CENTER CITY REPORTS

RETHINKING THE CURB LANE IN CENTER CITY

SEPTEMBER 2019

CENTER CITY DISTRICT
CENTRAL PHILADELPHIA DEVELOPMENT CORPORATION

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PETER TOBIA

INTRODUCTION

This report starts with an obscure question: *If you added together the linear footage of every curb lane in Center City Philadelphia and then sorted and tallied the allocation of space along the curb lane according to different permitted and prohibited uses, what would it tell you about our transportation priorities?*

The answer to this question can be a critical starting point for a comprehensive reassessment of those priorities and for a broader effort to make more optimal use of what has become a scarce resource: the roadways that move people in and out of Center City Philadelphia each day.

During the last two decades, Center City has steadily added jobs, residents, visitors and shoppers. At almost any hour of the workweek, and as documented in Center City District's March 2018 report, *Keep Philadelphia Moving,* centercityphila.org/research-reports/2018congestion, the byproduct of success is *congestion*. This challenge is further compounded by one of Philadelphia's defining assets: a dense, compact and walkable, pre-automobile street grid with narrow roadways. All of the cars, buses, trucks, motorcycles and bicycles that deliver passengers and goods to the 61% of land area of Center City devoted to development are required to fit into the 17% of space allocated for vehicles (Figure 1).

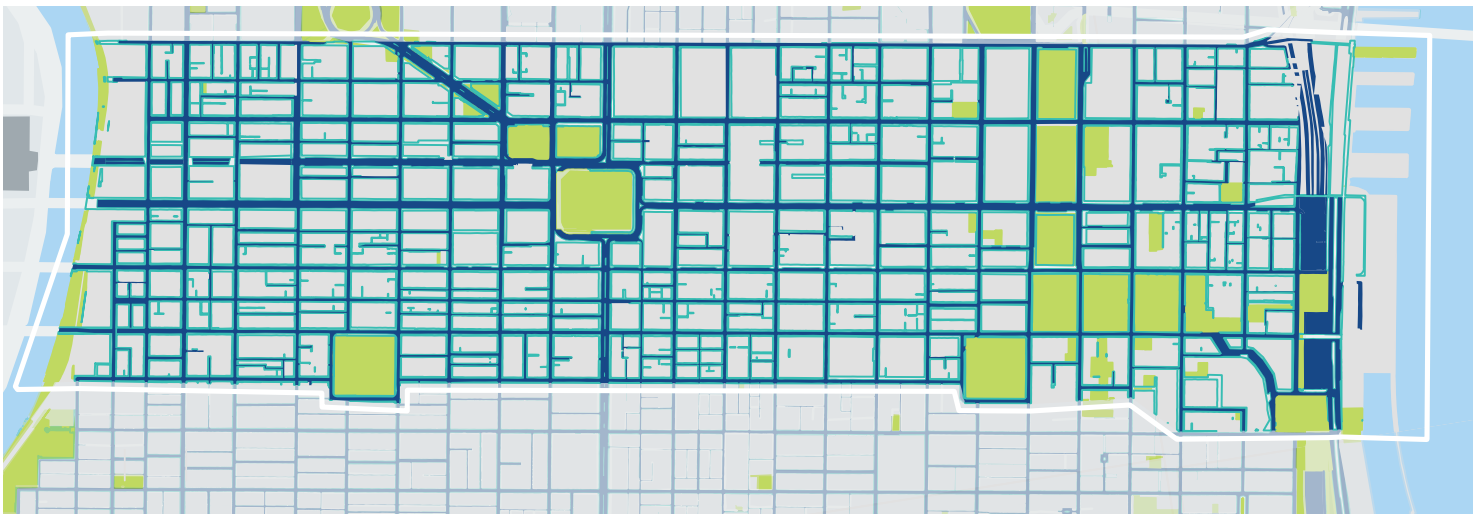
Further, as pedestrian volumes have increased on the 13% of the geography devoted to sidewalks, the crowds crossing at intersections limit turning times for vehicles in the street, further slowing traffic. Finally, because of decisions made over decades about the use of the curb lane on each street – for parking, deliveries, loading and bus stops – less than half of the road lanes in Center City are available at any given time to move cars, trucks, buses or bikes. While *Keep Philadelphia Moving* focused primarily on how systematic and sustained enforcement can enhance the use of the street, this report looks at the other significant variable that is within our control: how the scarce resource of the curb lane is allocated and managed in Center City.

RETHINKING THE CURB LANE

The allocation and management of the curb lane has an enormous impact on how a street functions. One can imagine a hypothetical scenario of maximum mobility in which all lanes in the street are devoted to moving vehicles and strictly enforced. Then no cars would park, no passengers would be dropped off, nor any packages picked up or delivered. However, urban streets are not like interstate highways dedicated to maximum throughput. Their purpose is also to serve adjacent buildings – commercial, residential and institutional. Consequently, over the years, the City has designated some areas for parking, some for loading and others for bus stops. Some regulations, like rush-hour clearance or time-limited

1: In many European cities, streets are open for cars and deliveries in the early morning and then, around 10 a.m., become pedestrian only. Other "shared streets" allow no parking, have no curbs, make no physical distinction between sidewalk and roadway, are open to both vehicles and pedestrians, but are designed in such a way that vehicles cannot drive at speeds greater than 2-3 mph.

FIGURE 1: CENTER CITY LAND USE



BUILDINGS	PARK	SIDEWALK	STREET
61%	9%	13%	17%

parking vary by time of day.[1] Bike lanes recently were added or moved to opposite sides of the street, as part of an ongoing process of recalibrating and adjusting streets to changing needs, preferences and technologies. But just as a street can tilt too much toward maximum mobility and fail to meet its property serving functions, it can tilt too far toward over-commitment of the curb lane to stationary uses so that traffic is snarled, simply by the impact of too many vehicles taking up a moving lane while trying to parallel park.

Streets and curb lanes need to balance multiple functions. However, most decisions have been made piecemeal in response to problems or requests from property owners, neighborhood associations, businesses or new development. There have been periodic, wider-ranging efforts like the designation of a bus priority route, or new bike lanes across Center City, or the current Chestnut street pilot program of more designated loading zones. But given growing frustration and the adverse economic impact of congestion, it is worth stepping back to ask Center City-wide questions: how have we allocated *all* of the scarce curb space from Race to Locust streets, river to river? What does this say about our priorities? Would we benefit from new priorities established by looking comprehensively at the area that holds the densest concentration of jobs in the region?

SURVEY METHODOLOGY AND SCOPE

The Department of Streets and the Philadelphia Parking Authority post regulations on individual blocks. But when CCD commenced this effort, there was no comprehensive database or map geolocating all of these regulations within the commercial core of the city. It is relatively easy to answer the question: what are the regulations on the 1100 block of Chestnut Street. It was impossible to answer the question: what is the cumulative proportionate allocation of all curb lane regulations within the commercial downtown?

Coord, a technology company associated with Google Earth, recently conducted digital surveys in multiple cities and for a fee is prepared to make some or all of this data available.[2] However, to gather this information for public distribution, the CCD surveyed a 1.3 square mile section of Center City, spanning Race to Locust, river to river – an area with *69 miles* of linear curb line.

From January to March 2019, CCD surveyors with GPS-enabled tablets walked every block of every street, demarcating the length of each unique, curb-use segment according to the posted regulations and photographing each sign. Using the application Survey 1-2-3, surveyors then manually drew each unique line segment onto a base map, built by using the City of Philadelphia's aerial photogra-phy[3] as a reference. In total, surveyors recorded 3,349 curb unique segments governed by 4,514 regulations (many segments had more than one regulation). The geospatial data analytics firm Azavea was retained to assist with the post-survey data processing.

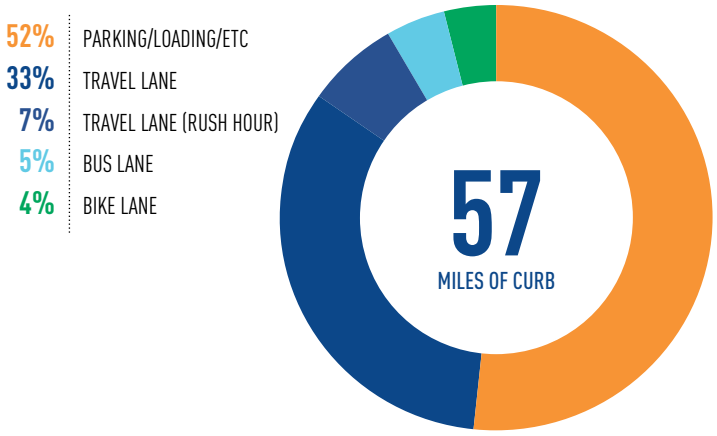
2: Coord is now offering a dashboard view of 10 different cities that shows how curb space is allocated at a particular moment in time and how regulations change across a day and week (https://www.coord.co). Coord is essentially a digitally more sophisticated version of the work that was conducted for this study.

3: The 2016 City of Philadelphia orthophotography has a ground resolution of 3 inches per pixel.

At the broadest level of classification, block faces were sorted into six categories based on how the block functions, summarized in Figure 2 and shown on the map in Figure 4.

Of the 69 total miles of block curbs surveyed, 13 of them were on single-lane alleys, constituting 17.4% of all curb lanes on streets. Within the survey area, most of those single-lane alleys function as storage areas for dumpsters. However, some single-lane alleys are also residential streets, most notably Elfreth's Alley in Old City but also multiple blocks in Washington Square West. How to make more optimal use of these alleys is a subject CCD studied a decade ago in an effort to suggest ways consolidate dumpsters and free more alleys for use as public space. However, that is not the focus of this study and because "no stopping" is the only possible regulation for these alleys, they were excluded from all subsequent tabulations.

FIG 3: CENTER CITY CURBSIDE CLASSIFICATIONS BY BLOCKFACE ON STREETS WITH TWO OR MORE LANES



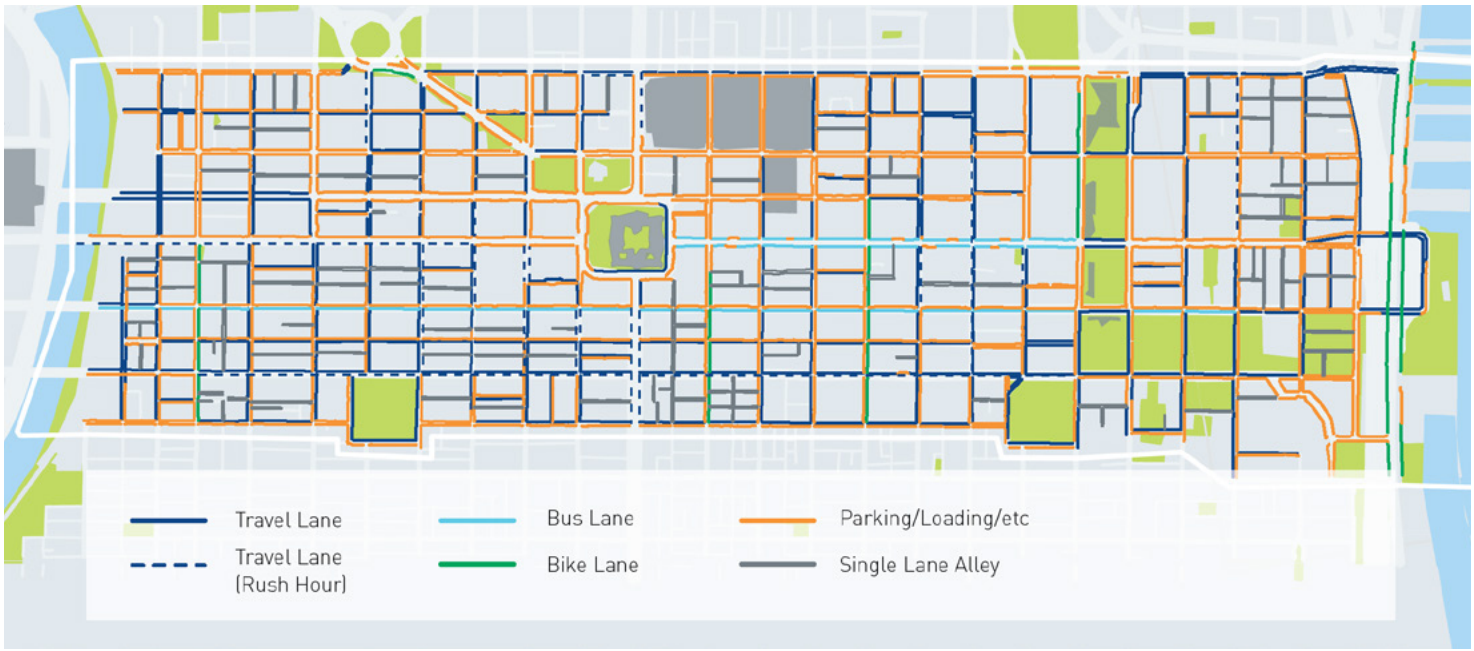
Between Race and Locust, river to river, surveyors documented 57 miles of curb along streets with more than one lane. Less than half (42%) of that space is dedicated to travel at all times (including bicycle and bus lanes), 7% is used for travel part of the time (during rush hour), and 52% of the curb is space is dedicated to non-travel activities such as parking and loading (Figure 3).

FIG 2: CENTER CITY CURBSIDE CLASSIFICATIONS

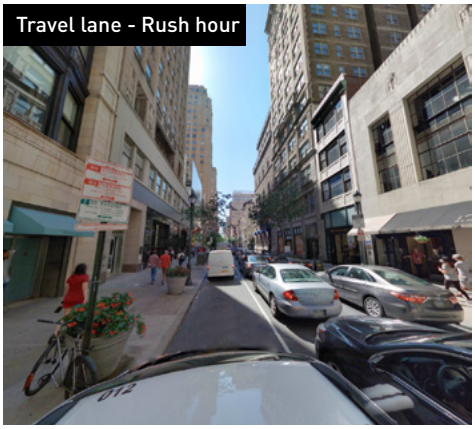
BROAD GROUP	EXAMPLE REGULATIONS	CURB (MILES)
Travel Lane	No Stopping	19
Travel Lane (Rush Hour)	No Stopping 3:30 - 6:30 p.m.	4
Bus Lane	Bus and Bike Only	3
Bike Lane	No Stopping or No Parking + Bike Lane Surface Paint	2
Parking/Loading/etc.	2 Hour Parking, Loading Zone, Specially designated parking*, etc.	29
Single-Lane Alley	No Stopping, No Parking	13
TOTAL		69

*Press, consul, city vehicles etc.

FIG 4: CENTER CITY CURBSIDE CLASSIFICATIONS



BROAD CURB DESIGNATIONS

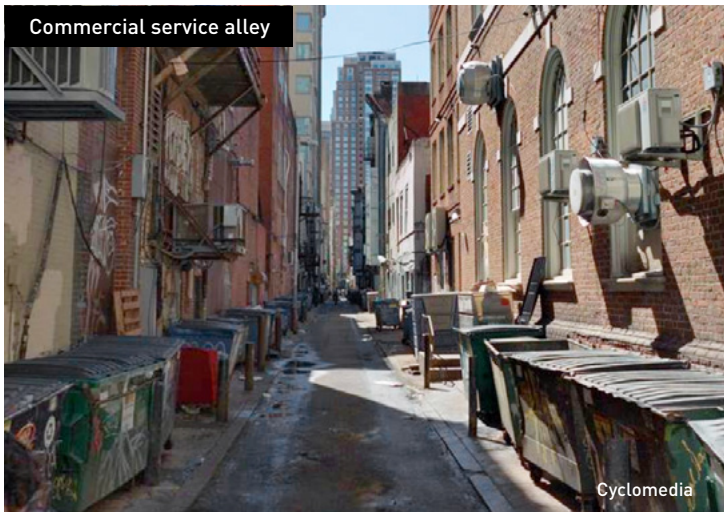


First row: travel lane (1600 block of Locust St., left side), travel lane - rush hour (1400 block of Walnut St., left side), bus lane (1600 block of Chestnut St., right side)
Second row: bike lane (200 block of S. 10th St., left side), parking lane (1300 block of Locust St., right side), single-lane alley (200 block of S. Camac St.)

52% OF CURB SPACE IN CENTER CITY IS DEVOTED TO PARKING AND LOADING;
42% IS DEDICATED TO DIVERSE MODES OF TRAVEL
THE BALANCE SHIFTS FROM PARKING TO TRAVEL AT RUSH HOUR

SINGLE LANE ALLEYS

Elfreth's Alley



1500 block of Moravian St.

SURVEY RESULTS

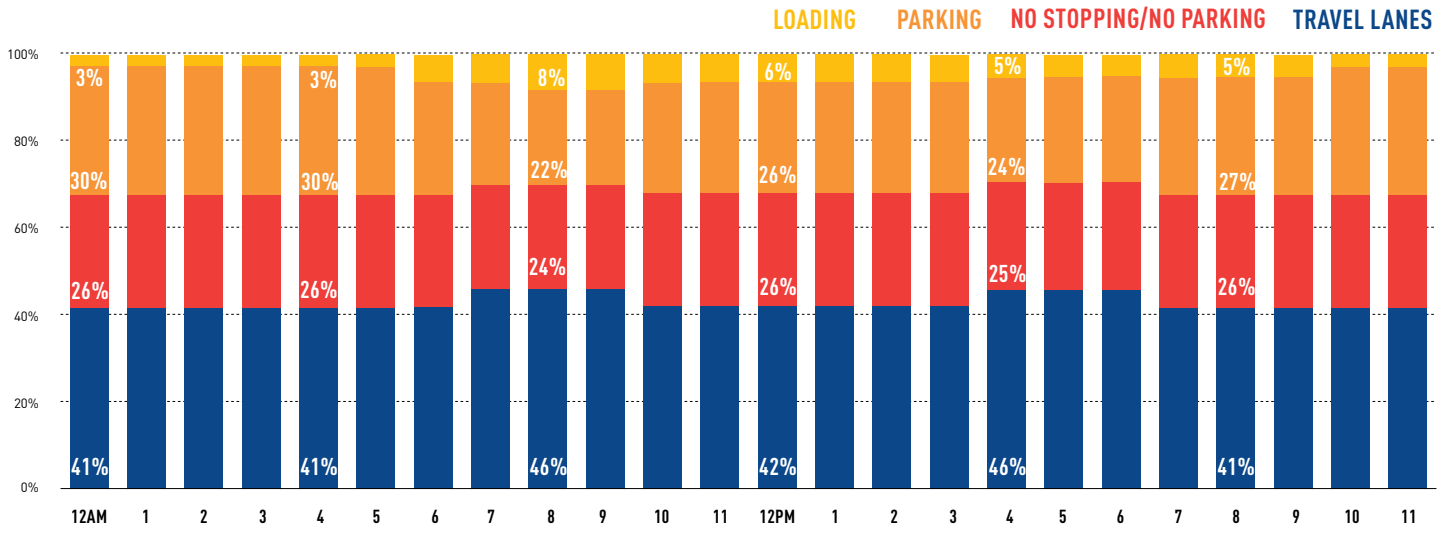
The management of curb space by varying regulations by time of day has been a long-standing practice in all cities. These time-dependent regulations broadly affect four categories of use: park-ing, loading, travel and total prohibitions on stopping during peak demand periods. Figure 5 shows the distribution by hour over the course of a typical Monday.

Travel lanes constitute 41% of the curb space during off-peak hours, expanding to 46% during rush hour peaks, primarily by prohibiting parking during these periods on streets like Walnut. Loading ex-pands during the morning, peaking at 8% at 8 a.m., before returning to 5-6% during the rest of the workday and early evening. Even at that peak, there is 2.5 times more space devoted to parking than loading. After 10 a.m., there is 4 times as much space devoted to car parking as there is to truck loading, even though surveys done by the CCD in 2017 and 2018 suggest that the peak for illegal truck parking in Center City occurs between 11 a.m. and noon.

Slightly more than a quarter (26%) of the linear curb space on a Monday is demarcated as *no parking* or *no stopping* – not including adjacent travel lanes. (When travel and curb lanes are combined, two-thirds of all linear cartways are designated as *no stopping*). Por-tions of the non-travel lane that are designated no stopping include the stretch of curb approaching intersections that is kept clear to preserve sight lines, as well as bus zones, fire hydrants, driveways, garage entrances, and those few streets that effectively have a shoulder, such as around portions of Washington Square and the Chestnut-Market bus loop at the Delaware River.

Figure 6 provides a more detailed breakout of the curbside regula-tions on Monday at 8 a.m. (with single-lane alleys excluded). As in Figure 5, travel lanes total 46% (38% vehicle travel lanes, 5% bus lanes, and 4% bike lanes) and loading constitutes 8% (3% truck loading, 3% general loading and 2% passenger loading). *No stopping* (21%) and *no parking* (3%) together comprise 24% of the curb length.

FIG 5: DISTRIBUTION OF CURBSIDE SPACE BY HOUR (MONDAY SHOWN)



FRAMING THE QUESTIONS

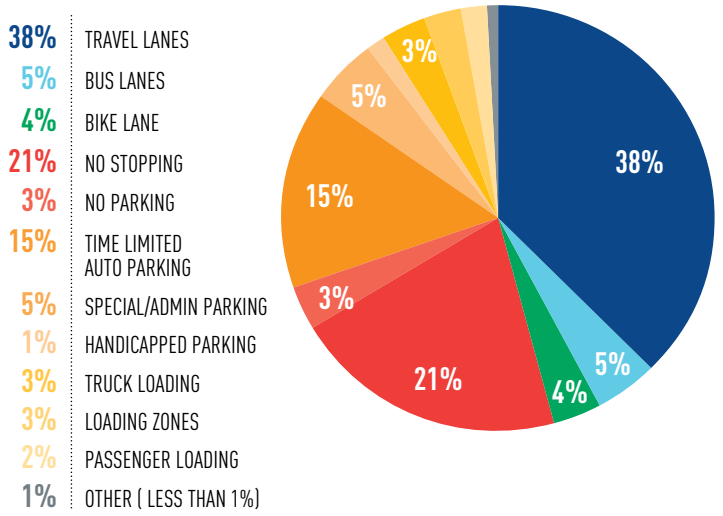
The overarching question for policy makers should be: "Is this the optimal distribution of curb space?" Any definition of "optimal" depends on the priorities that are placed on the modes of travel (car, bus or bike), parking of various types, and the importance of truck loading and deliveries. The distribution of space in Figure 6 indicates that, after travel, vehicle parking takes up the greatest share of curb space in Center City, accounting for 22%; loading zones account for 8% of the space, buses are allotted 5% and bikes 4%. Is that a conscious reflection of current public priorities or just the result of ad hoc and incremental changes that have occurred over time?

The City of Seattle offers one model of how to advance a discussion of curbside priorities. The transportation element of the Seattle 2035 plan defines the area adjacent to the curb as a "Flex Zone."[4] Then, Seattle notes six different functions or activities that curb space can allow as part of a broader effort to balance area-wide mobility objectives with the dominant land-use and resulting needs on those blocks. Those six functions are:

1. **Mobility:** moving people and goods; namely, travel lanes – bus lanes, bike lanes, vehicle lanes
2. **Access for People:** arrival, transfer and departure points for people – bus stops, bike parking, passenger loading, and short-term parking
3. **Access for Commerce:** arrival and departure points for goods and services – truck deliveries and loading
4. **Activation:** social space – food trucks, parklets, art, and street festivals
5. **Greening:** plantings, planter boxes
6. **Storage:** bus layover, long-term parking, reserved spaces, construction staging.

Center City's curbside functions might be defined differently, but establishing a classification system with a Philadelphia-specific context would help structure the conversation. What are the functions we want to accommodate in Center City and how do we address them in the curb lane on each block? What priority should be given to each use overall? Then the allocation of curb space should reflect both the priorities for that particular block and respond to the priorities for the entire downtown.

FIG 6: DISTRIBUTION OF CURBSIDE SPACE, MONDAY AT 8 A.M.



4: https://www.seattle.gov/transportation/projects-and-programs/programs/parking-program/parking-regulations/flex-zone/curb-use-priorities-in-seattle

PAINTED SHOULDERS

Washington Square

Chestnut-Market bus loop

STARTING THE CONVERSATION

Based on CCD's 2018 analysis in *Keep Philadelphia Moving* of causes of congestion, a major contributor is illegal truck parking that blocks moving lanes. In Seattle parlance this may suggest that "Access for Commerce" has been under-prioritized, especially since delivery companies are prepared to absorb significant fines for violations. Delivery trucks that illegally occupy moving lanes severely restrict "Mobility" for all other vehicles on the street and often create safety hazards by blocking the line of sight for drivers. Yet they are essential to the functioning of commerce and for the growing preference for home delivery of online purchases.

So as a hypothetical, imagine shifting the priority away from on-street parking toward commerce by doubling the amount of space available for curb lane truck loading and unloading, taking this added space away from parked cars, and significantly increasing fines for illegal truck parking. This can't be done piecemeal without simply shifting challenges to other blocks, so imagine doing this for all 57 miles of curb lane in our commercial study area.

Monday at noon, the survey data shows there are 75,931 linear feet of auto parking (including disabled and special/administration parking), and 11,728 linear feet of loading zones (excluding passenger loading). This means 6.5 times more curb space is allocated for vehicular parking than for delivery and loading. At 17.3 feet per car,[5] the on-street space allocated can accommodate 4,389 parked cars. At 30 feet per truck,[6] the loading space available can accommodate 390 trucks loading or unloading. Doubling loading areas to 22,455 linear feet would provide space for 780 trucks. Taking that space away from car parking would reduce the number of car parking spaces by 15% to 3,711. For a point of comparison, the inventory of *off-street* public parking spaces in the study area is 31,710.[7] In the context of all public parking, both on- and off-street, the hypothetical elimination of 678 parking spaces amounts to a reduction of only 1.9%. Is the trade-off of increased loading areas and decreased areas for customers and visitors to park a positive one? At a time when Uber, Lyft, multiple bicycle options and improved public transit are now available, this at least becomes a thinkable option.

Similar calculations can be done to offer a greater curb priority for green space, bike lanes, or drop-off areas for taxis and ride-sharing services. For example, to double the space allocated for bike lanes from 4% to 8% and take the space away from car parking, 632 on-street parking spaces would need to be eliminated from Center City.

But at the most basic, mathematical level, curb space reallocation is a zero-sum game: more space for one use means less space for the other. However, this is not simply a task of balancing the needs of different interest groups, since different curb lane decisions impact the functioning of the overall street.

5: The length of a Subaru Outback (15.3 ft.) plus one foot on either end, from Colder, Ashley; Weakley, Madison; and Zoeller, J. Robert, "Parking Space Estimation in the City of Portland" (2016). Student work.

6: The length of a package truck (22 ft.), plus two feet in front and six in the back for gate/loading space.

7: Market East (11,365) + Logan Square (7,251) + Penn Center (4,927) + Market West (4,278) + Old City (3,889) = 31,710 from PCPC Center City Parking Inventory 2015

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To illustrate the point with another extreme example: if all curbs were devoted to unlimited free parking, there would be enough space for 17,274 parked cars (at 17.3 feet per car). While there would be much more parking, there would be no loading zones, no bus lanes and fewer travel lanes. Even motorists most enamored with on-street street parking would find that the overall roadway system would function far less efficiently, with the remaining travel lanes clogged with a higher volume of cars on the street – induced by the availability of cheap parking – competing for limited right of way with buses, delivery trucks, and bicycles sharing the same lanes. In short, limiting on-street car parking might actually improve conditions for Center City motorists.[8] So each reallocation of space that is made should be evaluated both in terms of the priority we give to that mode or proposed curb use and the impact of that change on the optimal functioning of the overall transportation system of downtown streets.

NEXT STEPS

The purpose of this report is not to recommend whether buses, bikes, cars, trucks or parklets should be given greater or lesser priority. Instead, it is to provide the data that enables us to think comprehensively about the downtown and to evaluate the options. Each hypothetical example provided here is not so much a recommendation as it is a conversation starter. If you are lost in the woods, a comprehensive aerial overview of your environment is essential to choosing the best pathway that leads you out.

8: Philadelphia's flexibility to remove on-street parking in Center City is somewhat constrained by the fact that public agencies control only a small portion of the off-street parking supply. Since the late 1980s, the City or Parking Authority has sold two major off-street garages – 1845 Walnut Street and the Municipal Services Garage under Love Park. By contrast in many European cities, off-street parking is publicly owned and often priced to achieve broader public objectives. To raise revenue for other purposes the City has steadily raised the parking tax, resulting in the accelerated conversion of many surface parking lots to development sites. Converting gaps in fabric of the city to active development is beneficial to the vitality and tax base of the city, but it does have implications for broader parking policy. Many surface parking lots were created when the city was in decline and demand for real estate decreased dramatically. As positive economic trends continue, and as alternatives to car ownership expand, it is still worth posing the question: what is the minimum supply of parking, both on- and off-street, that must be maintained to keep us economically competitive?