0 - 1.75	135	25.0%	71	12.8%
1.75 - 2.25	213	39.5%	230	41.4%
2.25 - 2.75	135	25.0%	168	30.2%
2.75 - 3.25	9	1.7%	8	1.4%
3.25 - 4.0	47	8.7%	79	14.2%
Area average	2.14		2.34	

Southwest Litter Control Plan

2017/2018 Neighborhood Scores Map



2017/2018 Block Scores Map



Overall, litter scores increased (became worse) throughout the control plan area. The most concentrated increases appear to center around the 62nd Street corridor from Elmwood to Lindbergh, though increases were not limited to this area.

Kensington

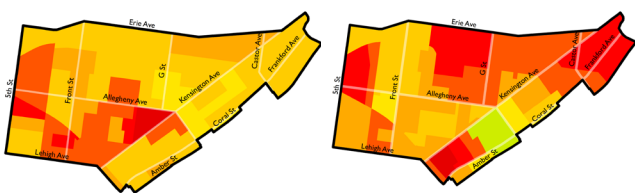
The Kensington plan was developed through a community engagement process over several months and was published in November 2018. The plan covers the area bounded by Lehigh Avenue, 5th Street, Erie Avenue, and Frankford Avenue. In the past year, the area has been targeted for intensive cleanup activities through the Philadelphia Resilience Project, including monthly area cleanups, vacant lot abatements, beautification projects, and increased enforcement of illegal dumping. This area is also part of the City's street sweeping pilot launched in April 2019 (after the survey was complete).

Kensington Area

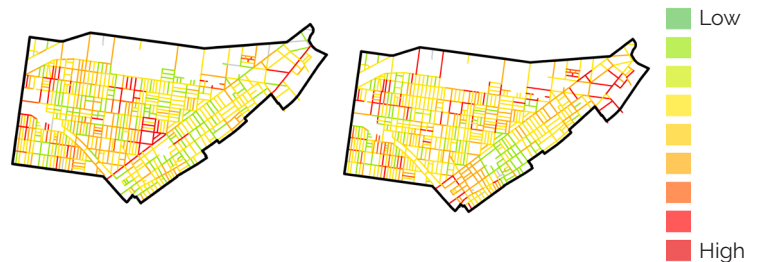
	2017		2018	
Total blocks surveyed	1,336		1,352	
1.0 - 1.75	241	18.0%	200	14.8%
1.75 - 2.25	629	47.1%	652	48.2%
2.25 - 2.75	315	23.6%	331	24.5%
2.75 - 3.25	43	3.2%	47	3.5%
3.25 - 4.0	108	8.1%	122	9.0%
Area average	2.19		2.23	

Kensington Litter Control Plan

2017/2018 Neighborhood Scores Map



2017/2018 Block Scores Map



The area between Lehigh and Allegheny Avenues showed overall lower (better) scores in 2018. This area has been a core focus for the Philadelphia Resilience Project, and these results are consistent with monthly resident surveys on 24 blocks surrounding McPherson Square, who have reported seeing less litter on their streets and fewer unmaintained vacant lots. However, several areas north of Allegheny Avenue had higher (worse) overall scores in 2018. The Cabinet will continue to work on implementing interventions laid out in the Neighborhood Litter Control Plan.

Conclusions

The Zero Waste and Litter Cabinet is very proud of the many community partners, academic institutions, and private sector organizations who have used the Litter Index data to solve problems and improve understanding. Widespread interest in this information as well as the high priority many residents place on tackling this issue contributed to making this dataset one of most downloaded datasets on Open Data Philly. This data is integral to unlocking the solutions to litter in Philadelphia, but as the Zero Waste and Litter Action Plan makes clear, this effort has to be a partnership between the City, its residents, and the private sector.

Two consecutive years of Litter Index data has provided unprecedented insights into the conditions that drive and sustain the persistence of litter in Philadelphia. We are better able to characterize regions of the city where litter conditions are consistently most severe, areas that show large amounts of variability, and areas that are for the most part consistently minimally littered. We are able to quantify the prevalence of single-use disposable materials in contributing to litter, as well as the concentrated regions where illegal dumping consistently occurs. By interrupting the sources and pipelines that bring litter to neighborhoods, we may be able to finally see change in conditions—whether it be

surveillance camera placement, recreation center trash corral site selection, targeted campaigns to reduce single-use disposables like plastic bags, or strategic placement of public trash cans. Furthermore, while resident reports of litter and illegal dumping issues have provided valuable documentation of these problems since the launch of Philly311 in 2008, the Litter Index provides a comprehensive, systematic, and objective baseline from which the City is able to be proactive rather than reactive in its response to litter and illegal dumping. Although Philly311 continues to be an extremely important tool for residents, businesses, and municipal government to request services, there remain areas where conditions are under-reported. The Litter Index has allowed City departments to identify cleanup locations that were never previously on the map. We are creating a new paradigm for how we address litter in Philadelphia.

Overall, the 2017-2018 Litter Index data show only a slight difference in the city-wide average litter score between the two years. Our analysis indicates that this is most likely not a statistically significant indication of worsening litter conditions, but we do know that there is more work to do. This dataset is one that we will continue to build upon as we work with communities and many partners toward a cleaner Philadelphia for all.

