APPENDIX

Downtown Monroe Market Analysis

Riverbend Research

Researchers: Andrew Fitzgerald & Jake Polansky

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Sections

Demographic Analysis, Residential Analysis, Jobs & Industry Analysis,
Surplus/Shortfall Analysis, Recommendations

Demographic Analysis

Population, Age, Household Income, Income in the past 12 months, Education Attainment

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Population

Downtown Monroe and Ouachita Parish saw modest population growth from 2010 through 2022. Downtown's population increased by almost 100 residents (+23.8%) while Ouachita Parish added 7,500 residents (+4.9%). Despite some growth in the Monroe MSA's population from 2010 through 2022 (+1.2%), the Monroe MSA along with Ouachita Parish and Downtown Monroe are projected to lose residents between 2022 and 2027.

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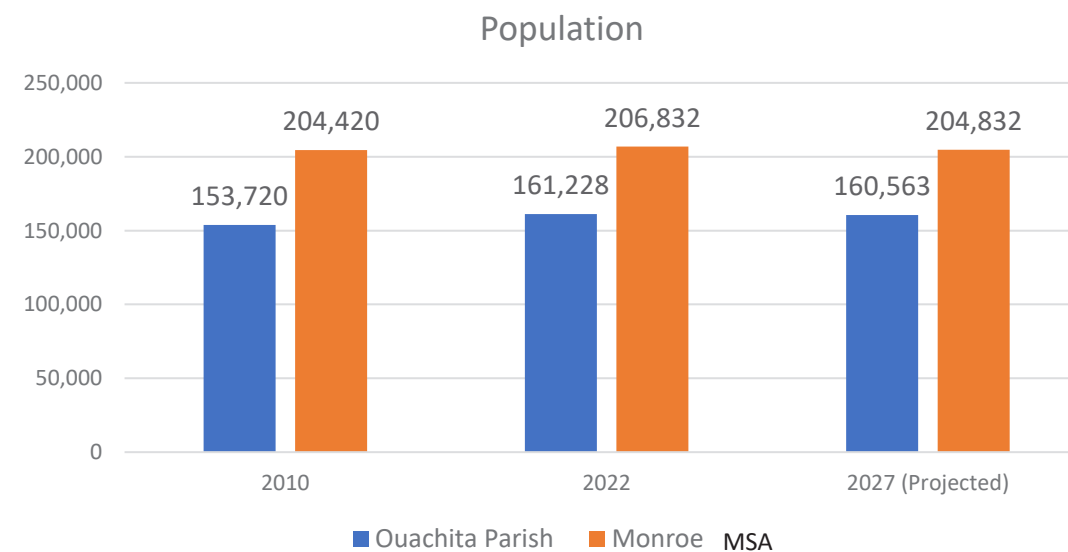
Age

Monroe is getting older. The Monroe MSA's median age increased from 35.5 in 2010 to 37.9 in 2022, and it's projected to increase to 39.1 by 2027.

While the region's population is aging, it's still younger than the national average. In 2010, Monroe MSA's median age (35.5) was younger than the national median that year (37.2). The young professional population (age 25 – 44) increased across the region between 2010 and 2022.
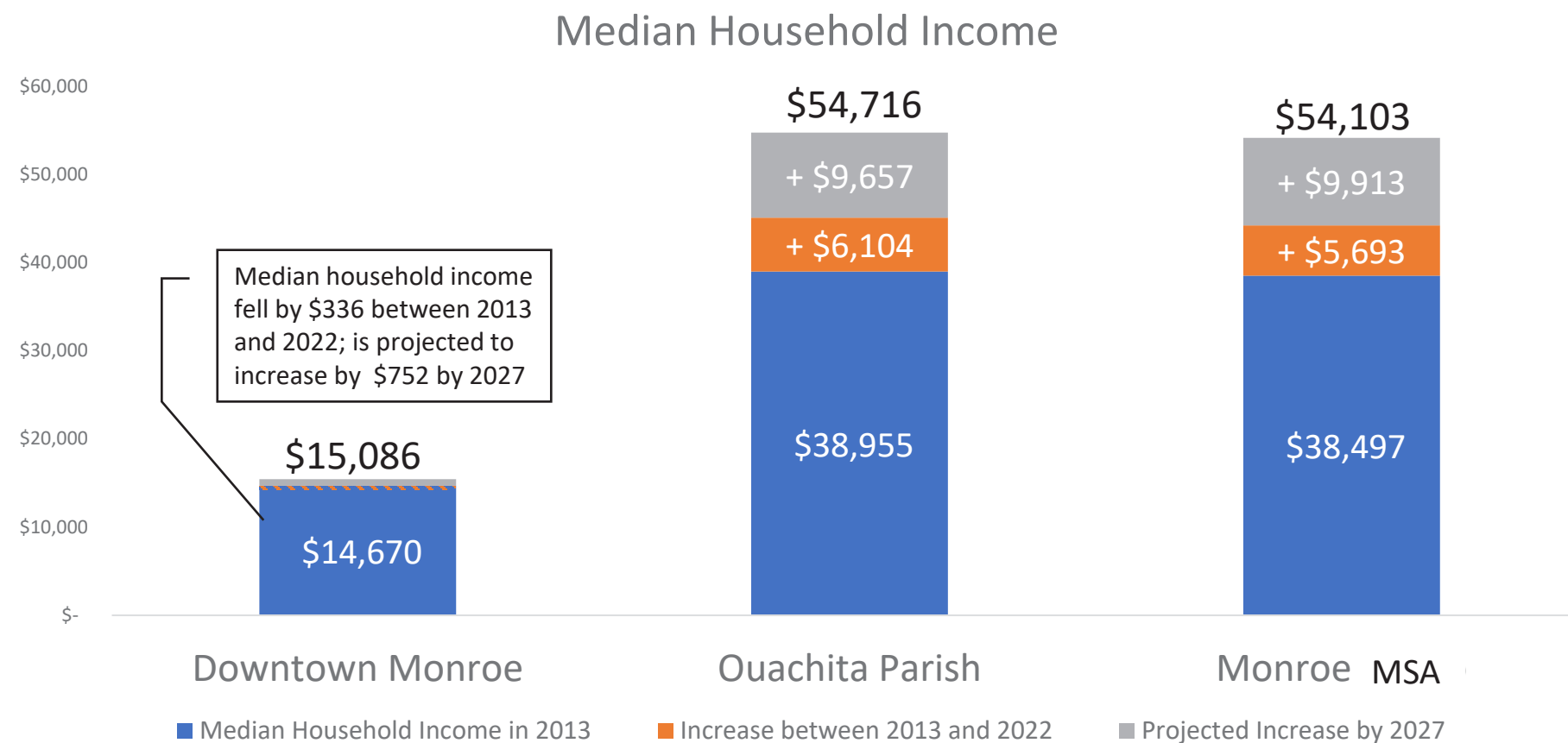
However, increases in the young professional population don't compare to increases in the population age 65+.

% increase from 2010 - 2022	Downtown Monroe	Ouachita Parish	Monroe MSA
25 to 34 years	+14%	+11%	+7%
35 to 44 years	+55%	+10%	+7%

% increase from 2010 - 2022	Downtown Monroe	Ouachita Parish	Monroe MSA
65 to 74 years	+ 54%	+ 50%	+ 44%
75 to 84 years	+ 37%	+ 23%	+ 16%
85 years and over	+ 79%	+ 31%	+ 28%

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Household Income

Household incomes in Downtown Monroe are very low: the median household income in 2022 was $14,334, down 2% from 2013. Ouachita Parish and the Monroe MSA have median incomes around $45,000, and this is projected to rise to somewhere between $54,000 and $55,000 by 2027.

Median Household Income

Median household income fell by $336 between 2013 and 2022; is projected to increase by $752 by 2027

	Downtown Monroe	Ouachita Parish	Monroe MSA
Total	$15,086	$54,716	$54,103
Projected Increase by 2027		+ $9,657	+ $9,913
Increase between 2013 and 2022		+ $6,104	+ $5,693
Median Household Income in 2013	$14,670	$38,955	$38,497

Legend: ■ Median Household Income in 2013 ■ Increase between 2013 and 2022 ■ Projected Increase by 2027

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Income in the past 12 months

More than half (52%) of Downtown Monroe households made less than $15,000 in the last year. A plurality of households (~20%) in both Ouachita Parish and the Monroe MSA also made less than $15,000 in the last 12 months.

Household incomes in Downtown are likely low due to the high percentage of residential units owned by the Housing Authority and subsidized for lower-income seniors.

Household incomes are expected to rise in both Ouachita Parish and the Monroe MSA. The number of households making between $100K - $150K is expected to rise significantly. Monroe Metro is projected to increase the number of households earning $100K - $150K by ~3,800 to ~11,200 total by 2027.

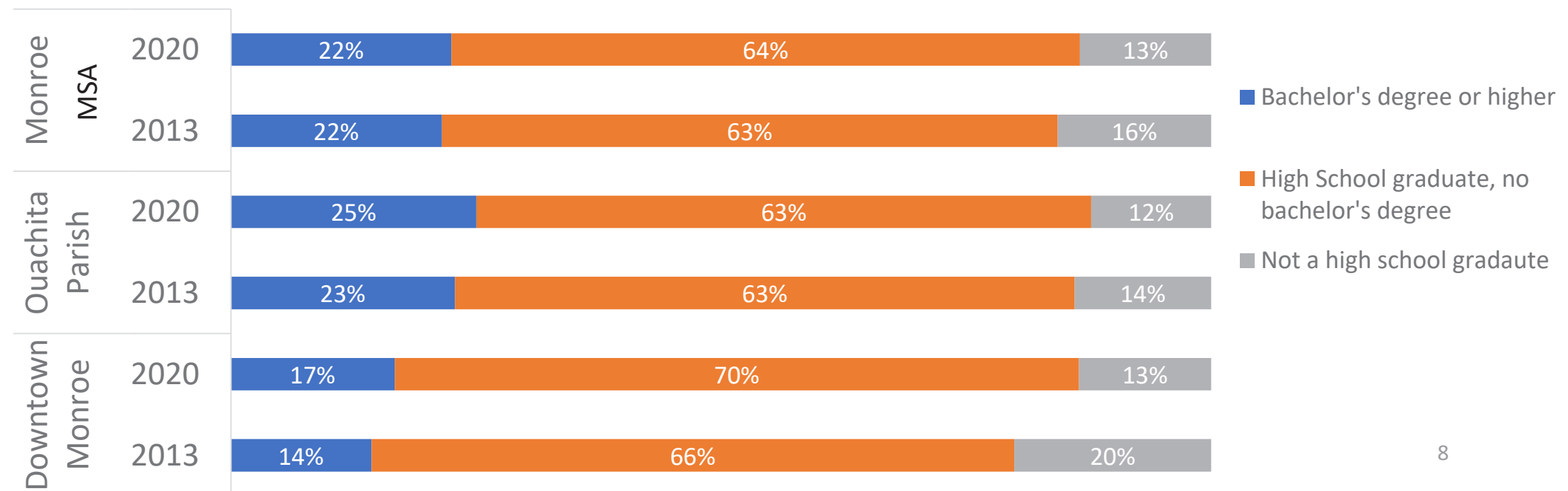| _Projected Increase/Decrease in the number of households by 2027, by income bracket_	Ouachita Parish	Monroe MSA
Less than $15,000	-23%	-24%
$15,000 to $24,999	-12%	-11%
$25,000 to $34,999	-8%	-8%
$35,000 to $49,999	-5%	-7%
$50,000 to $74,999	-11%	-10%
$75,000 to $99,999	15%	20%
$100,000 to $149,999	56%	52%
$150,000 to $199,999	27%	27%
$200,000 or more	21%	21%

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Education Attainment (1/3)

Educational attainment rates in Monroe are lower than the national average, but the number of residents with a bachelor's degree or higher increased between 2013 and 2020.

25% of residents in Ouachita Parish had a bachelor's degree or higher in 2020, 8% lower than the national average. 17% of Downtown Monroe residents and 22% of Monroe MSA residents had a bachelor's degree or higher in 2020.

Education Attainment Rates

		Bachelor's degree or higher	High School graduate, no bachelor's degree	Not a high school graduate
Monroe MSA	2020	22%	64%	13%
	2013	22%	63%	16%
Ouachita Parish	2020	25%	63%	12%
	2013	23%	63%	14%
Downtown Monroe	2020	17%	70%	13%
	2013	14%	66%	20%

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Education Attainment (2/3)

Downtown Monroe, Ouachita Parish, and the Monroe MSA all saw an increase in their share of the population with a bachelor's degree or higher, out-pacing overall population growth. Increases ranged between 1% and 2.4%. Downtown Monroe in particular added a significant number of residents with bachelor's degrees or higher. While the *share* of Downtown Monroe's population with a bachelor's or higher increased 2.4%, the *number* of residents increased 59%

	Downtown Monroe*		Ouachita Parish		Monroe MSA	
	2013	**2020**	**2013**	**2020**	**2013**	**2020**
Bachelor's degree or higher (# of residents)	75	119	22,246	25,352	24,262	30,192
Share of the population with a bachelor's degree or higher	14.3%	16.7%	22.9%	25.1%	21.5%	22.5%
Net increase (# of residents) 2013 – 2020		44		3,106		5,930
Percent Increase (# of residents) 2013 - 2020		58.7%		14.0%		24.4%

*Educational Attainment data are for the Block Group, not the specific catchment area. Catchment area has about 60% of the population of the block group.

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Education Attainment (3/3)

In addition to population with bachelor's degree, the region is producing graduates with certifications in workforce programs and adult education. Forty-four percent of graduates from Delta Community College are from Ouachita Parish.

LCTCS - Delta Community College (all campuses) graduate demographics					
Figures represent the number of graduates from that grouping of programs in that year					
	2018	2019	2020	2021	2022
Adult Education	322	374	376	314	242
Workforce	479	2361	2932	2076	2824

*Louisiana Community and Technical College System data.

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Residential Analysis

Housing Units, Owner-Occupied House Pricing, Multifamily Units & Rent, Downtown Rents, Single Family Homes

Housing Units (1/2)

The total number of housing units, along with the number of renter-occupied units and vacant units, increased from 2010 through 2022. By 2027, the total number of housing units is projected to remain stagnant or, at the most, increase marginally.

Downtown Monroe saw a 36% increase in the number of renter-occupied units between 2010 and 2022, compared to increases of 15% and 9% for Ouachita Parish and the Monroe MSA, respectively. Downtown Monroe also saw a 25% increase in the number of occupied units (includes both owner- and renter-occupied) between 2010 and 2022, higher than Ouachita Parish (+8%) and the Monroe Metro (+4%).

Ouachita Parish & Monroe Metro Housing, by type (Owner- Occupied vs. Renter-Occupied)

Ouachita Parish

	2010	2022
Owner-occupied housing units	35,924	36,964
Renter-occupied housing units	22,767	26,173

+1,040 / +3,406

Monroe MSA

	2010	2022
Owner-occupied housing units	50,502	51,000
Renter-occupied housing units	28,186	30,829

+498 / +2,643

■ Owner-occupied housing units   ■ Renter-occupied housing units

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Housing Units (2/2)

Most of Downtown Monroe's housing growth came from renters, not homeowners. The number of owner-occupied units fell 59% between 2010 and 2022, and it's estimated just 12 units are owner-occupied in Downtown Monroe today.

The number of vacant housing units is increasing across the board.

	Downtown Monroe			Ouachita Parish			Monroe MSA		
	2010	2022	2027	2010	2022	2027	2010	2022	2027
Vacant Housing Units	23	29	31	5,790	7,820	8,582	9,562	11,094	11,830
Vacant Units as a % of Total Housing	8.2%	8.2%	8.8%	9.0%	11.0%	12.0%	10.8%	11.9%	12.7%

Owner-Occupied House Values

Housing values are expected to increase over the next five years in Monroe.

Monroe MSA Owner-Occupied Units, by value

2022   **Projected 2027**

46%   54%   30%   70%

■ Less than $150K
■ $150K or more

Owner-Occupied Units in the Monroe MSA, by value

	2022	2027 (projected)	Increase/Decrease
Less than $150k	23,257	15,379	-7,878
$150k or more	27,743	35,762	+8,019

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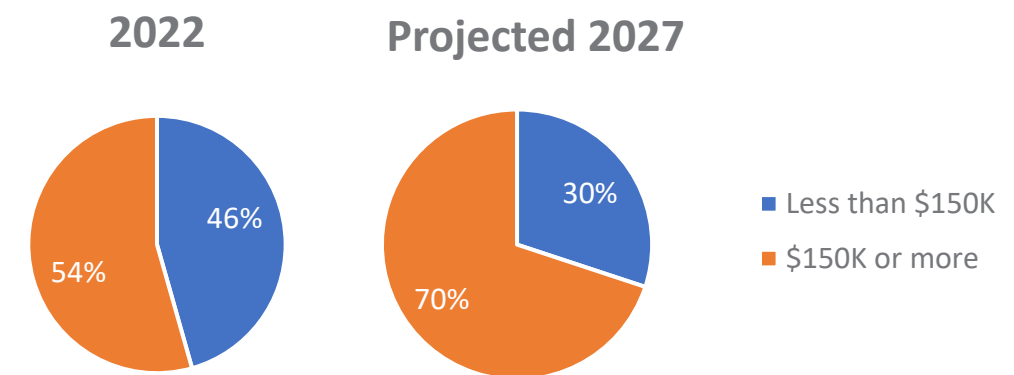
Multifamily Units and Rent

The amount multifamily housing increased significantly between 2013 and 2022. The Monroe MSA added ~3,000 units of multifamily housing from 2013 to 2020, a 22% increase.

Looking at the breakdown of the number of units by structure size, structures with 20 or more units saw some of the greatest increases in Downtown Monroe (+124%), Ouachita parish (+36%), and the Monroe MSA (+44%).

	Downtown Monroe		Ouachita Parish		Monroe MSA	
	2013	**2020**	**2013**	**2020**	**2013**	**2020**
1-unit, attached	10	11	887	1,162	898	1,387
2 units	8	22	2,108	2,625	2,254	2,994
3 or 4 units	1	19	3,663	4,230	3,877	4,839
5 to 9 units	-	-	3,222	3,028	3,420	3,258
10 to 19 units	-	9	1,149	1,168	1,164	1,302
20 or more units	104	232	1,676	2,280	1,768	2,544
Total Multifamily	123	293	12,705	14,493	13,381	16,324
Total Multifamily % Increase		138%		14%		22%

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Downtown Rents

In 2020, the median gross rent in Downtown Monroe was $620.

92% of renters in Downtown Monroe pay less than $1,000 in gross rent monthly.

	Number of units
Total Renter Occupied Units	409
Units with monthly rent less than $1,000	377
Units with monthly rent $1,000 or more	31

Single Family Homes

Single family homes remain popular for Monroe residents, although multifamily housing stock increased at a faster rate between 2013 and 2020 in both Downtown Monroe and Ouachita Parish.

The Monroe Metro added 11,653 single family housing units between 2013 and 2020, a 23% increase. During that time, Ouachita Parish added ~3,000 single family units and Downtown Monroe added ~50.

	Downtown Monroe		Ouachita Parish		Monroe MSA	
	2013	**2020**	**2013**	**2020**	**2013**	**2020**
Multifamily Units	123	293	12,705	14,493	13,381	16,324
Single Family Units	95	147	42,861	45,721	50,369	62,022
Multifamily % Increase		138%		14%		22%
Single Family Units % Increase		55%		7%		23%

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Jobs & Industry Analysis

Jobs by Industry, Inflow/Outflow, Downtown Demographics for Workers/Residents, Commuter Patterns

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Jobs in Downtown Monroe (1/2)

In 2019, there were 6,119 jobs in Downtown Monroe, fewer than Downtown had in both 2002 (7,004) and 2010 (7,390). In 2019, 80% of Downtown Monroe jobs fell under one of these three industries:

- Administration & Support (1,992 jobs)
- Health Care and Social Assistance (1,309 jobs)
- Public Administration (1,541 jobs)

Between 2002 and 2019, job growth in Downtown Monroe was concentrated in three industries:

- Administration & Support (+1,532 jobs)
- Public Administration (+183 jobs)
- Accommodation and Food Services (+90 jobs)

The Health Care and Social Assistance industry has been a huge driver of job losses over the past decade. After the industry added 696 jobs in Downtown Monroe between 2002 and 2010, it lost 2,507 jobs between 2010 and 2019. Other industries that have experienced high numbers of job losses between 2002 and 2019 include Finance/Insurance (-276 jobs), Information (-167 jobs), and Professional/Scientific/Technical Services (-121 jobs).

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Jobs in Downtown Monroe (2/2)

	Net Growth 2002 - 2019	Net Growth 2010 - 2019	Percent Change 2002 - 2019	Percent Change 2010 - 2019
Administration & Support, Waste Management and Remediation	1532	1679	333%	536%
Public Administration	183	-82	13%	-5%
Accommodation and Food Services	90	82	130%	106%
Other Services (excluding Public Administration)	75	50	47%	27%
Management of Companies and Enterprises	6	-56	86%	-81%
Utilities	2	1	2%	1%
Agriculture, Forestry, Fishing and Hunting	1	2	20%	50%
Mining, Quarrying, and Oil and Gas Extraction	-2	-5	-100%	-100%
Retail Trade	-3	15	-2%	14%
Educational Services	-13	-4	-100%	-100%
Transportation and Warehousing	-23	-45	-32%	-47%
Real Estate and Rental and Leasing	-32	-45	-64%	-71%
Manufacturing	-34	-20	-97%	-95%
Construction	-92	-18	-57%	-20%
Arts, Entertainment, and Recreation	-97	11	-44%	10%
Wholesale Trade	-103	-118	-87%	-89%
Professional, Scientific, and Technical Services	-121	6	-37%	3%
Information	-167	-169	-53%	-53%
Finance and Insurance	-276	-48	-90%	-60%
Health Care and Social Assistance	-1811	-2507	-58%	-66%

Inflow/Outflow

In 2019, 99.7% of workers in Downtown Monroe did not live in Downtown Monroe. However, 89.5% of people who lived in Downtown Monroe also worked in Downtown Monroe (18 people). This means 6,101 workers are commuting into Downtown Monroe each day for work.

	2019	
	Count	Percent
Employed in Downtown Monroe	6,119	100%
Employed in Downtown Monroe but Living Outside	6,101	99.7%
Employed and Living in Downtown Monroe	18	0.3%
Living in Downtown Monroe	171	100%
Living in Downtown Monroe but Employed Outside	153	89.5%
Living and Employed in Downtown Monroe	18	10.5%

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Downtown Demographics for Workers & Residents (**Workers**)

57% of people working in Downtown Monroe are between ages 30 and 54, and 47% of Downtown Monroe workers make between $1,251 and $3,333 monthly.

Age	count	share
29 or younger	1,099	18%
30 to 54	3,445	57%
55 or older	1,539	25%

Earnings	count	share
$1,250 per month or less	1,086	18%
$1,251 to $3,333 per month	2,858	47%
more than $3,333 per month	2,139	35%

Overall, the average earnings per job in Downtown Monroe's zip code was $49,200 in 2021.

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Downtown Demographics for Workers & Residents (**Residents**)

56% of people who live in Downtown Monroe are between ages 30 and 54, and 41% of Downtown Monroe workers make between $1,251 and $3,333 monthly.

Age	count	share
29 or younger	37	22%
30 to 54	95	56%
55 or older	38	22%

Earnings	count	share
$1,250 per month or less	56	33%
$1,251 to $3,333 per month	69	41%
more than $3,333 per month	45	27%

Commuter Patterns

Downtown Workers (Commuting into Downtown)

People who work in Downtown Monroe commute in from all around the parish, although two of the highest concentrations of workers live in two neighborhoods bordering Downtown, one to the northwest and one to the southeast.
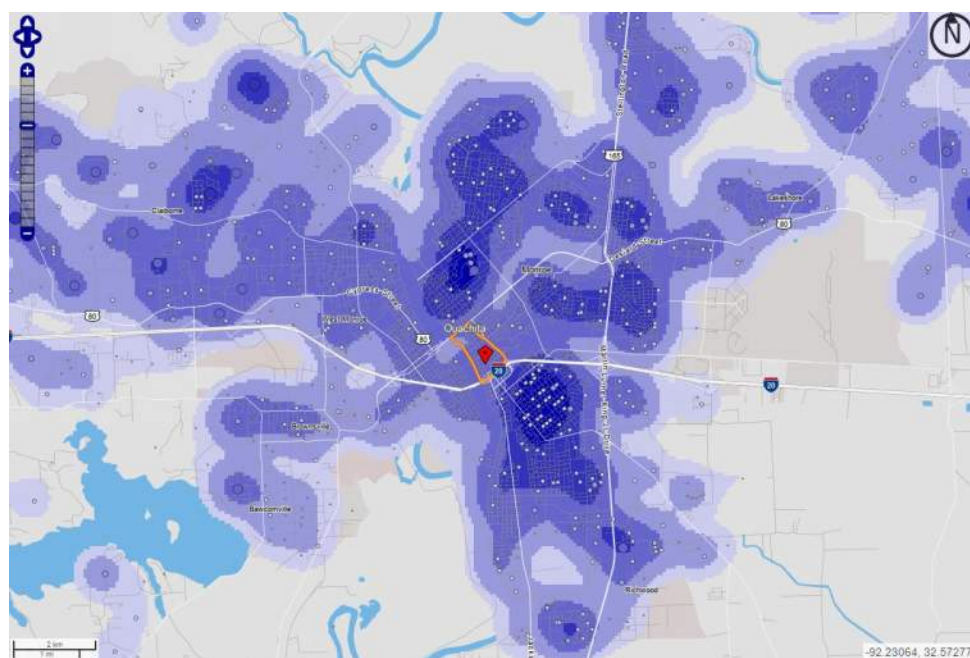
Downtown Residents (Living Downtown)

Many fewer people live Downtown, but in 2019 it was estimated that 10.5% of those who lived in Downtown Monroe also worked there. Those who do leave Downtown Monroe to work commute much shorter distances than those who commute into Downtown and live outside Downtown.

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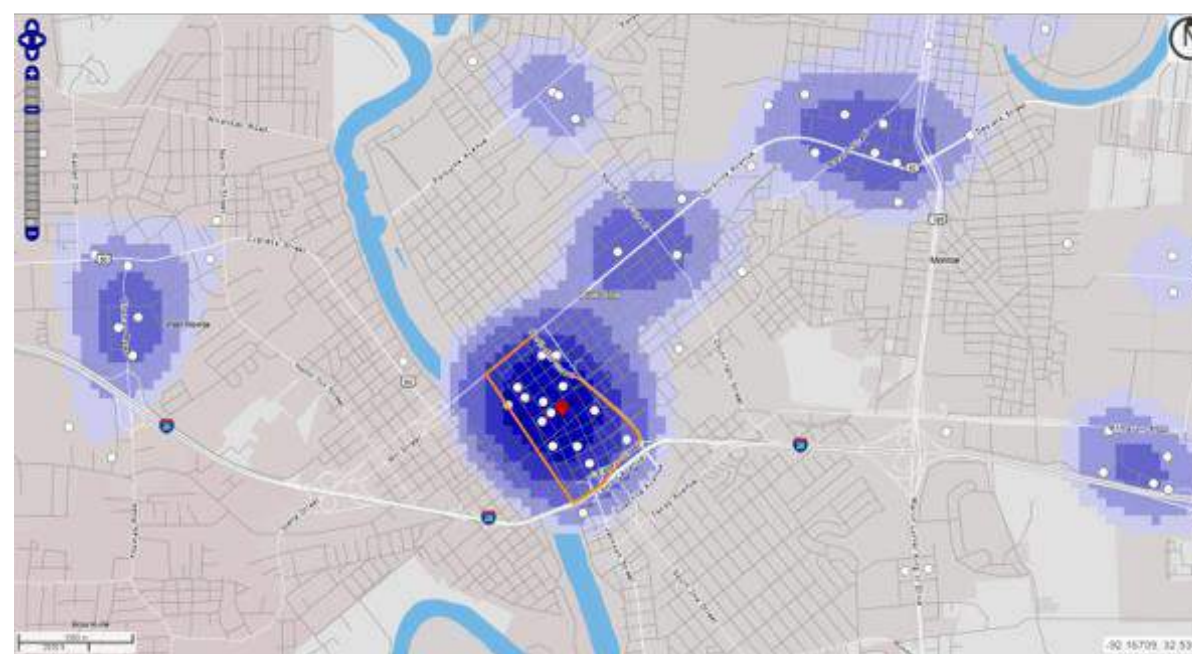
Surplus/Shortfall Analysis

Consumer Spending Potential, Restaurant Brand Propensity

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Consumer Spending Potential – Downtown Monroe

The types of retailers with the greatest opportunity in Downtown Monroe are grocery stores, department stores, motor vehicle dealerships, and specialty food stores. Grocery stores have $497,879 in annual consumer spending potential; a specialty food store, with $32,229 in annual consumer spending potential, could complement a grocery store in Downtown Monroe.

Bars and other drinking places in Downtown Monroe register $505,050 in annual consumer sales. Downtown Monroe residents only demand $12,276 in consumer spending at bars, so this means a significant number of people travel from outside Downtown Monroe in order to visit downtown drinking establishments. Bars in Downtown Monroe bring in about one-fifth of total bar spending within a 20-minute drive of downtown, and about 16% of all bar spending throughout the Monroe MSA. This signals an opportunity to cluster bars and restaurants to establish Downtown as *the* destination in the region for dining and entertainment.

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Consumer Spending Potential – within a 20-minute drive of Downtown Monroe

When looking at residents and establishments within a 20-minute drive of Downtown Monroe, the types of businesses that have the greatest consumer spending potential include home furniture stores, direct selling establishments (think businesses that deliver their products directly to you, like newspapers or water-cooler refills), and drinking establishments.

Surplus/Shortfall - Within 20 minutes of Downtown Monroe

Legend:
- Retail Gap (Consumer Spending Potential)
- Retail Supply
- Retail Potential

Chart values:
- Home Furnishings Stores: $3,594,564 *
- Direct Selling Establishments: $3,179,066 *
- Drinking Places - Alcoholic Beverages: $2,421,598 *
- Lawn & Garden Equip & Supply Stores: $1,552,179 *
- Office Supplies, Stationery & Gift Stores: $549,326 *

* Figures represent consumer spending that is lost to areas outside of a 20-minute drive from Downtown Monroe

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Consumer Spending Potential – Monroe MSA

Home furnishing stores, office supply stores, and direct selling establishments are the types of businesses that see the greatest number of residents leaving the metropolitan area in order to find what they need. There's a nearly a $10.5 million retail gap for home furnishing stores, meaning $10.5 million in potential consumer spending by Monroe residents on furniture is spent outside the Monroe MSA. This may offer an opportunity for local "makers" who can sell furniture and home goods.

Surplus/Shortfall - Monroe Metro

Legend:
- Retail Gap (Consumer Spending Potential)
- Retail Supply
- Retail Potential

Data labels:
- Home Furnishings Stores: $10,466,905 *
- Office Supplies, Stationery & Gift Stores: $7,349,183 *
- Direct Selling Establishments: $6,316,649 *
- Other Motor Vehicle Dealers: $5,294,433 *
- Specialty Food Stores: $4,752,760 *
- Drinking Places - Alcoholic Beverages: $4,289,576 *

* Figures represent consumer spending that is lost to areas outside of a 20-minute drive from Downtown Monroe

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Recommendations

Middle/Upper-Middle Income Housing, Mixed-Use Development with Grocery and Restaurants/Bars

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Recommendations – Middle/Upper-Middle Income Housing (1/2)

There are very few, if any, Downtown Monroe housing options for average/above-average wage earners, let alone higher-end earners. Residents with these incomes may be willing to pay a premium for access to Downtown Monroe's walkability.

- About 6,000 people work in Downtown Monroe, and only 478 people live there
    - Only 18 people both live and work in the area
- Many of those that work in the area live a nice neighborhood to the northwest of the catchment area
    - That neighborhood also has an extremely nice high school – something to keep in mind if one goal is to have more families living in the catchment area

- Average wage for the zip code in which the catchment area is located is $49,200 annually
    - Median household income for the catchment area is an astonishingly low $14,000 per year based on census data

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Recommendations – Middle/Upper-Middle Income Housing (2/2)

- Of the approximate 400 housing units in the area, only about 10 are owner occupied, and all appear to have values of less than $200,000 based on census data
    - According to Zillow, there appears to be one $400,000 unit for sale that's relatively new, so the census data is a little outdated. Most of the condos downtown appear to be on AirBnB rather than owner-occupied. Nothing else for sale

- Census data also indicates that about 93% of the rental units in the area are $999 per month or less. Currently no units for rent on Zillow

- Based on the $49,200 average annual income, the average worker would look to spend about $1,200 per month on housing (rent or mortgage, 30% of pre-tax income). The lack of housing options in Downtown Monroe for average/above-average wage earners presents a strong opportunity for higher-end residential development in the catchment area, including housing for college students and young professionals.

Recommendations – Mixed-Use Development with Grocery and Restaurants/Bars (1/2)

Based on consumer spending potential, Downtown Monroe should build on its competitive advantage in the restaurant/bar space while expanding grocery options for residents.

- Out of all types of business establishments, "grocery stores" have the highest dollar value of what Downtown Monroe residents leave the boundaries of downtown to purchase
  - Mixed-use retail & residential development (think something like Matherne's Market in Downtown Baton Rouge) would give some of Downtown Monroe's 6,000 workers both a potential walkable commute and pedestrian access to a local grocery store

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Recommendations – Mixed-Use Development with Grocery and Restaurants/Bars (2/2)

- Data shows a surplus of restaurants and bars in Downtown Monroe, meaning people travel into downtown from outside the catchment area to visit food and drink establishments
  - There's a notable shortage of both restaurants and bars on the parish and metro level, so more bar and restaurant options downtown will continue to attract residents from across the region

Providing these amenities could help develop Downtown Monroe as the optimal spot in the region to Work, Live, and Play.

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Responses to Questions

Downtown Worker Spending Patterns, Current Housing Locations for Young Adults

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Response to Questions – Downtown Worker Spending Patterns

What are the spending patterns for people who currently work downtown?

- It's estimated the 6,100 downtown workers spend between $23 million and $24 million annually during the workday
  - Workers spend an estimated $3,871 annually* on coffee/lunch near their place of work
  - This works out to about $15 per day per worker over 260 working days

  These are high-end estimates because remote work likely reduced the number of downtown workers who commute to their office each day.

*Based on a 2012 study that found workers spend $3,000 annually on coffee and lunch near work; this is $3,871 in 2022 dollars.

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Response to Questions – Current Housing Locations For Young Adults (1/3)

Where do young adults age 18 – 25 currently live?

Population Age 18 – 20 (Darker shading symbolizes more residents)
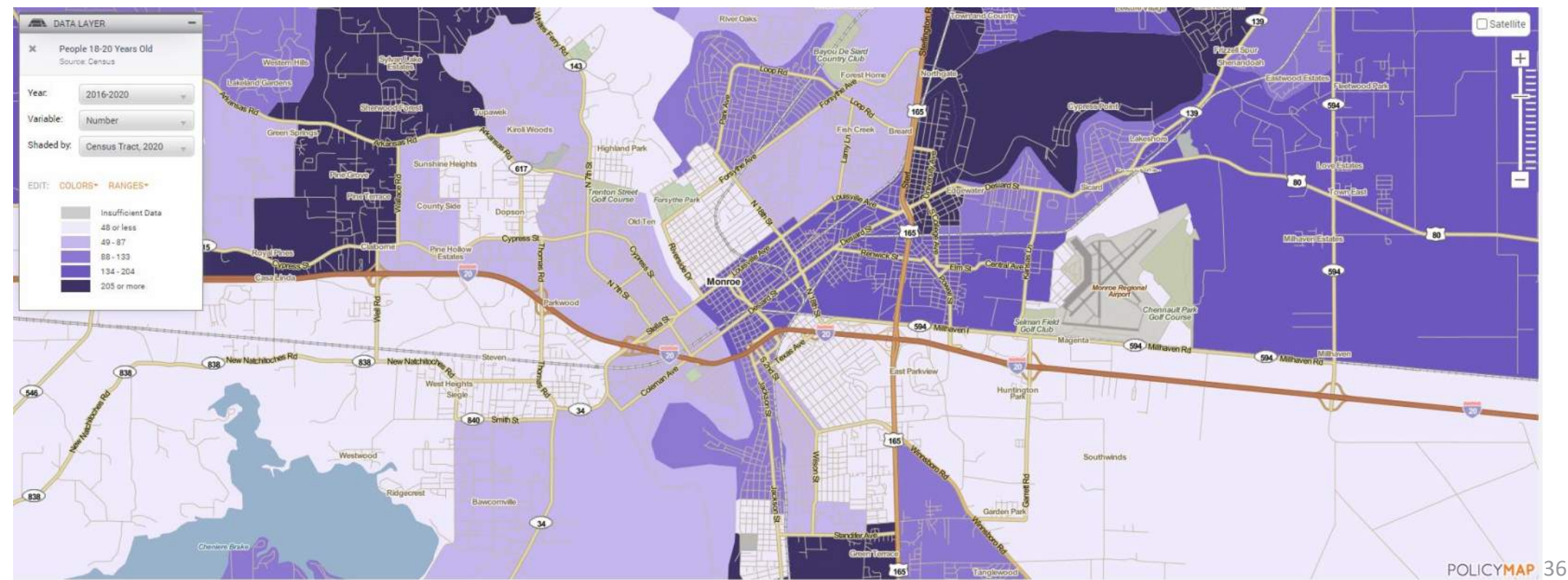
Response to Questions – Current Housing Locations For Young Adults (2/3)

Where do young adults age 18 – 25 currently live?

Population Age 21 – 24 (Darker shading symbolizes more residents)
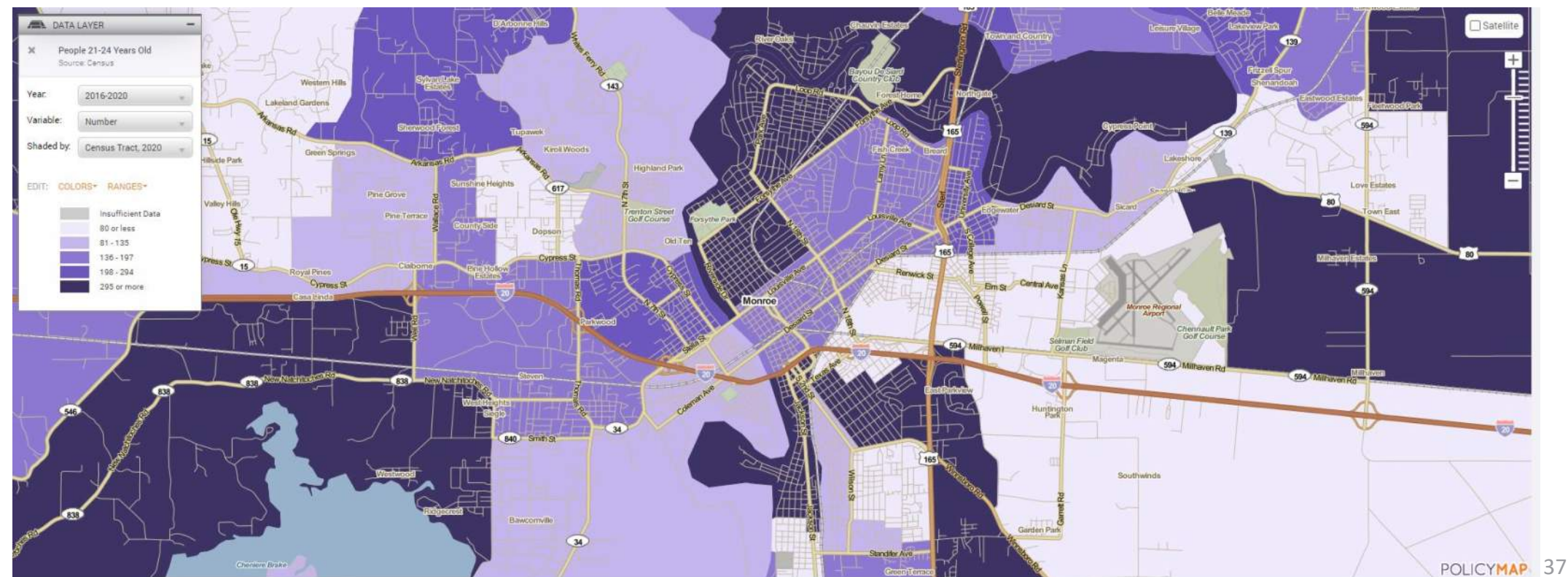
Response to Questions – Current Housing Locations For Young Adults (3/3)

Where do young adults age 18 – 25 currently live?

- Young adults age 18 – 20 live in high numbers around ULM; higher numbers can also be found in neighborhoods to the south and east of campus as well as in West Monroe

- Young adults age 21 – 24 also concentrate around ULM. They also find homes in areas north and south of downtown and east of campus as well

- Downtown Monroe does not house large numbers of young adults compared to surrounding areas

Population Age 18 - 20

Population Age 21 – 24

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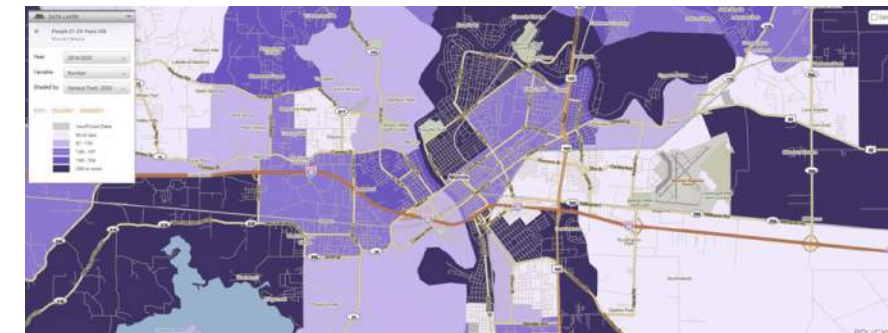
Asphalt Art Safety Study

Historical Crash Analysis and Observational Behavior Assessment at Asphalt Art Sites

April 2022

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Executive Summary

Transportation infrastructure is perhaps the most visible aspect of a city's public realm—the sidewalks and roadways we depend on daily are often as recognizable as the buildings, destinations, and people within it. As cities transform to meet evolving needs of the future, there is an increasing opportunity for streets to not only be safe and efficient, but a unique and inspiring part of the urban experience. Among other strategies to achieve that goal, public art projects coupled with improvements to transportation infrastructure, often known as "asphalt art," offer many benefits. They can create safer, more desirable streets and public spaces. They are typically inexpensive and quickly implementable, while helping cities test long-term roadway redesigns. And they help local governments engage with residents to reshape their communities.

These projects, including intersection murals, crosswalk art, and painted plazas or sidewalk extensions, have existed for years and are growing in popularity in communities across the world. Though asphalt art projects frequently include specific roadway safety improvements, the art itself is often also intended to improve safety by increasing visibility of pedestrian spaces and crosswalks, promoting a more walkable public realm, and encouraging drivers to slow down and be more alert for pedestrians and cyclists, the most vulnerable users of the road.

There has been considerable public feedback, anecdotal evidence, and analyses of individual locations indicating that asphalt art can have these traffic-calming benefits and encourage safer behavior. However, despite broad support from people who use and design streets, art within the public roadway network has faced regulatory hurdles in the United States and elsewhere because of concerns about compliance with current design standards and guidance that governs roadway markings. These concerns have persisted in the absence of much rigorous evaluation or published literature on safety performance of asphalt art projects.

This study was conducted to address the need for impact analysis by comparing crash rates and real-time behavior of pedestrians and motorists at an array of asphalt art sites before and after the projects were installed. There are two main components to the study: first is a Historical Crash Analysis that compares crash data prior to and after the introduction of asphalt art at 17 diverse study sites with at least two years of data. The second is an Observational Behavior Assessment that compares before and after video footage of motorist and pedestrian behavior at five U.S. locations with asphalt art projects installed in 2021 as part of the Bloomberg Philanthropies' Asphalt Art Initiative. **The analysis found significantly improved safety performance across a variety of measures during periods when asphalt art was installed.**

Comparing the average of crash rates for before-after analysis periods, results from the Historical Crash Analysis include:

» 50% decrease in the rate of crashes involving pedestrians or other vulnerable road users

» 37% decrease in the rate of crashes leading to injuries

» 17% decrease in the total crash rate

Similarly, the Observational Behavior Assessment indicates:

» 25% decrease in pedestrian crossings involving a conflict with drivers

» 27% increase in frequency of drivers immediately yielding to pedestrians with the right of way

» 38% decrease in pedestrians crossing against the walk signal

The promising findings from this study will inform ongoing discussions on how to revise U.S. roadway engineering guidance to improve safety for the most vulnerable road users. The study also provides data-driven evidence cities can use to make the case for their own arts-driven transportation projects.

The following report details the background, methodology, and results of the Historical Crash Analysis and the Behavioral Observation Assessment.

1. Introduction

There is arguably no more important goal for the transportation profession than ensuring safe travel for everyone on the road, especially pedestrians, cyclists, and other vulnerable road users. In recent years, though, this goal has proven elusive. According to the National Highway Traffic Safety Administration (NHTSA), in 2020, a total of 38,824 people died in motor vehicle crashes in the U.S., the most since 2007 and an increase of 6.8% over 2019.[1] Considering an 11% reduction in vehicle miles traveled (VMT) in 2020 during the pandemic, the fatality rate adjusted for miles traveled increased by 21% and the adjusted pedestrian fatality rate increased by an unprecedented 21%. Clearly, innovative, proven street design tactics need to be more broadly embraced in order to improve safety and mobility on our roadways.

Cities across the globe have been installing asphalt art treatments at intersections and pedestrian crossings for some time now with a goal of improving safety and the quality of life for all roadway users. Such projects have been used in a variety of applications, including within the crosswalk, within the center of an intersection, or in place of or in addition to traditional roadway features such as islands or curb extensions. The art is intended to create a highly visible crossing and suggest a walkable, active, shared use environment. Additionally, art in the crosswalk or at curb extensions makes the pedestrian crossing location more conspicuous to drivers.

However, some in the transportation community find that such projects on portions of roads open to motor vehicles are typically not compliant with official interpretations of the 2009 version of the Federal Highway Administration (FHWA) Manual on Uniform Traffic Control Devices (MUTCD), which provides standards and guidance for markings on public roadways in the United States. This interpretation of the standard—which pre-dates the availability of modern colored pavement materials—has limited the number

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[1] National Highway Traffic Safety Administration 2020 Annual Crash Data

of communities who can, as a practical matter, use asphalt art in crosswalks and other parts of the street. Recently, such interpretations have been challenged by organizations like the National Association of City Transportation Officials (NACTO) and individual public agencies seeking to improve roadway safety by focusing more on the most vulnerable road users, and less on the rapid movement of motor vehicles on city streets. Both NACTO and the Institute of Traffic Engineers (ITE) have proposed that asphalt art in crosswalks be permitted in the forthcoming revision to the MUTCD; however, the status of asphalt art in the ongoing revisions will likely not be known until 2023.

Given this divide between existing policy and the growing movement of practitioners and community residents who see the potential benefit of asphalt art, some local authorities have been willing to approve asphalt art projects while those in other jurisdictions have been more reluctant to do so. The resulting patchwork approach makes approval processes difficult for community organizations seeking to install asphalt art projects and leads to time-consuming, redundant efforts by local engineers seeking to assess such proposals. This study was designed to address this need and provide a quantitative assessment of multiple asphalt art projects to determine their impact on roadway safety.

1.1 Study Goals and Objectives

The goal of this study is to assess the effectiveness of asphalt art as a safety improvement through quantification and analysis of crash and behavior performance metrics before and after installation at study sites. There are two independent components to the study:

» **Historical Crash Analysis** – Site characteristics, traffic volumes, and crash data were obtained for 17 asphalt art sites in five states (seven unsignalized intersections, seven signalized intersections and three mid-block crossings). A before-after comparison group study design was used to evaluate the safety effectiveness of the projects.

» **Observational Behavior Assessment** – Performance metrics were developed for pedestrian and driver behavior and recordings were assessed to identify occurrences of the behavior during before and after comparison periods. This methodology was applied to five asphalt art intersection locations (two signalized and three unsignalized).

The objective of the study is to quantify the change in the following metrics for before and after comparison periods:

» Crash Rates

  » Total Crashes

  » Vulnerable user crashes

  » Fatal and injury crashes

» Driver and Pedestrian Behavior Metrics

  » Pedestrian-Vehicle conflicts with crash potential (near-miss)

  » Driver yielding/stopping behavior

  » Compliance with traffic control devices

These components were combined because crash rates should not be used as a lone factor in determining the safety effectiveness of roadway treatments, as crashes often have numerous contributing factors. By also assessing quantifiable behavioral metrics such as rate of pedestrian-vehicle conflicts and rates of drivers yielding to pedestrians, the intention is for the study to provide a more holistic measure of the effectiveness of treatments at installation sites.

1.2   Literature Review

In addition to the analysis itself, a literature review was performed and interviews with transportation officials from over three dozen cities were conducted, inquiring about their experience with asphalt art projects related to safety. Aside from a small number of internal studies generated by municipal staff, the study team found no all-encompassing analysis that created a standardized set of metrics by which to compare safety across different asphalt art improvement types, facility types, settings, and geographic regions, or that considered the long-term safety impacts of asphalt art, further demonstrating the need for the analysis in this document. Findings from the literature review and interviews are summarized in Appendix A.

2. Historical Crash Analysis

2.1. Background and Scope

To quantify the safety performance of a site, road safety practitioners use metrics called crash modification factors (CMF). CMFs are multiplicative factors used to compute the expected number of crashes after implementing a given countermeasure or roadway modification at a specific site. FHWA has developed a living database called the CMF Clearinghouse, which includes a list of recognized CMFs and provides references to studies from which they were developed. CMFs listed in the CMF Clearinghouse are developed as a product of robust published research studies. CMFs included are rated based on the thoroughness of the associated research study, which is predicated on criteria such as study design, sample size, statistical methodology, statistical significance, etc.

While the intent of this historical crash analysis is not to develop a CMF (as it lacks the scale and complexity of FHWA-reviewed research studies), elements of research studies used to develop CMFs were used as a model for this analysis. Similar to FHWA research studies, the goal of this study is to observe and compare long-term crash trends over a range of sites with similar characteristics. In addition to comparing crash quantity/frequency, trends in crash attributes and contributors such as severity, vulnerable user involvement, lighting condition, and crash type were also assessed.

2.2. Crash Data Sources

Many states and cities actively maintain open-source crash databases with historical crash data available at differing levels of granularity and comprehensiveness. While in certain states/ jurisdictions, comprehensive data is relatively easy to obtain, others do not allow the public to search for crash data at a single site, only by municipality or neighborhood. Additionally, some public databases only have crash data available for a limited number of years, often excluding the current and most recent complete year (for this study 2020 and 2021) and/or data older than five years.

Further, while a range of roadway data (volume, speed, multimodal, user behavior) is also becoming more widely available and easier to obtain, it is usually not granular enough for quantifying performance at a specific site without dedicated, often costly, monitoring programs.

This lack of comprehensive crash and road user behavior data ultimately impacted both the study site selection and the methodology itself. A list of crash data sources for each study site including years of data obtained is included in the Appendix B.

2.3. Site Selection Criteria

While asphalt art sites are prevalent throughout the country, the study team sought the most rigorous understanding of asphalt art impacts and initially reviewed 150 locations. Of those, 17 sites were selected that met all of the below criteria while offering a diverse array of project types, geographic locations, and neighborhood contexts.

» Known installation dates and dates of deterioration/repainting within 3 months (confirmed through NearMap or Google Maps historical imagery)

» Facility type is a marked mid-block crossing, stop-controlled intersection, or signalized intersection within (or formerly within) public ROW and open to vehicle traffic (excludes art in driveways, trails, approaches to controlled access highways, private developments, etc.)

» State or municipality has publicly available historical crash data through an online resource or open-source data portal

» Historical crash data available on a location-based scale (i.e., more than just county-wide or municipal-wide data)

» At least 12 months of pre- and post-implementation ("before" and "after") crash data available (as many states delay crash data for the current and previous year or only keep recent crash records for the last 5 years, many recently implemented asphalt art sites or those implemented longer than 6 years ago did not have 12 months of data)

» Robust crash data including (at a minimum) crash date, time of day, severity, vulnerable user involvement, lighting condition, crash type/circumstances

2.4. **Summary of Study Sites Selected**

The 17 sites selected for this study are included in Table 1 below. Sites from five states were included in high-density urban (central business district, downtown, or mixed-use areas), medium/low density urban (mostly residential), and suburban settings. Sites included mid-block crossings, stop-controlled intersections, and signalized intersections. Tables 2–4 below include a disaggregation of the 17 study sites by state, region, setting, and facility type.

Table 1: **Study Site Location Information**

#	City	State	Intersection	Site Setting	Facility Type
1	St Petersburg	FL	Central Ave & 5th St	Urban Core	Intersection-Signal
2	Miami	FL	Northeast 98th St & Northeast 2nd Ave	Neighborhood Commercial	Mid-Block
3	Ft Lauderdale	FL	Terramar St & Breakers Ave	Neighborhood Residential	Intersection-Stop
4	Ft Lauderdale	FL	Riomore St & Breakers Ave	Neighborhood Residential	Intersection-Stop
5	Pinecrest	FL	Killian Dr & SW 67th Ave	Suburban	Intersection-Signal
6	Pinecrest	FL	Killian Dr & SW 62nd Ave	Suburban	Intersection-Stop
7	Atlanta	GA	Piedmont Ave & 10th St	Urban Core	Intersection-Signal
8	Decatur	GA	Ponce de Leon Ave & Fairview Ave	Neighborhood Residential	Intersection-Stop
9	Decatur	GA	Ponce de Leon Ave & Clairemont Ave	Urban Core	Intersection-Signal
10	Decatur	GA	Ponce de Leon Ave & E Court Square	Urban Core	Mid-Block
11	Cambridge	MA	Massachusetts Avenue & Inman Street	Urban Core	Intersection-Signal
12	Rahway	NJ	E Cherry St & Irving St	Neighborhood Residential	Intersection-Stop
13	Maplewood	NJ	Valley St & Oakview Ave	Suburban	Intersection-Signal
14	NYC (Brooklyn)	NY	Hooper St & Division Ave	Urban Core	Intersection-Stop
15	NYC (Manhattan)	NY	7th Ave & Christopher St	Urban Core	Intersection-Signal
16	Tampa	FL	N River Blvd & W Louisiana Ave	Suburban	Intersection-Stop
17	New Brunswick	NJ	Livingston Ave	Urban Core	Mid-Block

Table 2: **Study Sites by Region**

Region	#	%
Northeast	6	35%
Southeast	11	65%
TOTAL	**17**	**100%**

Table 3: **Study Sites by Setting**

Setting	#	%
Urban Core	8	47%
Neighborhood Residential/Commercial	5	29%
Suburban	4	24%
TOTAL	**17**	**100%**

Table 4: **Study Sites by Facility Type**

Facility Type	#	%
Intersection (Signal Controlled)	7	41%
Intersection (Stop Controlled)	7	41%
Mid-Block	3	18%
TOTAL	**17**	**100%**

2.5.   Improvements at Study Sites

Asphalt art sites included in the study were classified based on type of improvement. Improvements related directly to installation of art include crosswalk art, intersection art serving a functional traffic control/calming purpose and meeting the definition of a traffic control device or traffic calming treatment device (e.g., curb extension, painted chicane, incorporation of traffic control elements), and roadway art serving only as an aesthetic improvement and not meeting the definition of a traffic control device (e.g., within the center of an intersection or along an approach). At some sites, in addition to asphalt art, other roadway/roadside improvements were implemented at the same time (e.g., raised crosswalks, pedestrian signal improvements, traffic control device modifications). Table 5 provides a matrix of improvements at each study site. Pre- and post-implementation aerial photos and links to locations in Google Maps are provided in Appendix C.

Table 5: **Site Locations by Improvement Type**

#	City	State	Crosswalk Art	Roadway Art (Center of intersection or intersection approach)	Other Improvements/Notes
1	St Petersburg	FL		✓	
2	Miami	FL		✓	
3	Ft Lauderdale	FL	✓	✓	Sidewalk improvements
4	Ft Lauderdale	FL	✓	✓	Sidewalk improvements
5	Pinecrest	FL		✓	
6	Pinecrest	FL		✓	
7	Atlanta	GA	✓		Rapid development, nearby bike network expansion, bike & pedestrian volume growth
8	Decatur	GA	✓		Raised crosswalks
9	Decatur	GA	✓		Bollards/sidewalk improvements
10	Decatur	GA	✓		Raised crosswalks
11	Cambridge	MA	✓		
12	Rahway	NJ	✓		
13	Maplewood	NJ	✓		
14	NYC (Brooklyn)	NY		✓	Restricted turning movement, intersection leg closure
15	NYC (Manhattan)	NY	✓		
16	Tampa	FL		✓	
17	New Brunswick	NJ	✓		Art within marked parking spaces
COMBINED SITES		#	11	8	8
		%	65%	47%	29%

2.6. Historical Crash Data Analysis Methodology

Historical crash data was obtained from state and municipal transportation agencies for each of the 17 study sites. As mentioned above, sites were selected based on a set of criteria identified to support a sound analysis methodology. In many jurisdictions, there are limitations on data available through open-source data portals. This required extracting data for thousands of crashes, and then manually parsing data to obtain the desired datasets at individual locations.

NearMap, an online resource for regularly updated historical aerial imagery, was used to obtain art installation dates as interviews with each municipality were not conducted. Using this imagery, the last confirmed date of the condition prior to asphalt art implementation, date of art installation, and dates of deterioration/ repainting/removal were obtained. Months between the confirmed prior condition and implementation and months after art had deteriorated beyond recognition were excluded from both analysis periods. At some locations, the exact date(s) of installation are known and were used when available.

To account for differences in sites with different analysis periods, crash rates (crashes/year) were used as a metric instead of raw number of crashes. The average pre-implementation/before period for all sites was 48.2 months while the post-implementation/after period averaged 32.9 months. Analysis periods for each site are presented in Table 6 on page 21.

The combined pre- and post-implementation analysis periods for the 17 study sites included a total of 390 reported crash records. Crash records were first reviewed and analyzed for all 17 sites combined in the following categories: total reported crashes, crashes involving vulnerable users (e.g., bicyclists, pedestrians, scooter users), crashes resulting in an injury, crash type, contributing circumstance, and time of day/lighting condition. Contributing circumstances and crash types were not available for every site and breakdown of crash types were summarized for combined sites with that information available. Lighting condition data was incomplete for many states and varied widely from state to state, resulting in inclusive data that was not included in the analysis.

Table 6: **Analysis Periods**

#	City	State	Pre-Implementation "Before" (Months)	Post-Implementation "After" (Months)	Implementation Year
1	St Petersburg	FL	52	39	2016
2	Miami	FL	54	25	2017
3	Ft Lauderdale	FL	49	42	2016
4	Ft Lauderdale	FL	49	42	2016
5	Pinecrest	FL	59	14	2018
6	Pinecrest	FL	59	14	2018
7	Atlanta	GA	54	42	2017
8	Decatur	GA	47	46	2016
9	Decatur	GA	48	47	2017
10	Decatur	GA	48	47	2017
11	Cambridge	MA	60	28	2016
12	Rahway	NJ	39	18	2019
13	Maplewood	NJ	40	31	2018
14	NYC (Brooklyn)	NY	30	35	2018
15	NYC (Manhattan)	NY	16	42	2017
16	Tampa	FL	60	32	2017
17	New Brunswick	NJ	57	16	2019
	AVERAGE		48.3	32.9	–

Crash rate metrics for combined study sites were calculated using two separate methods. The average of crash rates is the average of the individual crash rate values of each site within an analysis period and is calculated by dividing the sum of crash rates for each site by the quantity of sites. The average rate is the aggregated crash rate of all sites/analysis periods and is calculated by dividing the total number crashes that occurred divided by the total amount of time analyzed. It should be noted that several after periods overlapped with periods of reduced volumes due to the COVID-19 pandemic.

2.7. Historical Crash Analysis Results

Comparisons of crash types are presented in the following tables and further detailed by site in **Appendix D**. The percent differences between analysis periods were calculated as the difference in crash rates of the after and before period divided by the crash rate of the before period. Positive values for percent difference between the crash rates in the before and after condition indicate a reduction in the crash rate, while negative values indicate an increase.

Study Sites - Combined

Results indicate that, at the 17 study sites, the average of crash rates was 17.3% lower in the analysis periods after art installation than the average of crash rates for the before analysis periods. Similarly, the average of vulnerable user and injury crash rates were 49.6% and 36.5% lower in analysis periods after art was installed.

It should be noted that sites with a comparatively large number of crashes in both the before and after analysis periods heavily influenced averages of crash rates. As such, the average of crash rates was calculated for the entire 17 site sample and separately, excluding the sites with the highest and lowest number of total crashes statistical outliers. For this study, Site 7 (Atlanta, GA) experienced the highest number of crashes (70 and 77 crashes in before and after periods respectively) and both Site 16 (Tampa, FL) and Site 17 (New Brunswick, NJ) had no crash occurrences either analysis period. For purposes of performing calculations excluding statistical outliers, Site 17 was excluded as opposed to Site 16 because the before and after analysis periods were longer.

The following points summarize key findings from an analysis of crashes of all types (total crashes), crashes involving vulnerable users, and crashes involving an injury, holistically for all 17 study sites combined. Reported crashes, analysis periods intervals, and crash rates for before and after periods are presented by site and as an average in Tables 7–9 below. Table 10 presents the average (aggregate) crash rate of crashes and analysis periods of the 17 study sites combined.

Table 7: **Total Crash Rate by Site and Average of Rates (Crashes/Year)**

#	City	State	Analysis Period (Months)		Total Crash Quantity		Total Crash Rate (Crashes/Year)		
			Before	After	Before	After	Before	After	Difference
1	St Petersburg	FL	52	39	18	13	4.2	4.0	-4%
2	Miami	FL	54	25	3	0	0.7	0.0	-100%
3	Ft Lauderdale	FL	49	42	2	1	0.5	0.3	-42%
4	Ft Lauderdale	FL	49	42	4	3	1.0	0.9	-13%
5	Pinecrest	FL	59	14	28	1	5.7	0.9	-85%
6	Pinecrest	FL	59	14	3	0	0.6	0.0	-100%
7	Atlanta	GA	54	42	70	77	15.6	22.0	+41%
8	Decatur	GA	47	46	11	4	2.8	1.0	-63%
9	Decatur	GA	48	47	12	15	3.0	3.8	+28%
10	Decatur	GA	48	47	11	8	2.8	2.0	-26%
11	Cambridge	MA	60	28	31	7	6.2	3.0	-52%
12	Rahway	NJ	39	18	6	2	1.8	1.3	-28%
13	Maplewood	NJ	40	31	17	9	5.1	3.5	-32%
14	NYC (Brooklyn)	NY	30	35	12	12	4.8	4.1	-14%
15	NYC (Manhattan)	NY	16	42	5	5	3.8	1.4	-62%
16	Tampa	FL	60	32	0	0	0.0	0.0	0%
17	New Brunswick	NJ	57	16	0	0	0.0	0.0	0%
AVERAGE SITE			48.3	32.9	13.7	9.2			
AVERAGE OF TOTAL CRASH RATES (ALL SITES)							3.44	2.84	-17.3%
AVERAGE OF TOTAL CRASH RATES (EXCLUDING HIGH AND LOW SITES)							2.86	1.75	-38.7%

Table 8: **Vulnerable User Crash Rate by Site and Average of Rates (Crashes/Year)**

#	City	State	Analysis Period (Months)		Vulnerable User Crash Quantity		Vulnerable User Crash Rate (Crashes/Year)		
			Before	After	Before	After	Before	After	Difference
1	St Petersburg	FL	52	39	1	0	0.00	0.00	-100%
2	Miami	FL	54	25	0	0	0.00	0.00	0%
3	Ft Lauderdale	FL	49	42	0	0	0.00	0.00	0%
4	Ft Lauderdale	FL	49	42	0	0	0.00	0.00	0%
5	Pinecrest	FL	59	14	0	0	0.00	0.00	0%
6	Pinecrest	FL	59	14	0	0	0.00	0.00	0%
7	Atlanta	GA	54	42	4	3	0.89	0.86	-4%
8	Decatur	GA	47	46	0	0	0.00	0.00	0%
9	Decatur	GA	48	47	0	0	0.00	0.00	0%
10	Decatur	GA	48	47	0	0	0.00	0.00	0%
11	Cambridge	MA	60	28	1	0	0.20	0.00	-100%
12	Rahway	NJ	39	18	0	1	0.00	0.67	0%
13	Maplewood	NJ	40	31	0	1	0.00	0.39	0%
14	NYC (Brooklyn)	NY	30	35	6	1	2.40	0.34	-86%
15	NYC (Manhattan)	NY	16	42	1	0	0.75	0.00	-100%
16	Tampa	FL	60	32	0	0	0.00	0.00	0%
17	New Brunswick	NJ	57	16	0	0	0.00	0.00	0%
AVERAGE SITE			48.3	32.9	13.7	9.2			
AVERAGE OF VULNERABLE USER CRASH RATES (ALL SITES)							0.26	0.13	-49.6%
AVERAGE OF VULNERABLE USER CRASH RATE (EXCLUDING HIGH AND LOW SITES)							0.24	0.09	-61.0%

Table 9: **Injury Crash Rate by Site and Average of Rates (Crashes/Year)**

#	City	State	Analysis Period (Months)		Injury Crash Quantity		Injury Crash Rate (Crashes/Year)		
			Before	After	Before	After	Before	After	Difference
1	St Petersburg	FL	52	39	5	0	1.15	0.00	-100%
2	Miami	FL	54	25	1	0	0.22	0.00	-100%
3	Ft Lauderdale	FL	49	42	0	0	0.00	0.00	0%
4	Ft Lauderdale	FL	49	42	6	0	1.47	0.00	-100%
5	Pinecrest	FL	59	14	3	1	0.61	0.86	+40%
6	Pinecrest	FL	59	14	0	0	0.00	0.00	0%
7	Atlanta	GA	54	42	14	9	3.11	2.57	-17%
8	Decatur	GA	47	46	4	2	1.02	0.52	-49%
9	Decatur	GA	48	47	1	4	0.25	1.02	+309%
10	Decatur	GA	48	47	1	1	0.25	0.26	+2%
11	Cambridge	MA	60	28	14	0	2.80	0.00	-100%
12	Rahway	NJ	39	18	0	1	0.00	0.67	0%
13	Maplewood	NJ	40	31	6	5	1.80	1.94	+8%
14	NYC (Brooklyn)	NY	30	35	4	5	1.60	1.71	+7%
15	NYC (Manhattan)	NY	16	42	1	0	0.75	0.00	-100%
16	Tampa	FL	60	32	0	0	0.00	0.00	0%
17	New Brunswick	NJ	57	16	0	0	0.00	0.00	0%
AVERAGE SITE			48.3	32.9	13.7	9.2	//////	//////	//////
AVERAGE OF INJURY CRASH RATES (ALL SITES)							0.88	0.56	-36.5%
AVERAGE OF INJURY CRASH RATE (EXCLUDING HIGH AND LOW SITES)							0.80	0.46	-41.5%

Table 10: **Average (Aggregate) Crash Rate (Crashes/Year)**

Sites	Crash Type	Analysis Period (Months)		Quantity		Crash Rate (Crashes/Year)		
		Before	After	Before	After	Before	After	Difference
Average Crash Rate (All Sites Aggregated)	**Total**	**821**	**560**	**233**	**157**	**3.41**	**3.36**	**-1.2%**
	Vulnerable Users	821	560	13	6	0.7	0.0	-32.3%
	Injury	821	560	60	28	0.5	0.3	-31.6%
Average Crash Rate (Aggregated, Excluding High and Low sites)	**Total**	**710**	**502**	**163**	**80**	**2.75**	**1.91**	**-30.6%**
	Vulnerable Users	710	502	9	3	0.15	0.07	-52.9%
	Injury	710	502	46	19	0.78	0.45	-41.6%

» Using the average of rates method, between the before and after analysis periods, the average of total, vulnerable user, and injury crash rates decreased by 17.3%, 49.6%, 36.5%, respectively. Excluding the statistical outliers (Sites 7 and 17), the average of total, vulnerable user, and injury crash rates decreased by 38.7%, 61.0%, 41.5%, respectively.

» Using the average (aggregate) rate method, between the before and after analysis periods, the average (aggregate) total, vulnerable user, and injury crash rates decreased by 1.2%, 32.3%, and 31.6%, respectively. Excluding the statistical outliers (Sites 7 and 17), the average (aggregate) total, vulnerable user, and injury crash rates decreased by 30.6%, 52.9%, and 41.6%, respectively.

» Change in crash rates at sites ranged from a decrease of 100% (two FL locations) to an increase of 41% (Atlanta, GA).

» 13 (76%) sites had a decreased total crash rate, 2 (12%) had an increased total crash rate, 2 (12%) had no crashes in either period.

» No crashes resulted in a fatality during before or after analysis periods at each of the 17 study sites.

» No crashes were reported during one or both analysis periods at 4 (24%) sites and both analysis periods at 2 (12%) sites.

» No vulnerable user crashes were reported during one or both analysis periods at 15 (88%) sites and both analysis period at 10 (59%) sites.

» No injury crashes were reported during one or both analysis periods at 10 (59%) sites and both analysis period at 4 (24%) sites.

» Crashes at one site (Atlanta, GA) accounted for 38% of total crashes (30% in the before period, 49% in the after period).

Study Sites – Disaggregated by Site Characteristics

A disaggregate analysis was completed to determine if certain types of asphalt art may be more effective or if art may be more effective under specific conditions. Tables 11–14 below summarize trends for total, vulnerable user, and injury crash rates for study sites broken down by geographic region and site setting.

2.8.   Discussion of Historical Crash Analysis Results

On the basis of a before-after historical crash analysis of 17 asphalt art study sites, implementation of asphalt art appears to have a positive impact on the rate of crashes of all types. The average of total, vulnerable user, and injury crash rates for the combined study sites were reduced by 17%, 50%, and 37% respectively after installation of asphalt art. While the average (aggregate) rate also decreased in the after period. The trend between presence of asphalt art and reduced crash rates was consistent across sites with a variety of roadway settings, traffic control types, and art improvement type. The results are likely due to the improved conspicuity of the intersection and roadway user movements. It should be noted that at several locations, after analysis periods overlapped with the COVID-19 pandemic, when injury crash rates were elevated nationwide.

The total crash rate decreased or remained at 0 in the after analysis period compared to the before period at all sites, except Piedmont Avenue & 10th Street in Atlanta, GA (+41%) and Ponce de Leon Avenue & Clairemont Avenue in Decatur, GA (+28%) (both signalized intersections). The Piedmont Avenue & 10th Street site is located in the rapidly growing Midtown area of Atlanta and accounted for 38% of the total crashes occurring at all sites. Despite increased total crash rate after art was installed, the intersection experienced a 17% decrease in the injury crash rate (crashes/year) and a 4% decrease in vulnerable user crash rate—two important and widely utilized performance indicators. The project could be considered successful on the basis of this decrease in the injury crash rate and vulnerable user crash rate (which typically result in an injury, if reported).

Additionally, according to the City of Atlanta, rapid redevelopment of immediate area surrounding the intersection near the time of the art installation, resulted in a nearly three-fold increase in bike activity (without bike improvements at the intersection itself), an 18% increase in motor vehicle volumes on Piedmont Street, and a

Table 11: **Average (Aggregated) Total, Vulnerable User, and Injury Crash Rates by Geographic Region**

Region	#	Total Crash Rate (Crashes/Year)			Vulnerable User Crash Rate (Crashes/Year)			Injury Crash Rate (Crashes/Year)		
		Before	After	Difference	Before	After	Difference	Before	After	Difference
Northeast	6	3.52	2.47	-30%	0.40	0.21	-47%	1.24	0.78	-37%
Southeast	11	3.36	3.75	+12%	0.10	0.09	-11%	0.73	0.52	-28%
Total	**17**	**3.41**	**3.36**	**-1.2%**	**0.19**	**0.13**	**-32.3%**	**0.88**	**0.60**	**-31.6%**

Table 12: **Average (Aggregated) Total, Vulnerable User, and Injury Crash Rates by Site Setting**

Setting	#	Total Crash Rate (Crashes/Year)			Vulnerable User Crash Rate (Crashes/Year)			Injury Crash Rate (Crashes/Year)		
		Before	After	Difference	Before	After	Difference	Before	After	Difference
Urban Core	7	2.30	1.01	-56%	0.04	0.06	+48%	1.01	0.18	-82%
Urban Residential	6	5.04	5.82	+16%	0.47	0.18	-62%	1.02	0.85	-17%
Suburban	4	2.64	1.32	-50%	0.00	0.13	IND	0.50	0.79	+60%
TOTAL	**17**	**3.41**	**3.36**	**-1.2%**	**0.19**	**0.13**	**-32.3%**	**0.88**	**0.60**	**-31.6%**

Table 13: **Average (Aggregated) Total, Vulnerable User, and Injury Crash Rates by Site Facility Type**

Traffic Control	#	Total Crash Rate (Crashes/Year)			Vulnerable User Crash Rate (Crashes/Year)			Injury Crash Rate (Crashes/Year)		
		Before	After	Difference	Before	After	Difference	Before	After	Difference
Intersection - Signal Controlled	7	6.60	6.27	-5%	0.26	0.20	-23%	1.60	0.94	-42%
Intersection - Stop Controlled	7	1.37	1.15	-16%	0.22	0.10	-52%	0.50	0.42	-17%
Mid-Block	3	1.06	1.09	+3%	0.00	0.00	–	0.15	0.14	-10%
TOTAL	**17**	**3.41**	**3.36**	**-1.2%**	**0.19**	**0.13**	**-32.3%**	**0.88**	**0.60**	**-31.6%**

Table 14: **Average (Aggregated) Total, Vulnerable User, and Injury Crash Rates by Site Improvement Type**

Improvement	#	Total Crash Rate (Crashes/Year)			Vulnerable User Crash Rate (Crashes/Year)			Injury Crash Rate (Crashes/Year)		
		Before	After	Difference	Before	After	Difference	Before	After	Difference
Roadway Art Sites (Excl. Sites with Crosswalk Art)	6	2.45	1.96	-20%	0.27	0.08	-72%	0.50	0.45	-9%
Roadway Art + Crosswalk Art Sites	2	0.73	0.57	-22%	2.08	1.29	-38%	0.73	0.00	-100%
Crosswalk Art Sites (Excl. Sites with Roadway Art)	9	4.78	4.81	+1%	0.18	0.19	+8%	1.20	0.83	-31%
Combined (Average Rate)	**17**	**3.41**	**3.36**	**-1.2%**	**0.19**	**0.13**	**-32.3%**	**0.88**	**0.60**	**-31.6%**

likely a significant increase in pedestrian volumes. It is reasonable to expect an increase in total crash and vulnerable user rate when volumes increase significantly and is encouraging that the injury crash rate decreased despite this.

Although crash rates for specific crash types (vulnerable user and injury crashes) did increase for certain crash types in the after periods, sample sizes were often very small (most locations had 0 or 1 crash in before-after periods averaging over 3 years). As crashes are for the most part rare and random events with several contributing circumstances, when crash sample sizes are small, crash reductions at most individual locations are not statistically significant when evaluated individually.

The disaggregate analysis indicated mixed results for each crash type investigated when considering sites by setting. Increases in pedestrian crashes in urban locations may be due an increased rate of pedestrians, cyclists, and even motor vehicle traffic generated by improving the location with asphalt art and other developments. Crash rates decreased for signalized and unsignalized intersections and experienced an insignificant increase at mid-block crossing locations between the before and after analysis periods. Notably, the average crash rate decreased at signalized intersections despite the significant number of crashes at the Atlanta site.

The negligible increases in overall and vulnerable user crash rates at improvement sites with crosswalk art alone may also be due to an increased rate of pedestrians, cyclists, and even motor vehicle traffic generated by site and nearby improvements. Despite a slight increase in overall (+1%) and vulnerable user (+8%) crashes at crosswalk art sites, injury crashes were reduced by 31%.

Disaggregate analyses in the present study are based on a very limited sample sizes using basic crash analysis techniques. As such, while we cannot infer direct causation, results generally indicated reduced crash rates after installation of art for most crash types across a range of settings, traffic control, and improvement types. As more post-implementation crash data becomes available for asphalt art sites, further study and analysis using larger sample sizes would provide more insight into effectiveness of different types of art improvements in different roadway contexts.
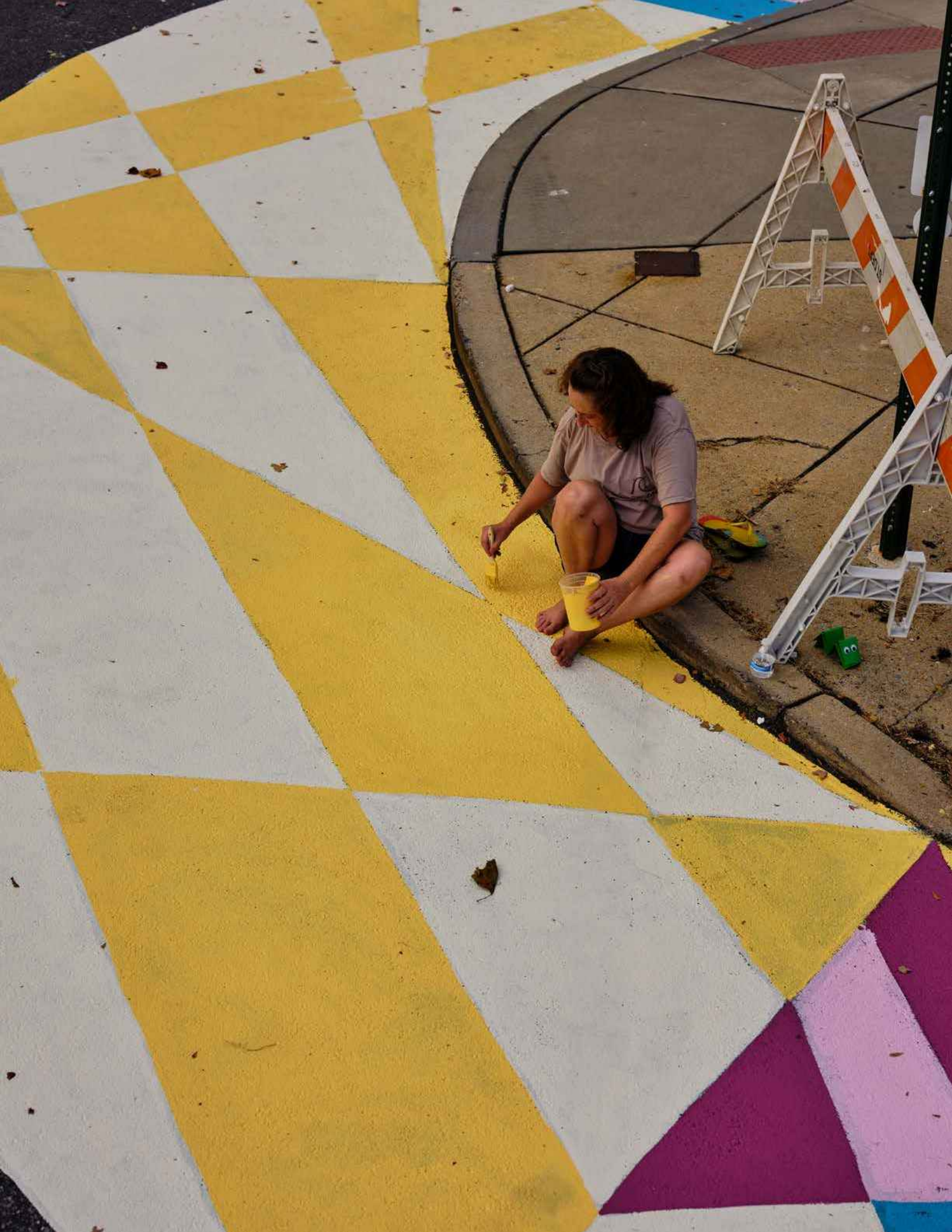
3. Behavioral Observational Assessment

3.1.   Background and Scope

While historical crash data provides insight into the safety performance of a subject site, it is important to keep in mind that crashes are rare occurrences and almost always have multiple contributing factors. The sample size of pedestrian crashes at most locations is too small to be of statistical significance at most locations individually. This is indicated in the above historical crash data, in that most sites have few to zero pedestrian crashes over both analysis periods. In instances where pedestrian crashes occur infrequently, other factors such as near-miss conflicts between pedestrians and vehicles, observed road user behavior, and compliance with traffic control devices can provide insight on the safety impacts as a result of roadway treatments such as asphalt art.

To study the impact of asphalt art on driver and pedestrian behavior, five intersection sites with art projects in Bloomberg Philanthropies' Asphalt Art Initiative were selected with scheduled implementation dates for summer-fall 2021. Video was recorded of the intersection capturing vehicle and pedestrian behavior for a period prior to and following installation. Using this video, visual observations were performed to assess pedestrian and motorist behavior during each observation period. The observation assessment methodology, information about sites selected, and findings are presented in the sections below.

3.2.   Methodology

Video recordings of each intersection location were collected for 48-hour periods during the same days of the week (when possible) to capture approaching vehicles and crossing movements at each leg of the intersection. Video was first reviewed at a high level to determine appropriate 8-hour analysis periods before and after the installation of the art/improvements. In some cases, this 8-hour period was broken into multiple segments to capture peak hour pedestrian volumes.

The video recordings were reviewed during the before and after analysis periods to conduct conflict analyses and record other observable behavior metrics. Pedestrian group crossings (as opposed to individual pedestrians, which were also recorded) were utilized for purposes of analysis. This metric is typical for pedestrian crossing studies as pedestrians waiting at an intersection typically arrive or cross in groups. As an example, if a child and parent arrived at an intersection together and crossed the roadway together, they would be counted as a single crossing, while if there were two individuals waiting at an intersection and one crossed during a "flashing don't walk phase" while the other pedestrian decided to wait until the next interval, they would be counted as separate crossings.

As the observational study sites consisted of both signalized and unsignalized intersections, different metrics were captured based on different types of traffic control. The following details road-user behavior metrics assessed as part of this study.

3.2.1. Metrics at All Observation Sites

Pedestrian-Vehicle Conflicts

To compare road user behavior in the before and after conditions at signalized and unsignalized intersection locations, a conflict analysis was conducted using video data collected at each location. Conflict analysis involves observing and recording conflicts between pedestrians and drivers/vehicle. A conflict is defined as an observable situation in which two or more road users approach each other in space and time to such an extent that there is a risk of collision if their movements remain unchanged, and at least one of the road users then takes action to avoid a crash. Such an action could be as simple as a routine application of the brakes to give way to a crossing pedestrian.

Pedestrian-vehicle conflicts range in severity by how likely they are to result in a crash. This analysis considered conflicts of two levels:

» **Low Crash Potential** – A motorist noticeably brakes to avoid striking a pedestrian or group; a pedestrian or group of pedestrians stops to avoid being in the path of an oncoming or turning vehicle, although the vehicle has appropriately yielded. Neither actions are sudden, atypical, or extreme. Vehicles passing their appropriate stop bar, or negotiation of space between pedestrian and vehicle in the crosswalk may suggest a Low Crash Potential conflict.

» **High Crash Potential** – A motorist noticeably and clearly suddenly stops or swerves to avoid striking a pedestrian or group of pedestrians in a fashion that suggests reduced control of the vehicle; a pedestrian or group of pedestrians jumps, runs, stops, or suddenly steps or lunges to avoid being struck by a vehicle.

An example of a Low Crash Potential conflict is when a vehicle turning towards a pedestrian in the crosswalk noticeably brakes to avoid conflicting with the pedestrian. This behavior is normal and as expected, as pedestrians are crossing with the signal and the car properly yields to them; however, this is still considered to be a conflict because, if the vehicle had not yielded quickly, the vehicle would have to suddenly break or swerve (indicating a High Crash Potential conflict) to avoid potential collision. A turning vehicle yielding the right of way to crossing pedestrians is also the most common type of Low Crash Potential conflict encountered. The goal of this conflict analysis is to identify observed differences in driver and pedestrian behavior and occurrences of crash-risk conflicts before and after art implementation.

To consider the rate of Low and High Crash Potential conflicts, the video recorded was also reviewed to quantify pedestrian activity. The following metrics pertaining to pedestrian activity were quantified:

» **Pedestrian Crossing Groups** – A pedestrian, or a group of pedestrians, that both approach the crosswalk and cross at the intersection simultaneously.

» **Pedestrians per Crossing Group** - The number of people present per pedestrian crossing as defined above.

» **Origin/Destination of Crossing Groups** – The origin and destination crosswalk for each group of pedestrian crossings.

Pedestrian Actions

An analysis was conducted of undesired pedestrian actions at intersections in before and after conditions using collected video data. Undesired pedestrian actions were recorded as follows:

» Pedestrian crossing against signal – When a pedestrian crosses the intersection while the movement is prohibited by the pedestrian signal and begins their movement while a solid "Don't Walk" symbol is displayed.

» Pedestrian crossing outside of crosswalk – When a pedestrian crosses mid-block, at an intersection approach outside the vicinity of the crosswalk or crosses the intersection at a diagonal.

3.2.2. Metrics at Unsignalized Observation Sites

Vehicle Yield/Stop Compliance

The goal of this yield compliance analysis is to identify observed differences in driver behavior with respect to compliance with yielding or stopping for pedestrians crossing or waiting to cross before and after art implementation, as well as noted behavior of pedestrians in the before and after observation periods.

Pedestrians have the right of way at unsignalized intersections, regardless of the presence or absence of a marked crosswalk, but people often have to wait for drivers to yield or stop for them before they start crossing. Particularly on higher-speed or higher-volume streets, drivers often fail to yield to pedestrians who are waiting to cross, and sometimes even fail to yield to people already in the crosswalk. In addition to injury risks, pedestrians face extended delays in crossing when drivers do not properly yield or stop for them.

As such, at unsignalized locations, the recorded videos were reviewed to analyze yielding behavior of drivers for crossing pedestrians along with other indicators of the traffic environment. The below metrics were recorded. It should be noted that only crossings with vehicles present at the intersection were analyzed, excluding crossings where pedestrians crossed with an adequate gap, unconflicted.

» **Vehicle Presence** – Whether there one or more vehicles approaching the observed crossing at the intersection at the time of the pedestrian crossing.

» **Non-Yielding Drivers/Vehicles** – The number of drivers who failed to yield to a pedestrian initiating crossing or in the crosswalk. This excludes any driver yielding to pedestrians even if suddenly braking in a manner that would constitute a potential crash conflict as defined in the section above.

» **Eventual Yield** – Whether or not the first or subsequent drivers, if present, eventually yielded to crossing pedestrians or pedestrians. If no vehicles yielded, pedestrians crossing during an adequate gap were noted as crossing with no eventual yield.

3.3.   Observation Sites and Analysis Periods

A total of five sites were selected for observations analysis with asphalt art projects scheduled for installation in summer and fall 2021. Table 15 below provides a summary of each site, setting, intersection type, roadway/roadside improvement(s). Before and after street level and aerial photography is provided for each location in the **Appendix**. Table 16 provides a summary of locations by date of art installation and observation analysis periods. Before and after photos of each observation site are shown in Figures 2–6, illustrating the improvements made at each site.

Table 15: **Summary of Observational Assessment Sites**

#	City	State	Intersection	Traffic Control	Setting	Summary
1	Trenton	NJ	South Clinton Ave & Barlow St/ R Wallenberg Ave	Signal	Urban Core	Painted crosswalks
2	Richmond	VA	W Marshall St & Brook Rd	Signal	Urban Core	Curb extensions, bollards, painted intersection
3	Durham	NC	Club Blvd & Glendale Ave	Signal	Suburban	Painted crosswalks, painted intersection
4	Pittsburgh	PA	Roup Ave, S Fairmount St & Harriet St	Stop	Neighborhood Residential	Curb extensions, additional/revised marked crosswalks
5	Lancaster	PA	Strawberry St & Vine St	Stop	Urban Core	Curb extensions, bollards

Table 16: **Summary of Analysis Periods**

#	City	State	Intersection	Installation Date(s)	Before Observation Date	After Observation Date	Observation Period Times
1	Trenton	NJ	South Clinton Ave & Barlow St/ R Wallenberg Ave	9/4/21 - 9/5/21	8/24/2021	9/21/2021	7 AM–11 AM, 3 PM–7 PM
2	Richmond	VA	W Marshall St & Brook Rd	10/24/21 – 10/26/21	9/23/2021	11/16/2021	11 AM–7 PM
3	Durham	NC	Club Blvd & Glendale Ave	5/21/21- 5/24/21	5/15/2021	7/3/2021	10 AM–6 PM
4	Pittsburgh	PA	Roup Ave, S Fairmount St & Harriet St	9/23/21 – 9/24/21	9/9/2021	10/21/2021	8 AM–12 PM, 3:30 PM–7:30 PM
5	Lancaster	PA	Strawberry St & Vine St	9/11/21- 9/12/21	9/9/2021	10/24/2021	8 AM–12 PM, 3:30 PM–7:30 PM

Trenton, NJ

Figure 2: **Trenton, NJ - Before**

Figure 3: **Trenton, NJ - After**

Richmond, VA

Figure 6: **Richmond, VA - Before**

Figure 7: **Richmond, VA - After**

Durham, NC

Figure 8: **Durham, NC - Before**

Figure 9: **Durham, NC - After**

Pittsburgh, PA

Figure 10: **Pittsburgh, PA - Before**

Figure 11: **Pittsburgh, PA - After**

Lancaster, PA

Figure 12: **Lancaster, PA - Before**
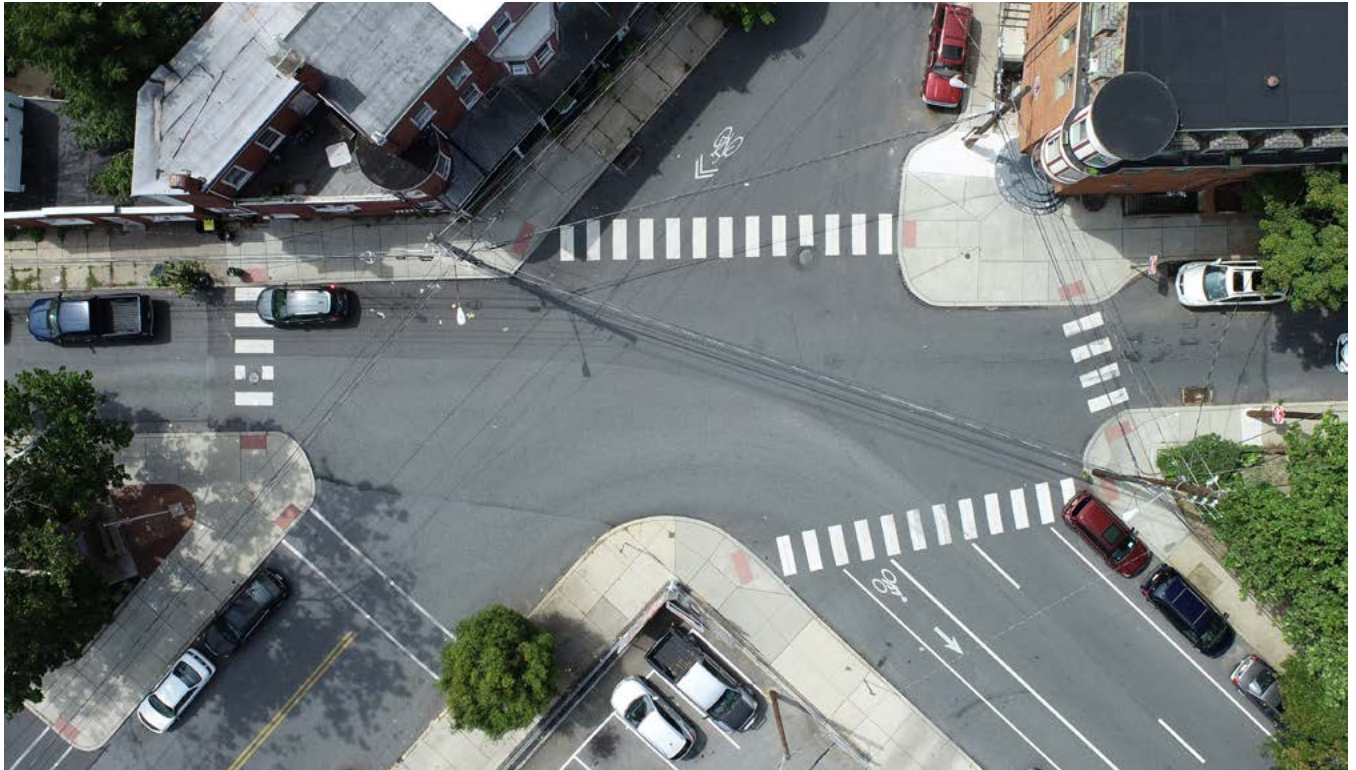
Figure 13: **Lancaster, PA - After**
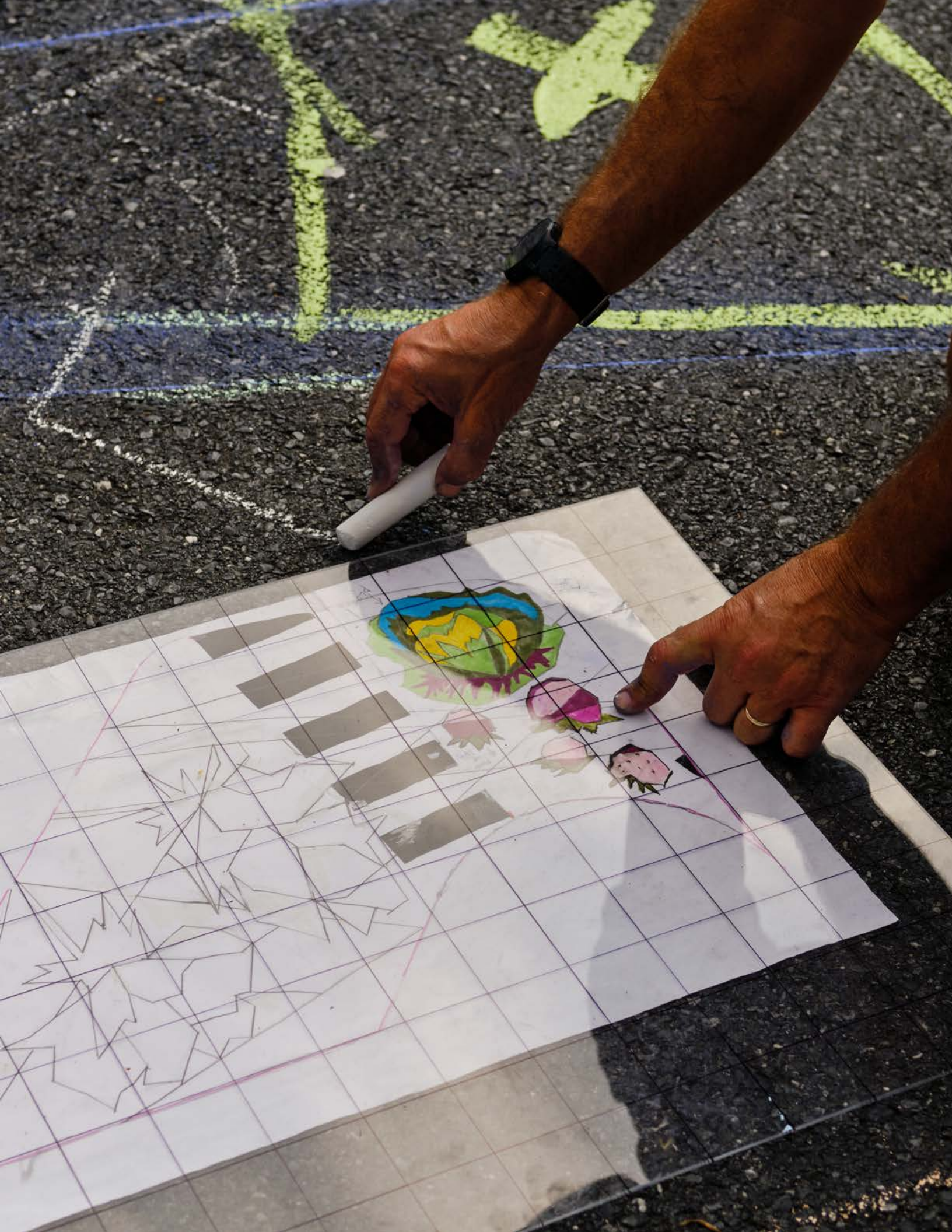
3.4. Behavioral Assessment Results

3.4.1. Vehicle–Pedestrian Conflict Assessment

At both signalized locations, the total conflict rate and rate of low crash potential conflicts decreased after the installation of asphalt art. Tables 17 summarizes the results of the vehicle-pedestrian conflict assessments for each site, signalized observation sites aggregated, unsignalized observation sites aggregated, and all observation sites aggregated. The high crash potential conflict rate increased at the Trenton location negligibly (an absolute difference of 0.1% in the rate). The average (aggregated) low and high crash potential conflict rates decreased when considering observed crossing movements at combined signalized study sites.

At the Durham unsignalized site, the rate of both high and low crash potential conflicts decreased. The low crash potential conflict rate decreased by 61% (an absolute difference of six fewer occurrences) at the Pittsburgh site and increased by 23% (an absolute difference of two additional occurrences) at the Lancaster site. No high crash potential conflicts occurred during the before or after observation periods at the Pittsburgh and Lancaster sites. The average (aggregated) low and high crash potential conflict rates decreased when considering observed crossing movements at unsignalized study sites.

When considering all observed movements at observation sites aggregated, the rate of crossings involving a low and high crash potential conflict decreased by 27% and 18%, respectively, an overall decrease of 25%.

Table 17: **Pedestrian-Vehicle Conflict Assessment Results**

	Pedestrian Crossing Behavior/Action	Before		After		Conflict Rate Reduction (%)
		Crossings (#)	Crossings (%)	Crossings (#)	Crossings (%)	
Trenton, NJ	**Total Pedestrian Crossings**	**1,035**	-	**1,050**	-	-
	Crossings Involving a Conflict	68	6.6%	59	5.6%	-14.5%
	High Crash Potential Conflicts	13	1.3%	15	1.4%	+13.7%
	Low Crash Potential Conflicts	55	5.3%	44	4.2%	-21.1%
Richmond, VA	**Total Pedestrian Crossings**	**325**	-	**319**	-	-
	Crossings Involving a Conflict	14	4.3%	6	1.9%	-56.3%
	High Crash Potential Conflicts	5	1.5%	1	0.3%	-79.6%
	Low Crash Potential Conflicts	9	2.8%	5	1.6%	-43.4%
Aggregated for Signalized Sites Combined	**Total Pedestrian Crossings**	**1,360**	-	**1,369**	-	-
	Crossings Involving a Conflict	82	6.0%	65	4.7%	-21.3%
	High Crash Potential Conflicts	18	1.3%	16	1.2%	-11.7%
	Low Crash Potential Conflicts	64	4.7%	49	3.6%	-23.9%
Durham, NC	**Total Pedestrian Crossings**	**301**	-	**215**	-	-
	Crossings Involving a Conflict	6	2.0%	3	1.4%	-30.0%
	High Crash Potential Conflicts	1	0.3%	0	0.0%	-100.0%
	Low Crash Potential Conflicts	5	1.7%	3	1.4%	-16.0%
Pittsburgh, PA	**Total Pedestrian Crossings**	**287**	-	**372**	-	-
	Crossings Involving a Conflict	12	4.2%	6	1.6%	-61.4%
	High Crash Potential Conflicts	0	0.0%	0	0.0%	-
	Low Crash Potential Conflicts	12	4.2%	6	1.6%	-61.4%
Lancaster, PA	**Total Pedestrian Crossings**	**253**	-	**308**	-	-
	Crossings Involving a Conflict	4	1.6%	6	1.9%	+23.2%
	High Crash Potential Conflicts	0	0.0%	0	0.0%	-
	Low Crash Potential Conflicts	4	1.6%	6	1.9%	+23.2%
Aggregated for Unsignalized Sites Combined	**Total Pedestrian Crossings**	**841**	-	**895**	-	-
	Crossings Involving a Conflict	22	1.6%	15	1.1%	-32.3%
	High Crash Potential Conflicts	1	0.1%	0	0.0%	-100.0%
	Low Crash Potential Conflicts	21	1.5%	15	1.1%	-29.0%
Aggregated for Observational Sites Combined	**Total Pedestrian Crossings**	**2,201**	-	**2,264**	-	-
	Crossings Involving a Conflict	104	4.7%	80	3.5%	-25.2%
	High Crash Potential Conflicts	19	0.9%	16	0.7%	-18.1%
	Low Crash Potential Conflicts	85	3.9%	64	2.8%	-26.8%

3.4.2. Driver-Pedestrian Yield Assessment at Unsignalized Sites

Drivers were more likely to yield to pedestrians after asphalt art was installed. Table 18 summarizes the results of the pedestrian-vehicle yielding assessment for unsignalized intersection sites (Durham, NC; Pittsburgh, PA; and Lancaster PA sites, and the three unsignalized sites combined, respectively). While yield behavior results varied at each site, when considering observed crossings at all three unsignalized locations aggregated, the occurrences of the first/all vehicles yielding increased by 27% and the occurrences of no vehicles yielding before the pedestrian group crossed decreased by 27%.

Table 18: **Pedestrian-Vehicle Yield Assessment**

	Pedestrian Crossing Behavior/Action	Before		After		Difference
		Crossings (#)	Crossings (%)	Crossings (#)	Crossings (%)	
Durham, NC	**Crossings w/ Vehicle Present**	**50**	-	**38**	-	-
	All drivers yielded to pedestrian(s) crossing	7	14.0%	3	7.9%	-43.6%
	One or more drivers did not yield, but drivers eventually yielded	6	12.0%	7	18.4%	+53.5%
	No drivers yielded—pedestrian crossed during a gap	37	74.0%	28	73.7%	-0.4%
Pittsburgh, PA	**Crossings w/ Vehicle Present**	**26**	-	**30**	-	-
	All drivers yielded to pedestrian(s) crossing	24	92.3%	28	93.3%	+1.1%
	One or more drivers did not yield, but drivers eventually yielded	0	0.0%	1	3.3%	-
	No drivers yielded—pedestrian crossed during a gap	2	7.7%	1	3.3%	-56.7%
Lancaster, PA	**Crossings w/ Vehicle Present**	**36**	-	**93**	-	-
	All drivers yielded to pedestrian(s) crossing	25	69.4%	71	76.3%	+9.9%
	One or more drivers did not yield, but drivers eventually yielded	5	13.9%	4	4.3%	-69.0%
	No drivers yielded—pedestrian crossed during a gap	6	16.7%	18	19.4%	+16.1%
Aggregated for Unsignalized Sites Combined	**Crossings w/ Vehicle Present**	**112**	-	**161**	-	-
	All drivers yielded to pedestrian(s) crossing	56	50.0%	102	63.4%	+26.7%
	One or more drivers did not yield, but drivers eventually yielded	11	9.8%	12	7.5%	-24.1%
	No drivers yielded—pedestrian crossed during a gap	45	40.2%	47	29.2%	-27.3%

3.4.3. Pedestrian Actions Assessment

Table 19 summarizes the results of the pedestrian action assessment. The percentage of occurrences of undesirable pedestrian actions are calculated for each observation period by dividing the number of occurrences of undesired crossing actions by total number of crossings. At both signalized sites, the percentage crossings involving undesirable pedestrian actions (crossing against the signal and crossing outside the vicinity of the marked crosswalk) decreased in the period after asphalt art was installed.

The percentage of crossings involving pedestrians crossing outside of the marked crosswalk increased in the after period at unsignalized observation when combined despite a reduction at the Pittsburgh site. Pedestrian crossing actions were not recorded for the Durham site.

3.5. Discussion of Behavior Assessment Results

As crashes almost exclusively have multiple contributing circumstances and are often random events, road user behavior is a critical indictor of road safety performance at a site in addition to crash data. Across each metric analyzed, results indicated that asphalt art has an overall positive impact on safe driver and pedestrian behavior, resulting in a reduced (-25%) rate of driver/vehicle-pedestrian conflicts, improved (+27%) rate of drivers yielding to pedestrians, and reduced (-27 to -38%) rate of undesirable pedestrian actions in the after observation period.

When considering road user behavior at sites by type of traffic control, driver/vehicle-pedestrian conflict rates were reduced at both signalized and unsignalized intersections while a greater rate of pedestrians were observed crossing outside of the marked crosswalk vicinity at unsignalized sites. The driver yield assessment was only performed for unsignalized sites only as traffic signals control vehicle and pedestrian movements at signalized intersections. Results indicate that drivers not only yielded immediately to pedestrians 27% more frequently after art was installed, but the frequency of no vehicles stopping for the pedestrian (pedestrian having to find a gap in traffic to cross) was reduced by 27%. While MUTCD rulings have suggested that the art may confuse drivers as to whether or not the art is part of a marked crosswalk, drivers yielded more often in the after observation period.

Table 19: **Pedestrian Actions at Observational Study Locations**

	Pedestrian Crossing Behavior/Action	Before		After		Difference
		Crossings (#)	Crossings (%)	Crossings (#)	Crossings (%)	
Trenton, NJ	Total Crossings	1035	-	1050	-	-
	Crossing Against Signal (Solid DON'T WALK)	363	35.1%	229	21.8%	-37.8%
	Crossing Outside of Marked Crosswalks	207	20.0%	139	13.2%	-33.8%
Richmond, VA	Total Crossings	325	-	319	-	-
	Crossing Against Signal (Solid DON'T WALK)	5	1.5%	1	0.3%	-79.6%
	Crossing Outside of Marked Crosswalks	68	20.9%	35	11.0%	-47.6%
Aggregated for Signalized Sites Combined	Total Crossings	1360	-	1369	-	-
	Crossing Against Signal (Solid DON'T WALK)	368	27.1%	230	16.8%	-37.9%
	Crossing Outside of Marked Crosswalks	275	20.2%	174	12.7%	-37.1%
Durham, NC	Total Crossings	301	-	215	-	-
	Crossing Outside of Marked Crosswalks	Not Available	Not Available	Not Available	Not Available	Not Available
Pittsburgh, PA	Total Crossings	287	-	372	-	-
	Crossing Outside of Marked Crosswalks	28	9.8%	23	6.2%	-36.6%
Lancaster, PA	Total Crossings	253	-	308	-	-
	Crossing Outside of Marked Crosswalks	42	16.6%	64	20.8%	+25.2%
Aggregated for Unsignalized Sites	Total Crossings	841	-	895	-	-
	Crossing Outside of Marked Crosswalks	70	5.1%	87	6.4%	+23.5%
Aggregated for Observational Sites Combined	Total Crossings	2201	-	2264	-	-
	Crossing Against Signal (Solid DON'T WALK) (Signalized Sites Only)	368	27.1%	230	16.8%	-37.9%
	Crossing Outside of Marked Crosswalks	345	15.7%	261	11.5%	-26.5%

4. Conclusion/Next Steps

As indicated in the results of both the historical crash analysis and observational behavior assessment, asphalt art had a strong positive correlation with improved safety benefits across aggregated and most individual study sites. Road user behavior clearly improved across the observed study sites in the after analysis periods.

At unsignalized intersections, there was a greater frequency of drivers immediately yielding to crossing pedestrians. Similarly, pedestrian-vehicle conflict assessments indicated a reduction in conflict rates at both signalized and unsignalized intersections. Good pedestrian crossing practices, such as crossing at marked crosswalk locations and crossing during the pedestrian phase, also improved substantially at signalized intersections with crossings against the signal dropping from 27% to 17%. Meanwhile, at unsignalized intersections, a few more people crossed outside the marked crosswalk, but the rate was still quite low (1% of people crossing the street).

On the basis of these positive findings, the study team recommends a significant expansion of this study to include asphalt art sites in a variety of roadway and land use contexts. This would allow for a more detailed assessment of which elements of projects (the art itself, additional traffic control, roadway, or roadside improvements, etc.) are the most effective, and also take into account other changes that may have taken place after the implementation period (redevelopment, population growth, changes to local bike or transit networks, etc.). It will also be critical to have control groups to account for the random variation in crash rates over time. This would determine a crash modification factor for asphalt art projects and provide the research grounding that some transportation professionals have requested.

This study also provides important context and precedent for the FHWA and others working to improve the MUTCD and other design guidance in the U.S. and globally. As the FHWA is currently revising the MUTCD, this analysis could contribute to more immediate changes to the language of that document to be more supportive of asphalt art projects going forward. Federal adoption of the language regarding color crosswalks proposed jointly by ITE and NACTO could clarify guidance and go a long way toward removing arbitrary barriers to asphalt art implementation. Additionally, since asphalt art is not technically prohibited by the current MUTCD and has only been restricted through interpretation memos that did not undergo the Federal regulatory process, the FHWA could remove this ambiguity with another such interpretation memo citing the results of this study and clarifying that the use of color in crosswalks and the use of artwork on roadways is in fact permitted under the 2009 MUTCD (excluding controlled-access highways such as Interstates/freeways).

Last and perhaps most important, this study, with a rigorous analysis of nearly two dozen projects across the country, provides supporting quantitative data for residents and city officials to use to implement asphalt art projects in their own communities. The results provide evidence to decision-makers that these projects will likely reduce crashes and improve safety for the most vulnerable users on the road.

By contributing to the body of research on this topic and through the Asphalt Art Initiative and work by cities, the study team hopes to encourage more arts-focused transportation projects that contribute to safer city streets across the country and around the world.

Bloomberg
Philanthropies

Bloomberg Associates

Asphalt Art Guide

How to Reclaim City Roadways
and Public Infrastructure with Art
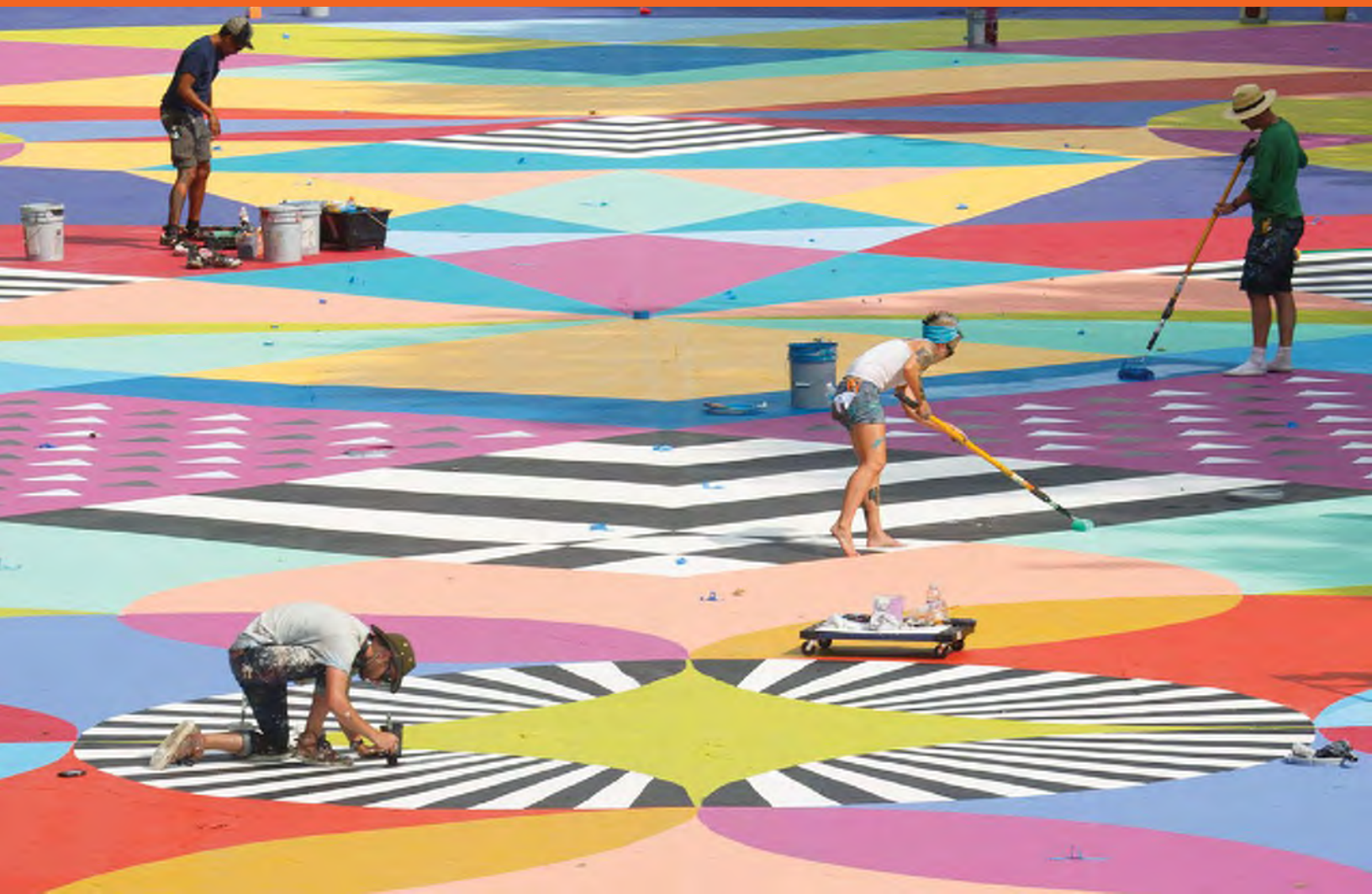
ABOUT BLOOMBERG PHILANTHROPIES

Bloomberg Philanthropies invests in 510 cities and 129 countries around the world to ensure better, longer lives for the greatest number of people. The organization focuses on five key areas for creating lasting change: Arts, Education, Environment, Government Innovation, and Public Health. Bloomberg Philanthropies encompasses all of Michael R. Bloomberg's giving, including his foundation and personal philanthropy as well as Bloomberg Associates, a pro bono consultancy that works in cities around the world. In 2018, Bloomberg Philanthropies distributed $767 million.

Cover photo: The Oval, Philadelphia, PA (Case study on page 31). Mural by Jessie and Katey. Photo by Steve Weinik.

A MESSAGE FROM MICHAEL R. BLOOMBERG

Public art has the power to reshape the way we experience our cities. We saw that time and again during my time as Mayor of New York City: art could remake streets and improve public safety, inspire people, draw in visitors, and enhance residents' quality of life. And when we combined our public art projects with our efforts to strengthen city infrastructure through new public plazas or bike lanes, we created even safer, more vibrant streets for everyone.

Now, we're working to share our experience and enliven streets and plazas around the world. Bloomberg Associates, our pro bono consulting firm that advises cities worldwide, has worked in collaboration with the experts at Street Plans Collaborative and with public art consultant Renee Piechocki to produce this guide for cities and city leaders.

The Asphalt Art Guide highlights more than two dozen art installations on streets, sidewalks, plazas, and utility boxes in cities across the U.S. and the world. We hope these case studies inspire more cities to develop and pursue their own projects to brighten city infrastructure and enhance neighborhoods. The guide also includes practical tips and best practices to help city agencies, community organizations, and artists carry out successful asphalt art installations.

Every project is unique, and every city will have its own approach – that's part of what makes this work so dynamic. But we believe that by sharing lessons we learned in New York City, and that dozens of others have learned through their own projects, we can give more city leaders the tools and inspiration to create brighter, safer, more welcoming streets for residents and visitors alike.

ABOUT THE GUIDE

Asphalt Art on City Streets and Public Infrastructure

Cities and citizens around the world are recognizing the potential of art to reimagine roadways and vertical infrastructure, improving street safety, revitalizing public spaces, and bringing communities together. The increasing demand for these arts-driven transportation projects has inspired the creation of this Guide. Our goal is to share ideas and step-by-step tips for city agencies, community groups, and artists interested in undertaking these kinds of projects.

While cities incorporate art into public spaces in a variety of ways, the specific focus of this Guide is what we're calling *asphalt art*: visual interventions on **roadways** (intersections and crosswalks), **pedestrian spaces** (plazas and sidewalks), and **vertical infrastructure** (utility boxes, traffic barriers, and underpasses).

Taken together, these relatively low-cost, often short-term and scalable projects can create immediate positive impact and catalyze long-term improvements to the public realm.

The Guide documents a wide variety of project types and champions — from formal city-sanctioned programs to citizen-driven interventions. It also identifies key considerations, including liability and permitting, community engagement, artist curation, and installation methods.

Colourful Crossings, London, UK
(Case study on page 23)

Mural by Office for Crafted Architecture
Photo by Better Bankside

Every city and every street are different. Not all the examples or processes in these pages will be relevant to every project, and not all streets are appropriate candidates for these kinds of treatments. But with the right local teams, sites, and projects, asphalt art has been proven to reshape the public realm quickly, affordably, and effectively.

By gathering insights and advice from dozens of projects around the world, the *Asphalt Art Guide* can inspire and inform professionals, advocates, and residents looking to make their streets and communities safer, more attractive, and more welcoming.

About
the Authors

BLOOMBERG ASSOCIATES

Bloomberg Associates is a philanthropic consulting organization founded by Michael R. Bloomberg in 2014. We work side by side with client cities to improve the quality of life for residents, taking a strategic, collaborative, and results-oriented approach to make cities stronger, safer, more equitable, and efficient. Our team of globally recognized experts and industry leaders has worked with cities across the globe on hundreds of projects in order to ignite change and transform dynamic vision into reality.

The Transportation team, led by Janette Sadik-Khan, former Commissioner of the New York City Department of Transportation, helps city leaders leverage their street infrastructure to deliver smarter, safer street designs that improve mobility for people on foot, bicycle, or transit.

The Cultural Assets Management team, led by Kate D. Levin, former Commissioner of the New York City Department of Cultural Affairs, works to make the creative sector a vital element of each client city's economy, identity, and quality of life.

For more information on the consultancy, please visit bloombergassociates.org or follow us on Twitter @BloombergAssoc.

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STREET PLANS COLLABORATIVE

Street Plans is an internationally recognized urban planning and architecture firm with offices in New York and Miami. We believe that the key to creating healthy, prosperous communities rests in the design of great streets and public spaces. We work with clients to identify ways to create and activate public spaces, while at the same time designing streets and neighborhoods that make it easy and safe to bike, walk, and take transit.

Street Plans is recognized as the leading global practitioner of tactical urbanism, which is an approach to neighborhood-building using short-term, low-cost, and scalable interventions to catalyze long-term change. We've produced over a dozen publications on street design and public space. Principals Mike Lydon and Tony Garcia are the authors of the acclaimed *Tactical Urbanism*, published by Island Press in 2015. For their contributions to the field of architecture and planning, they were awarded the Seaside Prize in 2017.

For more information on our work, visit street-plans.com or follow us on Twitter @StreetPlans.

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RENEE PIECHOCKI

Renee Piechocki is passionate about developing projects and initiatives to engage artists and communities in the public realm. She is an artist, administrator, advocate, and consultant. In recognition of her contributions to the field, she received the 2018 Public Art Network Leadership Award from Americans for the Arts.

How to Use the Guide

The Guide is organized into two distinct sections:

Case Studies – A look book of 26 asphalt art projects from around the world. Led by either a municipal agency or the local community, each description includes general background as well as a "best practice" highlight detailing a particularly noteworthy aspect of that project.

Tools & Tactics – An overview and discussion of key process steps for planning a project, as well as pro tips for aspiring asphalt artists. This summary of best practices includes information on community involvement, materials, and design as well as project implementation and maintenance.

Piazze Aperte Porta Genova project, Milan, Italy
(Case study on page 45)
Photo by Bloomberg Philanthropies

CASE STUDIES

CASE STUDIES

Case Studies

CASE STUDIES

This section takes a close look at 26 projects from around the world implemented in the past decade, showcasing the variety of successful ways to incorporate artwork on city streets and public infrastructure.

Each project team has a story to share about its challenges and keys to success. Some of the highlighted installations were one-off projects, while others were part of ongoing initiatives. Project organizers range from city agencies to nonprofit organizations, neighborhood groups, or even individual artists. The initiating impulses for the projects often include traffic calming as well as community-building and celebrating cultural identity within a neighborhood.

The case studies include information on project attributes like material types and associated costs, design and engineering justifications, project creators, installation methods, collaborative strategies, project evaluation, and lessons learned. Each case study also features a "best practice" spotlight on a specific project element that led to successful implementation or catalyzed meaningful policy or infrastructure change.

Projects have been divided into categories based on the type of infrastructure involved:

ART ON THE ROADWAY

This category includes mural projects on paved areas that are accessible to motor vehicles, such as intersections, crosswalks, and other surfaces within the active roadway.

ART IN PEDESTRIAN SPACE

Projects in this category are on paved areas that are inaccessible to motor vehicles while the artwork is in place, such as curb and sidewalk extensions as well as any surface that has been temporarily or permanently converted into a public space or plaza.

ART ON VERTICAL INFRASTRUCTURE

This category features art projects installed on vertical infrastructure, including utility boxes, traffic barriers, and highway underpasses.

Corbett Porch, Tucson. (Case study on page 35) Photo by Taylor Miller

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"The biggest impact from this project has been the lasting relationships that have been built in the neighborhood from collaborating together."

LISA CACH
COMMUNITY MEMBER
& PROJECT ORGANIZER

Photo by Lisa Cach

Green Lake Dragonfly

LOCATION
Seattle, WA

TYPE
Standalone Project

LEAD ENTITY
Team Dragonfly

ARTIST
Lisa Cach (community member)

TIMELINE[1]
1.5 years

DURATION
Indefinite, maintained every 1–3 years

MATERIALS
Latex traffic marking paint

COST
Materials: $1,000
Design Fee: (community designed)
Labor: (volunteer)

THE PROJECT

The Green Lake Dragonfly mural is a community-driven project that was funded by the City of Seattle's Neighborhood Matching Fund (NMF) program. To be eligible for funding, the group of neighbors near the project, deemed Team Dragonfly, needed to obtain approval from all community members with properties adjacent to the site and demonstrate that the project would enhance public space. After successfully securing the funds, the team worked with the City of Seattle's Department of Neighborhoods and local partners to obtain permits and coordinate the installation.

BEST PRACTICE HIGHLIGHT: TEAM COOPERATION

Prior to the installation, each team member assumed different roles, including applying to the NMF, creating the design, obtaining permits, and gathering signatures, supplies and donations. The success in building community relationships led the team to repaint the Dragonfly mural in 2014, 2015, 2016, and 2019.

[1] Indicates time between the project's initiation and completion.

"The mural was a great way to bring the community and politicians together around a unique and unusual project that celebrates art in the city."

JOHN COLLINS
EXECUTIVE DIRECTOR,
ST. PETERSBURG ARTS ALLIANCE

Photo by Edel Mohr

Common Ground

LOCATION
St. Petersburg, FL

TYPE
Standalone Project

LEAD ENTITY
St. Petersburg Arts Alliance

ARTIST
Cecilia Lueza

TIMELINE
1 month

DURATION
Indefinite

MATERIALS
Latex traffic marking paint,
non-slip additive

COST
Materials: $4,000
Design Fee: $1,000
Labor: (volunteer)

THE PROJECT

In 2016, the St. Petersburg Arts Alliance installed St. Pete's first asphalt intersection mural, Common Ground, as part of the city's SHINE Mural Festival, a city-wide mural festival highlighting local and international artists. The installation took place at an intersection in a central location of the city after the Arts Alliance saw the activity as an opportunity to involve the community in the festival.

To accomplish this task, the organization reached out to Cecilia Lueza, an artist and local resident, after seeing a similar project of hers in Fort Lauderdale. Given her experience, Lueza was able to advise the Arts Alliance about paint types, liability concerns, and other resources needed to carry out the installation. The Arts Alliance led a public engagement campaign and promoted the installation to the community, inviting them to take part. Over 50 volunteers participated in the single-day installation, which kicked off the week-long festival during which the Arts Alliance oversaw the installation of 18 additional murals throughout the city.

BEST PRACTICE HIGHLIGHT: FUNDING

In 2014, the Mayor's Office of Cultural Affairs recognized mural art as an important practice in the city and awarded the St. Petersburg Arts Alliance, an umbrella arts nonprofit supporting the city's cultural sector, with a $25,000 grant to initiate the SHINE Mural Festival. The Arts Alliance then matched this contribution with $75,000 in private, in-kind donations to kick-start the first year of the festival. Since its inauguration in 2015, the festival has installed more than 70 murals in the city. Every artist who participated in the SHINE festival, including Lueza, received $1,000 upon completion of the murals.

"The key to these projects is in finding great partners that will provide the necessary knowledge for each step."

HEATHER DANFORTH
SENIOR PLANNER,
CITY OF WEST PALM BEACH

Walks of Life

LOCATION
West Palm Beach, FL

TYPE
Standalone Project

LEAD ENTITY
City of West Palm Beach

ARTIST
Alexander Dreyfoos School
of the Arts Students

TIMELINE
6 months

DURATION
3 years

MATERIALS
Commercial-grade driveway paint

COST
Materials: $15,000
Design Fee: (student designed)
Labor: (volunteer)

THE PROJECT

In 2016, the City of West Palm Beach received technical assistance from Street Plans Collaborative as part of a Knight Foundation-funded tactical urbanism program funding short-term, low-cost interventions to repurpose a neighborhood intersection as a community space. The city partnered with the visual arts department at the Alexander Dreyfoos School of the Arts to have students design a street mural with high visual impact for the busy intersection of Tamarind Avenue and Fern Street near the city's Tri-Rail station, the nearby commuter rail service.

The project's goals were to slow motorists down, further the goals of the city's mobility master plan, and improve street safety, particularly for pedestrian commuters. The artwork, titled Walks of Life, was installed in March 2017 by over 100 volunteers in two days. In 2019, the same partners came together to redesign and install a new iteration of the project while the city continues to plan for an eventual capital redesign of that intersection.

BEST PRACTICE HIGHLIGHT: INTERDEPARTMENTAL COLLABORATION

To make this project happen, city planners, engineers, economic development staff, the Development Services Department's Art in Public Places coordinator, Street Plans, and a local arts school all formed part of the team. Street Plans, hosted a workshop with the students where designs were developed, materials were tested, and a design voted on. Street Plans coached the city and students during the process, but implementation was led entirely by the city, which began coordination efforts with the team four months prior to the installation.

The Planning Department handled all project coordination and public outreach. The Art in Public Places program facilitated the call for artists and managed all aspects of the design installation. The Economic Development Department oversaw the project budget and public relations efforts. Last, the Engineering Department reviewed installation plans and provided traffic control and site preparation.

"There is a real sense of empowerment when the community is allowed to play a leadership role to create something special in their neighborhood."

GREG RAISMAN
LIVABLE STREETS PROGRAM SPECIALIST, PORTLAND BUREAU OF TRANSPORTATION

Mural by Colleen Smith
Photo by Greg Raisman

Intersection Repair

LOCATION
Portland, OR

TYPE
Ongoing Program

LEAD ENTITY
City Repair;
Portland Bureau of Transportation

ARTIST
Community-determined for each site

TIMELINE
Online applications accepted
on a rolling basis

DURATION
1-25 years

MATERIALS
Acrylic deck stain, acrylic traffic
paint, non-slip additive

COST
Materials: $500–$3,000
Design Fee: (volunteer)
Labor: (volunteer)

THE PROJECT

City Repair is a Portland nonprofit organization that promotes placemaking projects by transforming streets into community spaces. Its most popular initiative, Intersection Repair, encourages community members to work together to build gathering spaces by making creative use of the right of way. As a result of the popularity of these projects, the City of Portland Bureau of Transportation (PBOT) created a streamlined permitting program called Street Paintings. Through this program, community members can propose an intersection mural design and location and work with the City Traffic Engineer to obtain design approval and technical guidance for the implementation. The mural designs are typically developed by an artist from the community by gathering community input and translating their collective vision into a physical design.

For all proposals, PBOT requires a signed petition from all residents with properties adjacent to the mural and within 400 feet along the road that is being painted. Although some city grant programs are available to community members for these projects, the murals are typically entirely funded by the community and maintained every one to three years until they fade away. As of 2019, City Repair and PBOT have overseen over 70 Intersection Repair projects.

BEST PRACTICE HIGHLIGHT: PUBLIC PRIVATE PARTNERSHIPS

The grass-roots movement to reclaim public space for community use began in 1996 among Portland neighbors who came together to organize. Over time, the group eventually gained municipal support by demonstrating that these projects shared many of the city's planning goals for improving quality of life and creating public safety by bringing communities together.

The initiative was formalized in a series of municipal ordinances, the first in 1997 that permitted a pilot study of intersection murals, and a second in 1998 that established the Intersection Repair City Ordinance to legally allow communities to design and designate public places that reflect local culture. PBOT now works with the City Repair organization to support community efforts to obtain an approved design of the murals, build community consensus, and manage the street painting.

"Art Route has helped broaden and season the conversations about increasing walkability and implementing temporary public art on both the city and community level."

TIFFANY TAUSCHECK
CHIEF STRATEGY OFFICER,
GREATER DES MOINES PARTNERSHIP

Art Route Des Moines

LOCATION
Des Moines, IA

TYPE
Standalone Project

LEAD ENTITY
Greater Des Moines Public Art Foundation

ARTIST
Peter Gibson

TIMELINE
6 months

DURATION
5 years

MATERIALS
Thermoplastic

COST
Materials: $240,000
Design Fee: $3,500
Labor: (included in materials cost)

THE PROJECT

The Greater Des Moines Public Art Foundation launched the Art Route Des Moines in 2016 as an opportunity to connect 87 pieces of public art in the city with artistic interventions on sidewalks and crosswalks. In collaboration with the Greater Des Moines Partnership and with the Greater Des Moines Convention & Visitors Bureau, the project team developed a trail that spanned six miles, including 14 crosswalks designed by a single artist.

With around 750,000 people visiting the city each year specifically for artistic and cultural attractions, Art Route Des Moines would prove successful as a wayfinding tool for public works of art. The route also serves as a traffic-calming measure that emphasizes the planned Connect Downtown project, an effort to enhance walkability in Des Moines led by the City and Urban Land Institute Iowa.

BEST PRACTICE HIGHLIGHT: SITE SELECTION

The project team identified six intersections with high traffic volumes that would also tie into the trail connecting public art. The team then initiated a public call for artists to design the crosswalk art and selected Canadian artist Peter Gibson. The final trail design included the crosswalk art and sidewalk wayfinding markings.

In addition to obtaining permits for the design and installation, the team also entered into a temporary public art operating agreement with the city in order to perform work on public property. As part of the agreement, the team determined a five-year duration for the murals based on the durability of the materials and identified the Public Art Foundation as the responsible party for repairing any damage to the murals within that timeframe. Along with the crosswalks and sidewalk wayfinding markings, the team also developed a GPS-enabled app so that users on the route can obtain information about each public art piece.

"With Colourful Crossings we explored how we can change the perception of city infrastructure by trying new ideas that make public spaces work better for everyone."

VALERIE BEIRNE
URBAN FOREST MANAGER,
BETTER BANKSIDE

Photo by Better Bankside

Better Bankside Colourful Crossings

LOCATION
London, England

TYPE
Standalone Project (3 iterations)

LEAD ENTITY
Better Bankside

ARTIST
Office for Crafted Architecture 2015, Camille Walala 2016, Thierry Noir 2017

TIMELINE
6 months

DURATION
2 years

MATERIALS
Year 1: Road marking paint; Years 2 and 3: Preformed thermoplastic

COST
Materials: (donated)
Design Fee: £2,500
Labor: (volunteer)

THE PROJECT

In 2007, Better Bankside, a nonprofit Business Improvement District (BID), launched a placemaking strategy and partnership called Bankside Urban Forest, an umbrella approach for improving streetscapes and public spaces with tactical interventions and urban greening projects across the Bankside neighborhood in Central London. The Colourful Crossings initiative was conceived by Better Bankside within this context.

An opportunity arose in 2015 to bid for funding from Transport for London's (TfL) Future Streets Incubator Fund. This fund, part of the Mayor's Transport Strategy, targeted innovative pilot projects for improving streets and public spaces in London. The proposal by Better Bankside BID was one of the ten pilot projects awarded funding during an open call held by TfL in 2015. The Bankside BID then commissioned the Office for Crafted Architecture to implement the first Colourful Crossing, which would serve as a prototype for the crossings designed in 2016 by Camille Walala and in 2017 by Thierry Noir.

The Bankside neighborhood, home to many world-class art galleries and design studios, became the first "design district" south of the River Thames in London Design Festival in 2015. As the neighborhood's identity continued to grow, community members and business owners started to show a desire to invest in public art projects that would improve public spaces and street safety. The BID used this opportunity to show how a low-cost intervention on the street could foster a strong creative identity, encourage pedestrian activity, and improve people's perception of the street.

BEST PRACTICE HIGHLIGHT: TESTING MATERIALS AND DESIGN

In its first year, the Bankside Colourful Crossings were created with road marking paint. While the paint was a very accessible material, it proved less durable than originally thought. Being able to test different materials such as concrete and preformed thermoplastic, a heat-applied material used for traffic markings on pavement, in subsequent crosswalks gave the BID the opportunity to inject color and creativity with a more durable material.

"This project reinforces all the qualities of urban and commuter cycling in Asheville and provides a safer and more beautiful way for anyone living on the Southside of downtown to access the city."

MIKE SULE
EXECUTIVE DIRECTOR,
ASHEVILLE ON BIKES

Photo by Justin Mitchell

Coxe Avenue

LOCATION
Asheville, NC

TYPE
Standalone Project

LEAD ENTITY
Asheville on Bikes

ARTIST
Sound Mind Creative

TIMELINE
6 months

DURATION
1 year or until streetscape reconstruction

MATERIALS
Acrylic exterior paint

COST
Materials: $3,000
Design Fee: $55,000
Labor: (volunteer)

THE PROJECT

Asheville on Bikes, the city's bicycle and multimodal advocacy nonprofit organization, partnered with Street Plans Collaborative, AARP, and the Blue Ridge Bicycle Club to create a 0.3-mile barrier-protected multiuse path along Coxe Avenue. Although the intervention included various bicycle and mobility facilities, the centerpiece of the installation was a 6,000 square-foot mural designed by Sound Mind Creative and installed by a group of volunteers from the community.

The asphalt design sits in the middle of the South Slope, Asheville's emerging residential and small business development district. While the pilot project was designed to last only a year, it will ultimately inform the city's redesign of Coxe Avenue for the long term.

BEST PRACTICE HIGHLIGHT: DESIGN DEVELOPMENT

This project kicked off in June 2018 with a public workshop during which community members defined the goals of the intervention. Following that first workshop, a Project Advisory Committee was formed to review project goals and select a final design to be implemented during the first week of November 2018. A second public workshop was held in August 2018 to further develop and refine recommendations tailored to local needs.

Thanks to Asheville's large bicycle advocacy community, many people were eager to participate in the volunteer team and support Asheville on Bikes' efforts to reimagine the city's infrastructure in a way that benefits all users.

"Successfully working with public works teams means super clear and concise communication, and being willing to step away from artistic myopia to engage in practical discussions concerning installation, timing, materials, etc."

ANN LEWIS
PROJECT ARTIST

Same Same, but Different

LOCATION
Pittsburgh, PA

TYPE
Standalone Project

LEAD ENTITY
Allegheny County Airport Authority

ARTIST
Ann Lewis

TIMELINE
9 months

DURATION
Indefinite

MATERIALS
Preformed thermoplastic

COST
Materials: $35,000
Design Fee: $15,000
Labor: (in-house)

THE PROJECT

The Art in the Airport program at Pittsburgh International Airport has a rotating program featuring local and regional artists, with exhibits selected by the city's Arts and Culture Manager and an Advisory Committee.

In early 2018, the committee decided to use the large parking lot space for the airport as a canvas for creative wayfinding and an art mural to enhance visibility and guide airport users to a safe walking route. The Airport Authority partnered with the Office of Public Art, a program of the Greater Pittsburgh Arts Council, to hold a call for artists and selected Ann Lewis because of her experience with public art and large-scale installations.

BEST PRACTICE HIGHLIGHT: MATERIAL SELECTION

The material chosen for this installation was a runway-grade thermoplastic, which is much thicker than the typical thermoplastic used in crosswalks or other roadway markings. Provided by traffic marking company Ennis Flint, the material is engineered to last for up to 20 years, reducing the lifetime maintenance costs for this project. For a project of this scale, it was essential for the artist to work closely with the material supplier to ensure that the thermoplastic was applied properly and to avoid any unnecessary delays or additional expenses.

This installation was completed after four days of work, however, there was a lapse in between the beginning and the completion of the project due to cold weather. Most products and paints for these types of projects will perform better when applied in warm and dry conditions, so it is important to consider this factor when choosing an installation date.

"I get to be a part of a growing movement away from an over-dependence on cars and towards a more socially and environmentally beneficial way of being that is more in line with our humanity."

PETER GIBSON
ARTIST

Sexapus

LOCATION
Montréal, Canada

TYPE
Standalone Project

LEAD ENTITY
City of Montreal Borough of Mercier–Hochelaga-Maisonneuve

ARTIST
Peter Gibson; En Temps et Lieu

TIMELINE
9 months

DURATION
1 year (for the featured mural)

MATERIALS
Acrylic traffic marking paint

COST
Materials: $5,400
Design Fee: $1,800
Labor: (included in design fee)

THE PROJECT

In recent years, the City of Montréal has developed programs that encourage sustainable mobility and aim to reduce the city's dependence on cars. In 2014, the Borough of Mercier–Hochelaga-Maisonneuve launched a shared streets initiative called Zone de Rencontre Simon-Valois. The project implemented transitional interventions over a three-year period on Ontario Street to redefine the area surrounding an existing plaza as a shared space and improve the safety and accessibility for active transportation users.

During the interventions of 2015, 2016, and 2017, the city was able to evaluate the impacts of the project to inform the permanent construction of the shared street that will take place in 2020. The first two iterations explored "shared street" scenarios by creating an asphalt art mural of a six-legged octopus called Sexapus on the main intersection and on the sidewalks to evaluate the receptiveness of the local community and business owners to the shared street concept. The last phase in 2017 further enhanced the streetscape with furniture and landscaping.

BEST PRACTICE HIGHLIGHT: PATHWAY TO A PERMANENT DESIGN

The goal of this pilot project was to create a shared street where pedestrians have priority and drivers respect the most vulnerable users of the road. The results of the first interventions were very positive and proved popular with the community.

After seeing the benefits of a shared street, local businesses and residents pushed for a permanent version even though Quebec's Highway Safety Code (HSC) did not yet allow for such shared street configurations. But thanks to the wide support for this public art intervention, the province added an amendment to the HSC in 2018 creating new traffic rules to allow such spaces. In 2019, the borough held a national design competition for the permanent implementation and received $3.2 million Canadian from the Central Administration for the reconstruction of the designated shared area.

"When multiple city agencies partake in the process, it is important to manage expectations and communicate about the mural's expected lifespan to determine the best materials and application method."

KATE JACOBI
PROJECT MANAGER,
MURAL ARTS PHILADELPHIA

Rhythm & Hues Mural by Brad Carney
Photo by Steve Weinik
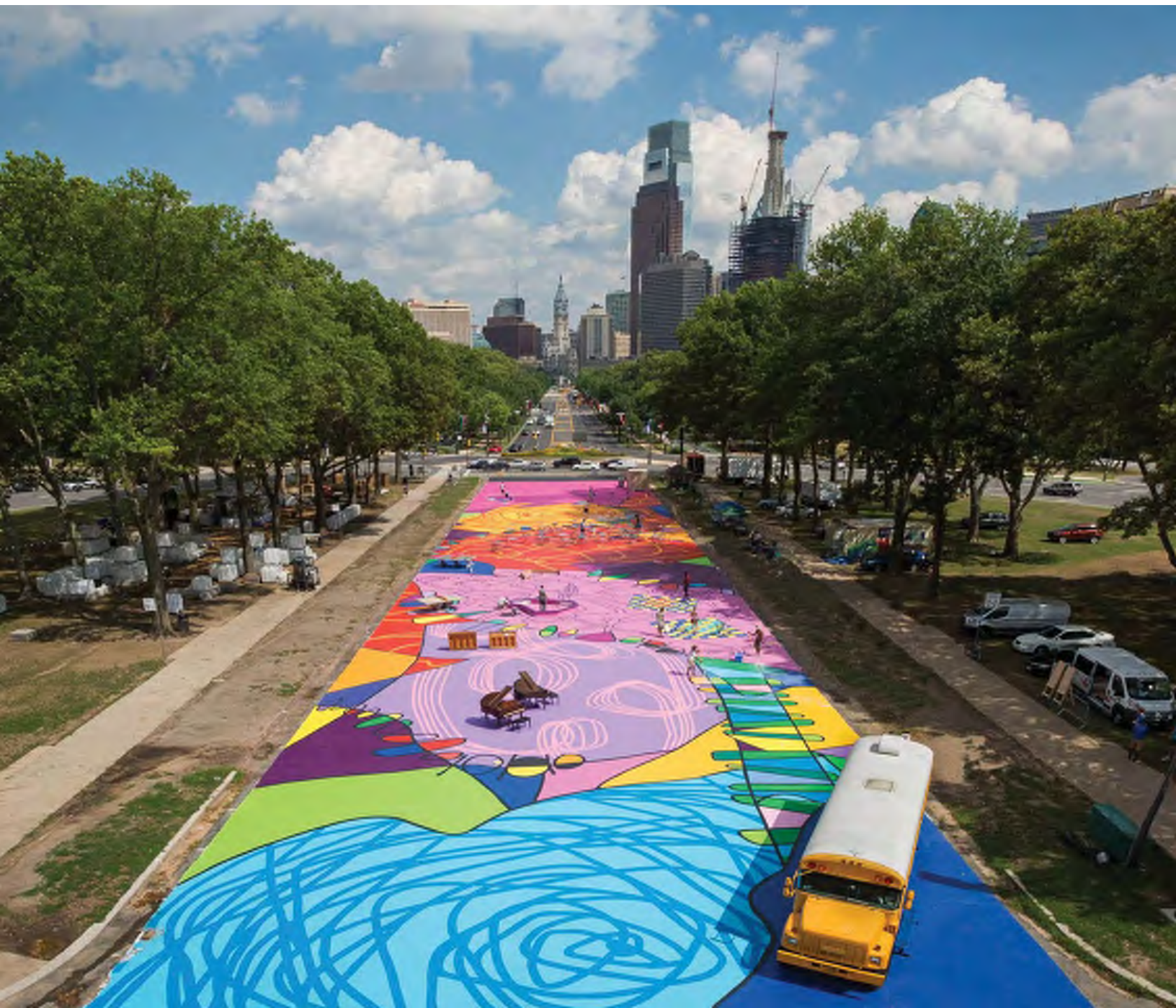
The Oval

LOCATION
Philadelphia, PA

TYPE
Ongoing Program

LEAD ENTITY
Mural Arts Philadelphia

ARTIST
Multiple, selected each year
by Mural Arts Philadelphia

TIMELINE
Annual

DURATION
5-6 weeks

MATERIALS
Acrylic exterior paint

COST
Materials: $20,000
Design Fee: $5,000
Labor: $15,000-$25,000

THE PROJECT

The Eakins Oval is a revenue-generating parking lot that transforms into eight acres of public space each summer. For five to six weeks, the space becomes The Oval+, a pop-up summer park with free community programming that includes a large-scale mural installed by Mural Arts Philadelphia. The program launched in 2013 with the eventual goal of transforming the entire Benjamin Franklin Parkway corridor into a public park.

This initiative builds on Green2015, a sustainability plan launched by the city's Parks and Recreation Department in 2010 with the goal of adding 500 acres of new publicly accessible green space to the city. To meet this goal, the Parks and Recreation Department searched for potential spaces to temporarily transform through creative placemaking projects and selected the Eakins Oval to run a one-year pilot. Given the pilot's success with the community, the space has been transformed each year, and will continue until the construction of a permanent plaza is funded.

BEST PRACTICE HIGHLIGHT: PROJECT IMPLEMENTATION

The need to include an artistic component for the site's activation prompted the Parks and Recreation Department to initiate a partnership with Mural Arts Philadelphia to select a mural artist, curate the design, and oversee the installation process. The production team allocates five days to paint the mural with a group of trained artists to ensure quality implementation.

Once the mural is installed, the Parks and Recreation Department, in partnership with the Fairmount Park Conservancy, organizes free public programming throughout the Oval's summer duration. After six years of activating the Oval, the project team has developed efficient strategies for selecting artists, developing a design, managing a budget, procuring materials, installing the mural, and programming the space. This has allowed the program to be continuously supported by multiple entities and organizations that help fund and implement the project each year.

"Every transportation department should give the community it serves the pens for its plans and the paintbrushes for its places."

RYAN RUSSO
DIRECTOR,
OAKLAND DEPARTMENT OF TRANSPORTATION

Zero Litter Mural by the Earth Team
Photo by City of Oakland DOT
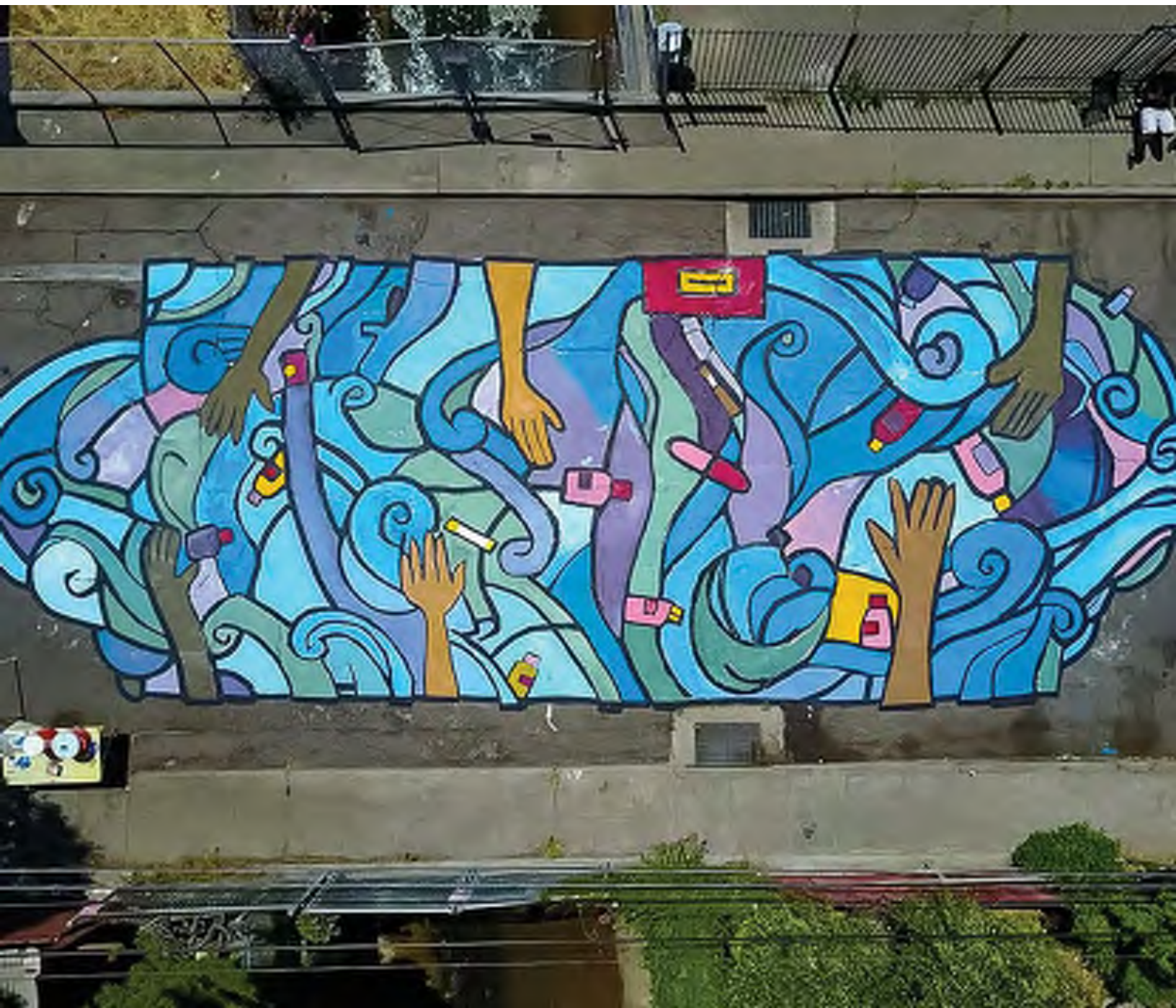
Paint the Town

LOCATION
Oakland, CA

TYPE
Ongoing Program

LEAD ENTITY
Oakland Department
of Transportation

ARTIST
Multiple

TIMELINE
1.5 years

DURATION
1 year

MATERIALS
Acrylic Exterior Paint

COST
Materials: $300 – $600
Design Fee: (community designed)
Labor: (volunteer)

THE PROJECT

In 2017, the City of Oakland Department of Transportation (OakDOT) launched a pilot program called Paint the Town. The program was set in motion to advance OakDOT's goals to encourage community ownership of public space by inviting Oakland residents to design and organize mural projects on the pavement.

OakDOT held an open application process that invited community members to paint temporary street murals on Oakland's roads. The department received 42 submissions and ultimately selected 30 proposals. Locations were chosen based on community support and the desire to facilitate projects in underserved neighborhoods. The city worked with a private funder, Oakland Fund for Public Innovation (OFPI), to fund a partnership with local nonprofit Walk Oakland Bike Oakland to help community members implement the projects. Mural installation for the selected designs began in Spring 2018 and eleven designs were completed within the year. OakDOT plans to finish the remaining murals by 2020.

BEST PRACTICE HIGHLIGHT: ELIMINATING BARRIERS TO ENSURE EQUITY

OakDOT's Paint the Town program has become a model for how cities can address the major barriers for community members to undertake a project of their own. Although applicants are responsible for obtaining special event permits, engaging the community, recruiting volunteers, and helping to implement the project, OakDOT and OFPI provide significant resources along the way to facilitate these tasks. The city has waived permit fees and provided street closure materials at no cost to the applicant, while OFPI provided funds for paint and supplies as well as design assistance and installation day support.

OakDOT held application clinics at libraries to assist with the application and developed a comprehensive toolkit that outlined program guidelines and helped walk applicants through the implementation process. In its toolkit, the department outlines the responsibilities of both the community members and OakDOT staff for design development, mural installation, and any future maintenance and repair needs. The success of this pilot program shows that with proper support, community residents can make a meaningful and large-scale impact on city streets.

"There is so much underutilized asphalt on our streets that can be easily reclaimed for pedestrians through art."

KYLIE WALZAK
LEAD PROGRAM MANAGER,
LIVING STREETS ALLIANCE

Photos by Living Streets Alliance

Corbett Porch

LOCATION
Tucson, AZ

TYPE
Standalone Project

LEAD ENTITY
Living Streets Alliance

ARTIST
Living Streets Alliance
and Community

TIMELINE
4 months

DURATION
In place until permanent roadway
construction begins (1+ years)

MATERIALS
Commercial-grade driveway paint

COST
Materials: $17,500
Design Fee: (in-house)
Labor: $11,000

THE PROJECT

Led by the Living Streets Alliance (LSA), a nonprofit advocacy group, Corbett Porch is Tucson's first asphalt art intervention. The group initiated this project to demonstrate the benefits of adopting policies that would enable Tucson to build a safe, accessible, and equitable transportation network to improve mobility for all residents.

To do this, the group selected a well-known dangerous intersection in the middle of a rapidly growing business district after local shop owners expressed an interest in creating a more pedestrian-friendly space in front of their businesses. The intersection is also part of a future roadway improvement project led by the Regional Transportation Authority called Downtown Links, which aims to improve multimodal connections. In addition to temporarily addressing pedestrian safety concerns, this project is meant to inform the design of a permanent intersection reconfiguration.

In October 2018, a group of over 200 volunteers helped LSA transform the intersection using low-cost, temporary materials like planters, concrete paint, and flexible delineators to demarcate the newly created space for pedestrians. The data collected by the University of Arizona found that once the installation was in place, drivers were more likely to stop at the stop bar (from 27% to 34% compliance) and come to a full stop (from 69% to 82% compliance), improving street safety.

BEST PRACTICE HIGHLIGHT: LEADING AS A NONPROFIT

Organizing an intervention around an existing municipal project was key to getting city and community support for the Corbett Porch. LSA applied for grant funding from the AARP Community Challenge in early 2018 and partnered with the City of Tucson Department of Transportation on securing permits and implementing the project. LSA also gathered input from the community for the design and engaged United Way's Days of Caring to find local volunteers to help with the installation as well as the University of Arizona College of Architecture for data collection and analysis of the impacts of the intervention.

"This project has created an identity for the intersection and cemented that corner as a focal place for the community rather than a barrier for pedestrians."

LEE CRANDELL
FORMER EXECUTIVE DIRECTOR,
LAKEVIEW CHAMBER OF COMMERCE

Photo by Lakeview
Chamber of Commerce

Lakeview Lincoln Hub

LOCATION
Chicago, IL

TYPE
Standalone Project

LEAD ENTITY
Lakeview Chamber of Commerce

ARTIST
Site Design Group

TIMELINE
18 months

DURATION
4 years until the city's permanent streetscape reconstruction project begins

MATERIALS
Epoxy-based pavement coating

COST
Materials: $50,000
Design Fee: $20,000
Labor: (included in materials)

THE PROJECT

The curb extension known as Lincoln Hub is a project led by the Lakeview Chamber of Commerce that transformed a four-block stretch along Lincoln Avenue and reclaimed 5,000 square feet of space for pedestrians. The project shortens the crosswalk distances and reduces traffic speeds at the Lincoln/Wellington/Southport intersection, encouraging more pedestrian activity along the avenue and supporting local businesses. In addition to the curb extension murals, the streetscape project includes seating, planters, and other wayfinding measures.

Once the project was initiated, the Lincoln Avenue Placemaking Project Task Force was formed to gather community input from residents and business owners and select the designer and other contractors to install the curb extensions. The temporary streetscape project was made possible by funding and support from the Special Service Area 27 tax levy. It was designed by Site Design Group and installed in the Spring of 2015. The project also earned a 2015 Charter Award from the Illinois Chapter of the Congress for the New Urbanism.

BEST PRACTICE HIGHLIGHT: PLANNING AROUND AN EXISTING CAPITAL PROJECT

The Lincoln Hub project came from the Chicago Department of Transportation's (CDOT) Lincoln Ashland Belmont Reconstruction Plan, a multimodal roadway improvement plan to transform the Lincoln Avenue into a vibrant commercial corridor. Building on the momentum behind that plan, the Chamber of Commerce launched the streetscape project by identifying three key priorities: traffic calming, greening and landscaping improvements, and pedestrian safety enhancements.

CDOT's Make Way for the People program invites local organizations and community groups to propose street improvement projects and grants them the necessary permits for the interventions. Through this program, the task force was able to use low-cost, short-term improvements that could be implemented before the permanent overhaul of the streetscape. Once the installation was completed, the city incorporated the temporary geometry changes into the reconstruction project that will begin in the near future.

"When developing a design for a street mural, consider yourself as the user. What is the user experience for someone biking, walking, driving through the project? Is the design legible? Is it effective?"

KRISTEN RAMIREZ
ART & ENHANCEMENTS PROJECT MANAGER,
SEATTLE DEPARTMENT OF TRANSPORTATION

Burke-Gilman Trail Curb Bulbs
Photo by Seattle Department
of Transportation

Curb Bulb Program

LOCATION
Seattle, WA

TYPE
Ongoing Program

LEAD ENTITY
Seattle Department of Transportation

ARTIST
In-house artist within SDOT

TIMELINE
Applications received on a rolling basis

DURATION
1–3 years

MATERIALS
Preformed thermoplastic

COST
Materials: $5,000–$15,000
Design Fee: (in-house)
Labor: $5,000–$10,000

THE PROJECT

The Seattle Curb Bulb Program is one of 20 projects and programs led by the Seattle Department of Transportation (SDOT) that focus on making the city more livable, connected, and affordable. Affiliated projects, including the Curb Bulb Program, are made possible by a tax levy that allocates $91 million for pedestrian-friendly improvements that increase visibility at crossings and reduce the number and severity of crashes.

BEST PRACTICE HIGHLIGHT: PROJECT MANAGEMENT

SDOT's program for asphalt art allows residents to request improvements from the city by facilitating the design and implementation process. The city designates a project manager who is a professional artist and art administrator to help solicit potential designs and work with other city agencies to implement the project. The program staff at SDOT works with communities to identify a project location and design, and with city crews to install the asphalt art. Although some of these improvements might include a permanent curb and gutter treatment, SDOT encourages communities to opt for temporary, decorative treatments to achieve the desired effect using fewer resources. The mural location can be suggested by the community or identified by SDOT. In both cases, the department works with its resident artist to come up with creative designs for the curb bulb mural and holds a community review and voting process to select a final design.

Once selected, SDOT works with the city's ADA Compliance Team to ensure that all projects are properly reviewed and permitted for installation. SDOT continues to evaluate these projects and monitor collision data to ensure that crossing improvements increase the number of vehicles yielding to pedestrians and decrease speed at intersections. These improvements have served as one of the many tools in SDOT's Vision Zero plan to end traffic deaths and serious injuries in Seattle by 2030.

"For artists, listening to feedback and making changes is important and necessary – this is your work but it's also for the community so it's important this context is understood."

MOLLY DILWORTH
PROJECT ARTIST

Cool Water, Hot Island

LOCATION
New York, NY

TYPE
Standalone Project

LEAD ENTITY
New York City Department of Transportation Art & Event Programming

ARTIST
Molly Dilworth

TIMELINE
6 months

DURATION
18 months

MATERIALS
Epoxy modified acrylic coating

COST
Materials: (included in labor cost)
Design Fee: $15,000
Labor: $150,000

THE PROJECT

In 2010, New York City Department of Transportation's Art & Event Programming Unit (NYCDOT Art) launched a design competition to install a temporary mural on the asphalt surface in Times Square. At the same time, the agency began planning for a permanent capital transformation of the space into a pedestrian plaza through the Green Light for Midtown project. The mural would serve as an interim intervention before the major reconstruction began in 2012. More information about this project can be found at www.nyc.gov/dotart.

BEST PRACTICE HIGHLIGHT: DESIGN DEVELOPMENT

NYCDOT Art worked alongside the Times Square Arts Alliance, the Mayor's Office, the Public Design Commission and other public art professionals to review 150 design submissions and select the winning design by artist Molly Dilworth. Her design, titled Cool Water, Hot Island, was a graphic representation of the urban heat-island effect observed by NASA's infrared satellite. The intervention, funded by donations to the Mayor's Fund to Advance New York City, was completed in one month and further reinforced Times Square as a destination for public art.

NYCDOT Art created a project committee that met regularly to go over design development and implementation. Committee members included NYCDOT Art staff, the Times Square Alliance, the Mayor's Community Affairs Unit, the artist, and the paint contractor who would oversee the installation. The group worked closely with the artist to realize a final design that could be efficiently implemented over 50,000 square feet of open space. The mural became a model for creating and enhancing pedestrian space to improve safety, health, and well-being for the public.

"Spirit Plaza is a unique public space in the heart of the city, designed for all citizens to come together, get involved, learn about local initiatives, and enjoy civic, culinary, and cultural attractions that highlight the many Detroit voices and unique identity."

MARIA GALARZA
PROJECT MANAGER,
CITY OF DETROIT PARKS & RECREATION DIVISION
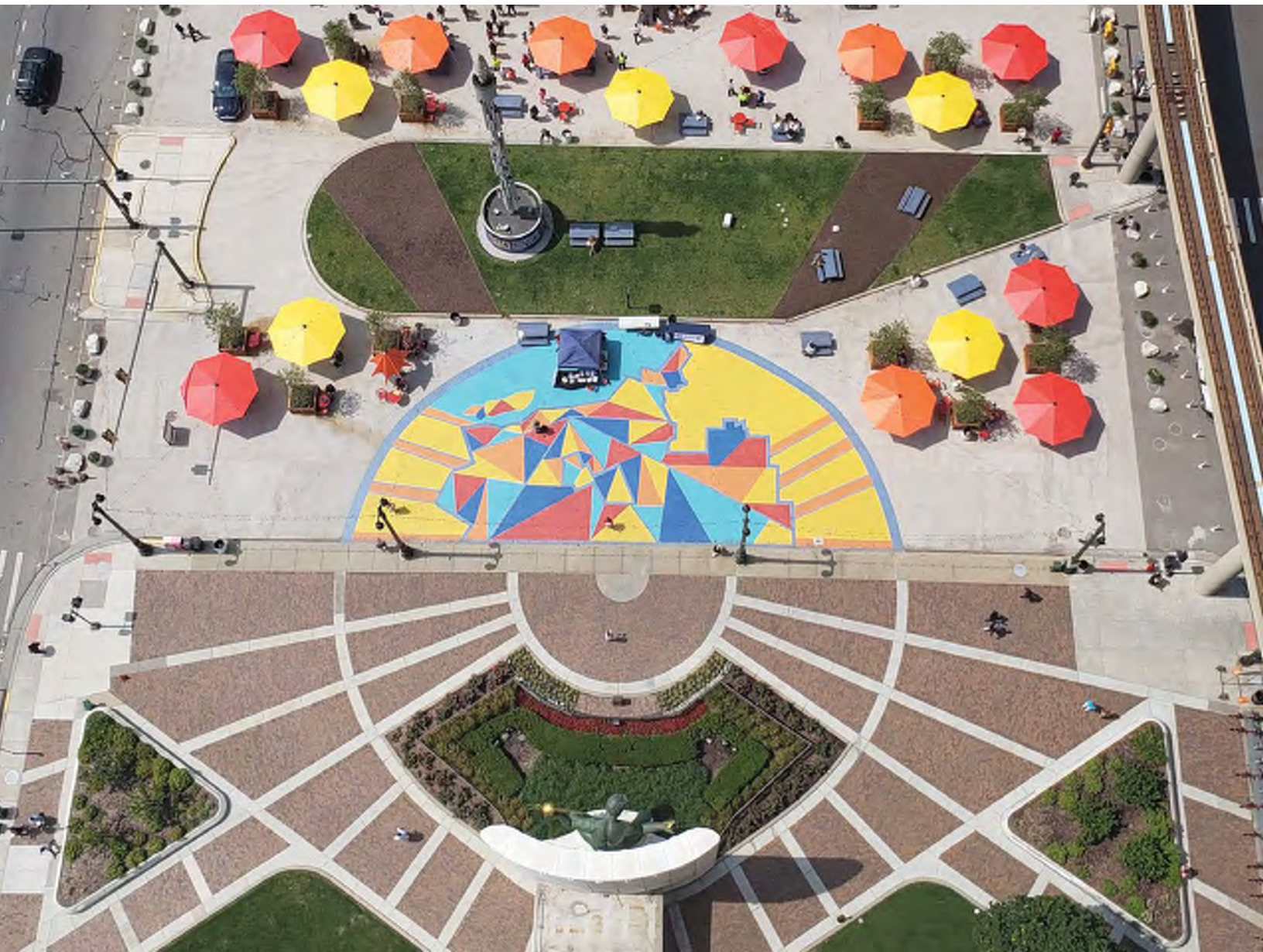
Spirit Plaza

LOCATION
Detroit, MI

TYPE
Standalone Project

LEAD ENTITY
City of Detroit Parks and Recreation

ARTIST
City of Detroit Planning and Development Department

TIMELINE
12 months

DURATION
3 years

MATERIALS
Acrylic traffic marking paint

COST
Materials: $1,500
Design Fee: in-house
Labor: (volunteer)

THE PROJECT

Spirit Plaza was launched by the City of Detroit Planning and Development Department (PDD) and Department of Public Works (DPW) in June 2017 as a three-month pilot public space programmed in collaboration with the Downtown Detroit Partnership (DDP). The city hoped that this intervention would promote a more walkable downtown for workers, residents, and visitors and consolidate traffic flow to create a more inviting street and safer pedestrian crossings.

Five months after its inauguration, the Detroit City Council agreed to continue the pilot of the plaza to allow officials to evaluate its impact on local businesses and traffic flow. For the summer of 2018, to renew excitement and kick off summer programming led by Parks and Recreation Division (DPRD), a temporary colorful mural was designed and installed on the plaza.

BEST PRACTICE HIGHLIGHT: FROM TEMPORARY TO PERMANENT

In 2018, as the space became more established, PDD engaged with DPRD to continue to seek ideas for programming and come up with a more permanent design iteration for the space. The new mural, depicting the map of Detroit, is an example of collaboration between these city agencies and DDP. Together, these organizations worked to create and program the space for the summer, fall, and winter.

To implement the mural, DPRD partnered with the nonprofit Summer in the City, an organization of young volunteers who paint murals across the city. In 2019, given two consecutive years of successful programming, the Detroit City Council voted to make Spirit Plaza a permanent public space downtown. A semi-permanent design will be installed in 2019, and the city plans to develop a permanent design through robust community engagement.

"This program has transformed the city's design approach from a slow-moving, top-down process into a collaborative effort that involves the community and allows them to test a design before committing to a permanent change."

DEMETRIO SCOPELLITI
ADVISOR TO THE DEPUTY MAYOR FOR URBAN PLANNING,
GREEN AREAS AND AGRICULTURE, CITY OF MILAN

Piazze Aperte Spoleto project
Top photo by City of Milan
Bottom photo by
Bloomberg Philanthropies
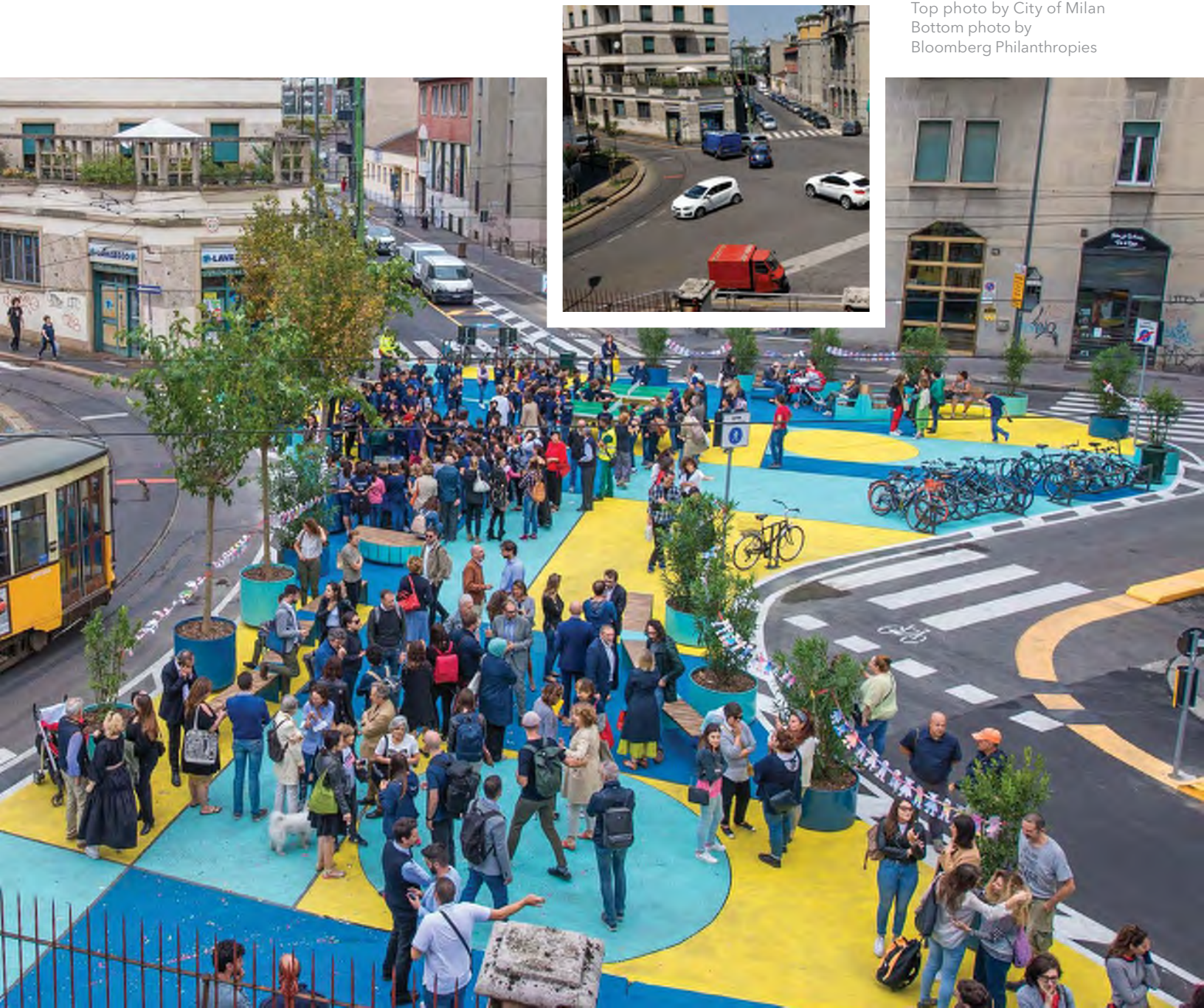
Piazze Aperte

LOCATION
Milan, Italy

TYPE
Ongoing Program

LEAD ENTITY
City of Milan

ARTIST
In-house

TIMELINE
3-6 months

DURATION
12 months , maintained after a year

MATERIALS
Water-based paint

COST
Materials: €30,000-€40,000
Design Fee: (in-house)
Labor: (included in materials fee)

THE PROJECT

The Piazze Aperte (Open Plazas) program was established by the City of Milan as a way of accelerating the creation of public spaces within the city. The program began in 2018 after the release of the Milan 2030 Master Plan and the Neighborhoods Plan, which identified an immediate need for additional public spaces around the city. City leaders lamented the delays of the conventional design and construction process and looked for ways to quickly implement the projects and solicit community feedback.

Working together with Bloomberg Associates and the National Association of City Transportation Officials Global Designing Cities Initiative (NACTO-GDCI), the city identified five interim pilot projects to implement using low-cost materials and volunteer labor. In some cases, the spaces had been originally designed as plazas but had been converted into parking lots in the 20th century, while in other cases, large intersections were redesigned with a smaller footprint for car travel. The spaces were designed by city staff in various departments and implementation was led by a local nonprofit, Retake Milano. Survey results from the first space to be transformed showed that 86% of people prefer the pedestrian plaza, 72% now use more of the space, and 84% would like the redesigned space to become permanent. In 2019, two of the plazas entered a design process for a permanent capital reconstruction.

BEST PRACTICE HIGHLIGHT: BREAKING DOWN SILOS

Given the success of the first five interventions and the results of the survey, the city initiated an expanded second phase in which it invited citizens to make proposals for future Piazze Aperte installations. This expansion was possible because of the removal of bureaucratic silos both within municipal government and between government and the community. Within the city, an "urban lab" division was created that brought together staff from urban planning, transportation engineering, and public space design. Where previously these departments had operated independently, leading to inefficiencies in the design process, now they work hand-in-hand to facilitate the design process and coordinate the installations. The city also partnered with Retake Milano to generate a platform where citizens can volunteer in the physical creation of the piazze. The team works regularly with community members to maintain the space and schedule neighborhood events.

"Placemaking is an essential function for a 21st-century municipality. It is not enough to build public spaces — we must create experiences that allow community connections to be forged."

RICKY ARRIOLA
CITY COMMISSIONER,
CITY OF MIAMI BEACH

Photo by Andrea Lorena

Rue Vendome

LOCATION
Miami Beach, FL

TYPE
Standalone Project

LEAD ENTITY
City of Miami Beach

ARTIST
Street Plans Collaborative

TIMELINE
10 months

DURATION
2 years

MATERIALS
Epoxy-based pavement coating

COST
Materials: $7,000
Design Fee: $35,000
Labor: (included in design fee)

THE PROJECT

In August 2017, the City of Miami Beach set in motion its North Beach Master Plan by transforming a nine-space parking lot into a public plaza with an art mural and community activities. The Miami Beach Commissioners voted unanimously to conduct a three-month "soft closure" of the parking lot to study the response from the community as well as any traffic impacts the plaza may have caused.

After the vote, the city engaged Street Plans Collaborative to design the 3,565 square-foot asphalt pattern, procure materials, and engage with the local community to find volunteers for the installation. In the spring of 2018, the team closed off the space to vehicles and was joined by the City of Miami Beach staff and local volunteers to paint the plaza over three days.

BEST PRACTICE HIGHLIGHT: PROGRAMMING

Once the three-month pilot ended, the site remained closed to vehicles because of the community's interest in keeping the space as a public plaza. The interim plaza has been maintained and used by the city for farmers markets and smaller neighborhood events since its installation. The plaza received new life a year later when the city engaged local creative marketing and events firm Prism Creative Group to organize and host large community events in the space and build public support for a permanent transformation.

With a community events manager on board to continuously activate the space, the plaza's popularity rose and, in January 2019, the city started the design process for the permanent transformation of the space.

"We are offering community members the opportunity to reclaim spaces normally used for vehicles into safe zones and to test these changes to determine the future use of the space."

CARLOS MARIO URREGO DURAN
PROGRAM MANAGER, BOGOTÁ DISTRICT MOBILITY OFFICE

Plazoletas Bogotá Inglés project
Photos by Bogota District Mobility Office

Programa Plazoletas Bogotá

LOCATION
Bogotá, Colombia

TYPE
Ongoing Program

LEAD ENTITY
Bogotá District Mobility Office

ARTIST
District Mobility Office
staff designers

TIMELINE
Yearly cycle; 6 months from
initiation to implementation

DURATION
1–3 years or until permanent
construction of plaza

MATERIALS
Traffic marking paint

COST
Materials: $3,000–$10,000
Design Fee: (in-house)
Labor: (volunteer)

THE PROJECT

The Plazoletas Bogotá — Spaces for All program is an urban intervention strategy led by the Mayor's Office to recover and build public spaces that improve pedestrian mobility and road safety. The program, a collaboration with Bloomberg Associates and the National Association of City Transportation Officials Global Designing Cities Initiative (NACTO-GDCI), links communities and local businesses in a participatory process that seeks to transform underutilized streets into community hubs.

As part of the program, the District Mobility Office created a streamlined process to allow communities to manage their public spaces through quick and low-cost activations. The District Mobility Office works with the District Administration and the Department of Public Works to oversee the interventions and community programming activities. Since the program's launch in 2016, almost 90,000 square feet have been transformed, creating 12 new plazas in Bogotá.

BEST PRACTICE HIGHLIGHT: SELECTION PROCESS

Every year, the Plazoletas program invites community and local organizations to propose spaces that are in need of improvement. Applicants register using an online portal, then the Mobility Department evaluates each proposal, selecting those that will most positively impact the community, provide needed public space in under-served areas, and enhance mobility.

Once selected, the District Mobility Office works with local community leaders to design the spaces that respond to the needs of the surrounding neighborhoods. The District Administration also works with communities to outline the duties of all participants and define the responsible actors for outreach, maintenance, insurance, design, programming, and budgeting.

"Stewardship is a really important aspect of these projects. By making sure that there is someone who cares and can address any issues, you can ensure the longevity of the project."

STEPHANIE FORTUNATO
DIRECTOR,
PROVIDENCE DEPARTMENT OF ART, CULTURE, AND TOURISM

Left: Indexed II mural by Noemie Bonnet
Right: Save Our Planet mural by Brent Bachelder
Photos by Michael Christofaro

Art Transformer Program

LOCATION
Providence, RI

TYPE
Ongoing Program

LEAD ENTITY
City of Providence Department of Art, Culture, and Tourism

ARTIST
Multiple, selected by jury

TIMELINE
Applications received on a rolling basis

DURATION
1–3 years

MATERIALS
Acrylic paint

COST
Materials: (included in design fee)
Design Fee: $350 per box
Labor: (included in design fee)

THE PROJECT

The Art Transformer Program was launched in 2010 by the Providence Department of Art, Culture, and Tourism to celebrate local artists and beautify unattractive infrastructure. The interventions are part of a city-led corridor improvement project that included wayfinding and bus shelter enhancements within various business districts to contribute to the vibrancy and vitality of the streetscape and discourage graffiti.

The department worked with the Planning Department and the transit agency to integrate arts and culture into planning projects by identifying five heavily traveled corridors for installation of utility box murals. Artwork was selected by a jury comprised of city and community representatives, and each chosen artist received a $350 stipend for their work.

BEST PRACTICE HIGHLIGHT: STEWARDSHIP

The program has now evolved into an "Adopt a Box" strategy that allows community groups or nonprofit organizations to become stewards of utility boxes that have been vandalized, replaced, or are otherwise in need of repair. Once a group has applied to adopt a utility box, the Department of Art, Culture, and Tourism reviews the application and facilitates the permitting process for the community group or organization to curate murals on the selected utility boxes and maintain the artwork.

"Step by step, Trigono is turning into a model neighborhood. A new normal with walls and facades that are maintained clean from tags, while at the same time encouraging conversation around art that respects and enriches the city."

GEORGIOS KAMINIS
FORMER MAYOR
OF ATHENS

Suitcase mural by Dimitris Kretsis
Womans Face mural by Achilles
Photos by Athens Trigono

52

Trigono Pedestrianization Project

LOCATION
Athens, Greece

TYPE
Standalone Project

LEAD ENTITY
Municipality of Athens

ARTIST
Multiple, selected by open call

TIMELINE
8 months

DURATION
Indefinite

MATERIALS
Acrylic spray paint

COST
Materials: €100 per box
Design Fee: (volunteer)
Labor: (installed by artists)

THE PROJECT

The Art on KAFAO project (using the Greek acronym for utility boxes) was launched in 2016 by the City of Athens as part of a broader €10 million donation for a number of programs from the Stavros Niarchos Foundation to the city. The program aimed at revitalizing the area by improving the safety, cleanliness, and walkability of the city's historical center.

Graffiti removal was a key component of the Trigono program, which involved eleven city agencies and was managed by the local nonprofit Athens Partnership. The Art on KAFAO project was designed both for aesthetic reasons and to prevent future graffiti tagging on these surfaces. The Trigono program has inspired other programs: in 2019, the city's historical center launched its This is Athens – Polis program aiming to paint 100 electric boxes across the neighborhood.

BEST PRACTICE HIGHLIGHT: MENTORING LOCAL ARTISTS

The city was looking for a way to reduce illegal tagging activity and used the utility box mural program to engage young street artists and enlist their participation to showcase their talents.

To achieve this, the mayor appointed a six-person artistic committee to hold an open call and select 37 emerging, local artists. Thanks to the educational component of the project, the municipality has noticed a decrease in tagging activity since the murals were installed and an increase in the willingness of artists to engage with city agencies in other creative placemaking projects.

"It is always better to start small and build the program over time. Each year there is something new to learn and more support to obtain."

CATHERINE CAMPBELL
PROGRAM MANAGER
STREETARTORONTO

Left: Mural by Erin McCluskey
Right: Mural by Daniela Rocha
Photos by Jocelyn Reynolds

StreetARToronto Outside the Box Program

LOCATION
Toronto, Canada

TYPE
Ongoing Program

LEAD ENTITY
City of Toronto Transportation Services Division, Public Realm Section

ARTIST
Multiple, selected through open call

TIMELINE
Yearly cycle; 3 months from initiation to implementation

DURATION
5+ years

MATERIALS
Acrylic spray paint, vinyl wraps

COST
Materials: $500
Design Fee: $500 per box
Labor: (included in design fee)

THE PROJECT

The StreetARToronto (StART) program was launched in 2012 by the Public Realm Office in the City of Toronto's Transportation Services Division. The program was designed to proactively replace graffiti vandalism with vibrant and community-engaged street art. The street art installations enhance the safety and beauty of Toronto streets, encouraging active forms of mobility, like cycling and walking, while showcasing and mentoring local artists.

Each year StART publishes a call to artists, secures permits, and monitors the installation process of 50-100 murals on traffic signal boxes. It has also designed an Outside the Box mentorship program to connect emerging artists to a wide network of experienced artists and creative community members. The Graffiti Management Plan and StreetARToronto program are fully funded with third-party, private-sector revenues generated through a Street Furniture Agreement with Astral Media Outdoor L.P. and do not involve taxpayer money.

BEST PRACTICE HIGHLIGHT: CREATING A CITY PROGRAM

The program's popularity has grown over the years and now receives more than 200 applications annually. The designs are often connected to themes of diversity and inclusion, generating widespread community support and more "eyes on the street." Given this widespread support, the StART program has expanded to include walls of all sizes, from utility boxes to 20+ story buildings.

The Outside the Box program also reduced the city's infrastructure maintenance costs by counteracting graffiti vandalism. In 2016, the city removed 200,000 square feet of graffiti; that number dropped to 135,00 in 2017 and to just 75,000 in 2018. As of 2019, almost 400 utility boxes have been hand-painted or vinyl-wrapped across the city.

"There is a specialized skill set and sensitivity that goes into coordinating with artists and curating artwork within an agency whose primary mission is not commissioning art. Cities should consider hiring arts administrators to formulate a workable structure for art programs within their departments."

EMILY COLASACCO
DIRECTOR,
NYCDOT ART & EVENT PROGRAMMING

Alphabet City mural by Elizabeth Hamby
Photo by NYCDOT

Barrier Beautification Program

LOCATION
New York, NY

TYPE
Ongoing Program

LEAD ENTITY
New York City Department of Transportation Art & Event Programming

ARTIST
Multiple

TIMELINE
Yearly cycle; 2 months from initiation to implementation

DURATION
1 year

MATERIALS
Acrylic exterior household paint

COST
Materials: $1,000–$2,000
Design Fee: $3,000
Labor: (volunteer)

THE PROJECT

Launched in 2010, the Barrier Beautification Program is one of the many programs run by the New York City Department of Transportation's Art and Event Programming Unit (NYCDOT Art). The unit collaborates with community organizations and artists to curate and manage temporary art installations and programming in the public realm throughout the city.

NYCDOT's Bike Program continues to expand and enhance the existing bike infrastructure in the city, and NYCDOT Art staff works with that unit to identify priority bike routes that have concrete safety barriers. Once identified, the selected artist and volunteers paint murals on the barriers that can be 400 to 2,200 feet long. The program has implemented 40 barrier murals as of 2019. More information can be found at www.nyc.gov/dotart.

BEST PRACTICE HIGHLIGHT: PROCESS FOR COMMISSIONING ARTISTS

Every year the department issues an RFP to solicit ideas and awards the selected artist $3,000 to produce the design and stencils and oversee the painting of murals on the selected concrete barriers.

The RFP includes information for the artist to consider, including site specifications and the varying abilities of the volunteers that help paint the mural. The RFP also includes language (and examples of projects) to encourage artists to use bold, simple patterns and colors. The artist is selected and assigned a barrier site by a project-specific committee that ranks all submissions based on criteria such as quality of past work, design approach, and ability to work on large-scale, team-based projects. The program partners with the nonprofit, volunteer recruitment agency New York Cares to provide up to 75 volunteers for each artist during the installation, depending on the scale of the site. The installation is typically accomplished over the course of six hours on one day.

"There is a tendency for neighborhood gatherings to occur around political or economic reasons. We want to use art as a way to get the community together in a positive and creative environment."

LEAH BRENNER CLACK
FOUNDER,
ARTS MARTIN ACRES

Photo by Lauren Click

Moorhead Underpass Mural

LOCATION
Boulder, CO

TYPE
Standalone Project

LEAD ENTITY
Arts Martin Acres

ARTIST
David Polka

TIMELINE
12 months

DURATION
Indefinite

COST
Materials: $500
Design Fee: $4,000
Labor: (included in design fee)

THE PROJECT

Arts Martin Acres (AMA) was initiated by South Boulder community members to encourage community building through creative means. In 2017, the organization received a $20,000 grant from the City of Boulder Neighborhood Enhancement Grant program to develop the Martin Acres Neighborhood Arts Plan. AMA worked with the community to select the Moorhead Drive underpass along the Parks and Recreation Department's Bear Creek bike path as an ideal mural location.

Once the site was identified, AMA partnered with And Art Space on an open call for design proposals that would best represent the diversity and natural beauty of Martin Acres. David Polka was selected from over 70 applicants to install the mural during the summer of 2017. The project team worked with the City of Boulder Parks and Recreation and Arts and Culture departments to obtain permits and a temporary public art agreement, coordinate traffic control, prime the walls for painting, and apply anti-graffiti coating.

BEST PRACTICE HIGHLIGHT: COMMUNITY OUTREACH

AMA partnered with Friends of Martin Acres to initiate a public outreach process to advance the existing neighborhood arts plan. The stakeholder outreach, which was collected through an online survey and a community input event, ignited a lot of excitement about art in Martin Acres among community members, schools, local businesses, and neighborhood organizations.

The results from the outreach process found that 90% of participants were in favor of bringing more art into their community. During the engagement activities, participants indicated their desired types of art and their priority project, and the murals in the Moorhead Underpass received the greatest support.

"Being a newcomer to Miami and not knowing the logistics of how to get the project up and running, I had to find local resources from agencies and organizations that support artists. I also had to ask a lot of people for favors."

BO DROGA
PROJECT ARTIST

Photo by Bo Droga

Underline Miami Dominoes

LOCATION
Coral Gables, FL

TYPE
Standalone Project

LEAD ENTITY
Bo Droga, Artist

ARTIST
Bo Droga

TIMELINE
12 months

DURATION
10 years

MATERIALS
Acrylic traffic marking paint

COST
Materials: $30,000
Design Fee: (volunteer)
Labor: (volunteer)

THE PROJECT

Unlike most other case studies in this Guide, this underpass mural project was not led by the city or a community group, but instead was initiated, designed, and installed by Australian artist Bo Droga. The mural, located on the structural supports for Miami's Metrorail, celebrates the city's Cuban and Latin American heritage with giant-sized dominoes painted on the concrete pylons over a total distance of 2,750 feet.

This area is undergoing a redevelopment process known as The Underline that will create a ten-mile mobility corridor that integrates multiple forms of transportation, connects communities, and improves the safety of pedestrians and cyclists. Droga saw this ongoing effort as an opportunity to transform a public space that lacked cultural and aesthetic character into a place of pride for the local neighborhood and is now frequented by the greater Miami community and tourists.

BEST PRACTICE HIGHLIGHT: ARTIST AS PROJECT LEAD

Droga was able to develop and implement this project on his own thanks to a $2,500 Ellies Award grant awarded to him by Oolite Arts. In late 2018, Droga presented his ideas to the Miami-Dade County Transit Department, the owners of the structural system of the Metrorail, and received support to move forward with his proposal.

With this agreement, the county presented guidelines for paint type, volunteer safety, and liability concerns and also issued contractor permits for the artist and the volunteers to work on county property. In the Spring of 2019, the artist and nine volunteers painted the first section of the overall project using large aluminum stencils for the dominos, while also leveraging in-kind donations on the paint, insurance, and engineering support.

"Based on the success of Underground at Ink Block, we will look for additional opportunities in future urban development projects to incorporate more street art to aid in branding, placemaking, and open space invigoration."

KATHY MCMAHON
SENIOR VICE PRESIDENT,
NATIONAL DEVELOPMENT

Cranes in the Sky mural by Marka27
Photo by National Development

Underground at Ink Block

LOCATION
Boston, MA

TYPE
Standalone Project

LEAD ENTITY
National Development

ARTIST
Multiple, selected by curator

TIMELINE
26 months from initiation
to implementation

DURATION
Indefinite

MATERIALS
Acrylic spray paint

COST
Materials: (included in design fee)
Design Fee: $53,000
Labor: (included in design fee)

THE PROJECT

Underground at Ink Block is a newly created public space and public art project launched to activate underutilized infrastructure spaces. Developed as part of the Massachusetts Department of Transportation's (MassDOT) Infra-Space program, the $8.5 million project transformed an eight-acre interstate underpass between the South End and South Boston into an active urban park with landscaped pedestrian and bicycle paths and ten mural walls. The project ultimately created a link between neighborhoods previously divided by uninviting and unsafe highway infrastructure.

The first round of murals was completed in 2017; two years later the project was expanded to include nine additional murals. Underground at Ink Block now has one of Boston's largest displays of public art and has become a must-see destination for residents and visitors.

BEST PRACTICE HIGHLIGHT: PUBLIC-PRIVATE PARTNERSHIPS

The planning, permitting, design, and construction efforts were led by MassDOT in cooperation with the City of Boston Planning & Development Agency, the FHA, engineering and construction partners, and local development and arts organizations. After the space was completed, real estate firm National Development was selected through a public bid process and granted a lease to manage the park with art, community programming, and parking to generate revenue for operating the space.

National Development partnered with Street Theory to select local and national artists and curate the mural designs. Street Theory's experience in large-scale public art installations and artist management was a crucial factor in the planning and execution of the space as a cultural amenity. Additionally, given Street Theory's broad artist network, the artists were directly commissioned by the creative agency with no need for an open call or lengthy review process. Since its inauguration, the installation has received several awards and recognitions for its innovative approach to enhancing urban connectivity, walkability, and safety.

TOOLS &
TACTICS

Tools & Tactics

This section breaks down the steps required to implement an asphalt art project.

When it comes to assembling a team, who does what? What difficulties should we expect, and what are some options for handling them? How can funding be acquired? How do we engage the community? What are some good ways for the city and neighborhood groups to work together to implement the project?

These questions and more are addressed here, drawing on the experience of successful project teams across the globe.

There is no one-size-fits-all process for asphalt art — each project will vary depending on its stakeholders, location, complexity, and scale. But the most common elements are discussed in detail in the following pages. They can serve as touchpoints for every step of your your project, troubleshooting along the way, and leveraging the best results throughout.

Same Same but Different, Pittsburgh, PA
(Case study on page 27)

Mural by Ann Lewis
Photo by Pittsburgh International Airport

Project Initiation

Asphalt art projects can be initiated in many ways. They may originate from a community group seeking to slow traffic in their neighborhood or in City Hall as part of a broad planning effort. Some projects are intended only for a short time, while other may be more permanent. There are many details to coordinate, but with the right team and sufficient planning, the project can be reasonably managed.

Generally, a project is initiated after someone identifies a potential site for an intervention and has either the resources, time, or passion to make it happen. Leadership from one person in particular is critical to the success of these projects; there should be someone who is ultimately responsible for managing the schedule and budget, whether that is a project manager assigned by the city or an executive director of a nonprofit.

While every project has basic elements, some of the recommendations in the pages that follow will depend on the initiating entity (community group or city) and the municipality's permitting structure, if any.

Projects are typically initiated in one of three ways:

1. Proposed by a community entity such as a nonprofit organization, informal group, independent artist, designer, or creative collective to address a community goal without a formal municipal approval process.

2. Implemented by a local government or municipal agency based on previous planning efforts or community requests.

3. Implemented through an ongoing initiative or program typically run by a local government agency. This might mean that an agency commissions an artist as part of a regular program for a particular space or that the city has an established permitting process for outside entities to do these projects on their own.

Generally, a project is initiated after someone identifies a potential site for an intervention and has either the resources, time, or passion to make it happen.

This intersection mural in Portland, OR, is one of many done by City Repair, a nonprofit organization that works hand-in-hand with the Portland Bureau of Transportation to accomplish these projects. This is a successful example of how nonprofit organizations often lead asphalt art projects. (Case study on page 19)

Mural by community member Colleen Smith
Photo by Greg Raisman

INITIAL PROJECT CONSIDERATIONS

Depending on who initiates the project, some preliminary research and planning will be needed. In the first stages of planning, consider the questions on the following pages regarding the location, ownership, creation, and longevity of a project. Knowing the answers to these questions up front will help with a smooth implementation later and raise any red flags about the selected site. We suggest documenting and discussing these details and sharing them with all of the project partners. These questions assume a project location has been selected, though they are useful for someone scouting out potential locations as well. Don't be disheartened if at first you do not have answers to every question! Most projects don't address many of these items and are still successful.

Some paint applications, like this one in Des Moines, may need to be applied by professional contractors. (Case study on page 21)

Crosswalk Mural by Peter Gibson
Photo by Greater Des Moines Partnership
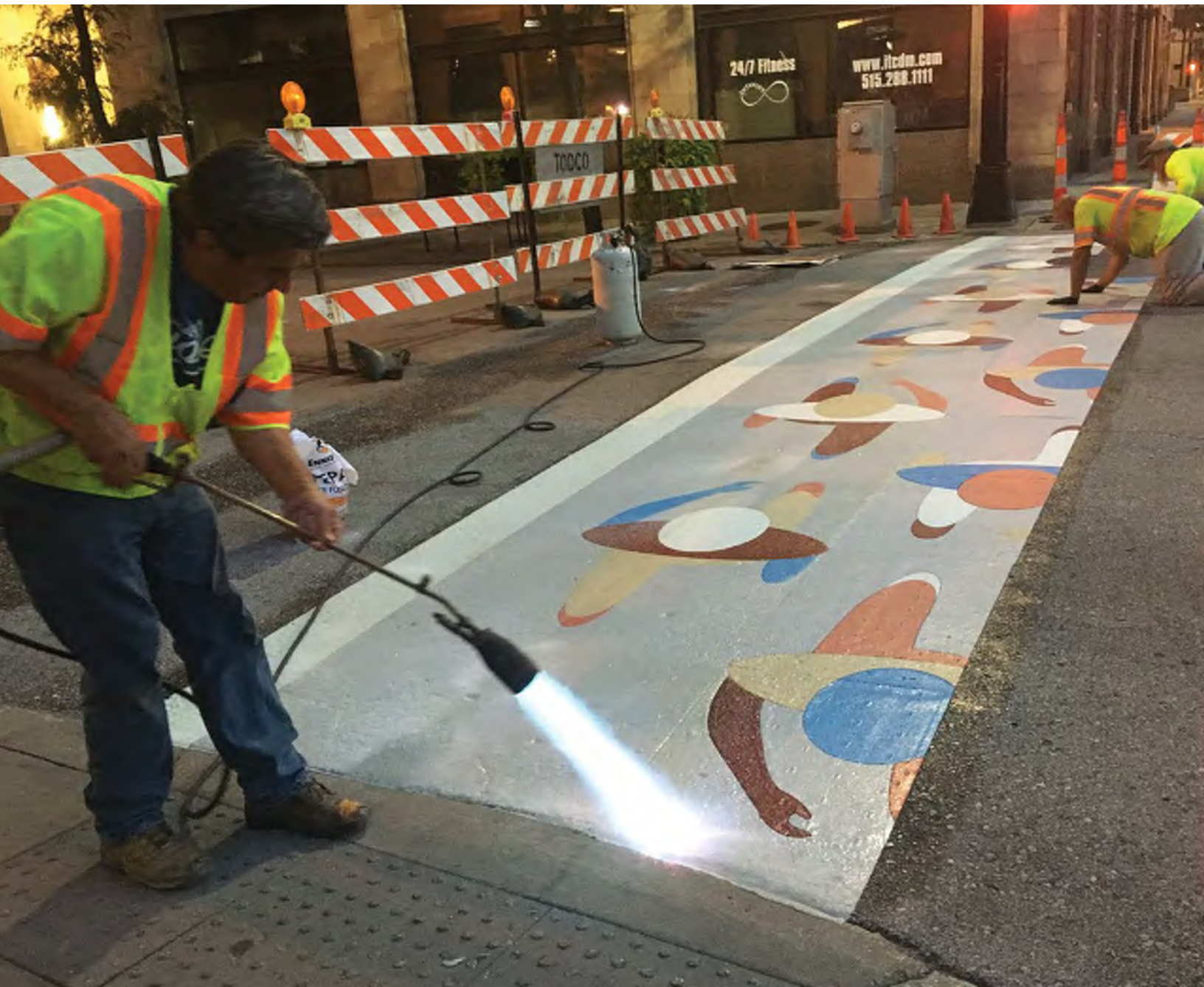
SITE CONSIDERATIONS

Who controls the site? What entities must be involved in design review and permitting? (i.e., department of transportation or public works, art commission, historic commission, or other entity).

This is an essential first question because it may be that the controlling entity has a permitting process for asphalt art projects that will impact the project schedule or the entity may not allow asphalt art projects in the first place.

If you are working on private property, getting permission in writing from the site owner early on is also key. You may still need building permits, street closure permits, or permission from a local arts commission or historic review commission. Inquire about master plans, community plans, or other long-term goals for the site. Inquire about any upcoming projects that may impact your project. What is a vacant lot this summer might be a retail location next year. Having that information will help you evaluate your site and plan for the longevity of your project.

How might the project complement a previous planning effort or a local community goal?

Project teams should determine if there are any existing planning efforts or community goals that this project might advance. Perhaps the project can be tied to an ongoing public planning process as an outreach activity. There may also be funding available for projects that are a part of a master plan.

What is the condition of the pavement?

Pavement that is in bad shape may need additional coats of paint or simply need to be patched or repaved. Crosswalks in particular should be fixed before the project begins. Paint may make it difficult for pedestrians to see cracks or other breaks in the pavement, leading to injury. Some cities repave or micro-surface asphalt before applying a coating, which will dramatically improve the longevity of the project as the coating will adhere much better to fresh asphalt. If this is not feasible, cities should consider requiring certain pavement conditions for accepted projects, and communities should make sure the area being requested is in good condition before applying for a

new project. See "Materials & Site Considerations" on page 88 for more information on how to choose the right coating, pre-treatments, and other methods to lengthen the life and general durability of a project.

What type of street is being considered and what is the volume of traffic?

High car volumes will lead to faster wear on the mural, which should be considered as a factor in paint choice. Streets with a car volume of 80,000–100,000 ADT (Average Daily Traffic) may not be suitable candidates for art in the roadway. Wide streets (50'+ or more than five lanes) are also very challenging, but not impossible. The higher the volume and speed of cars on the street, the less appropriate a street is for art in the roadway. For art in pedestrian spaces, the threshold can be higher based on the judgment of the project team and relevant permitting agencies.

Will the site require complex traffic control for installation? How will the installation affect traffic flow and the right of way?

Signalized intersections or high-volume roads (over 20,000 ADT) may require more complex traffic control and redirection. The city may not have the necessary internal traffic control equipment, and the budget may not allow for the rental of such equipment, which can be very costly.

Are there existing marked crosswalks, curb extensions, or other traffic pavement markings?

Consider how these interact with a potential design. Some traffic engineers require designs in the crosswalk to be within the white lines, while others are more permissive depending on context. Other pavement markings may be within the area considered for an asphalt art project. These may be painted over or they may be incorporated into the design.

Are there other street design elements such as: ADA ramps, bus stops, electrical poles, on-street parking, or driveway curb cuts?

These might conflict with proposed curb extensions or crosswalks and should be considered when developing the design.

PROJECT DEVELOPMENT

What is the projected duration of the project? How long is it intended to last?

This will have implications later for maintenance and paint type. For permanent projects, choose more durable paints. If the installation will be repainted within a year, then less durable paint can be used. More durable paints will also be more expensive. See page 88 for more about paint types and duration.

What is the time frame for implementation? Is there a specific deadline for project completion that needs to be met (e.g., the opening of a road or a public event)? Is the deadline flexible?

Consider factors such as weather, local events, seasonal changes in population, or holidays as these might impact the schedule for the installation. See "Project Management & Schedule" on the following page for more information on setting a "build date."

Who is on the core project team? Who are the key decision makers?

It is important to have representatives from both the city and the community on the core team. See "Assembling a Team" on page 74 for more on project team roles and responsibilities.

Who will create required drawings and construction documents for the project?

If the city is the lead, this may mean using an existing on-call contract for the creation of striping plans and maintenance of traffic plans or asking the nonprofit partner to take on the work of hiring an architect to create the plans.

What is the budget? Who is paying for the project?

This will impact material procurement. If the city is the source of funding, then procurement may be challenging: materials may be limited to those the city already has available or can procure with existing contracts. City leads should consider working with nonprofit entities that have more flexibility when spending grant funding.

PROJECT IMPLEMENTATION & STEWARDSHIP

Will the project team utilize volunteers in the implementation?

If so, the team will need liability waivers for volunteers, a volunteer management plan, and amenities for volunteers during the install (water, food, shade, etc.). Volunteers will need to be trained on the material application and safety. See "Site Safety & Traffic Control" on page 95.

Are there any business owners and/or residents adjacent to the site?

If so, these should be the first groups approached about the project. Getting their support and participation may be critical to the success of the project. See "Engaging the Community" on page 90 for more information about different outreach methods.

How will the project be maintained? Will it be allowed to fade after one application or will it be reapplied? Who will maintain the project once it is complete? Has that entity agreed to participate in the project? For how long?

All paint and other materials will fade and require maintenance. How this is addressed might depend on the entity: is a longer term reconstruction of the street planned, or is the project intended to be permanent? If the city is the lead and no upcoming repaving/reconstruction is in the works, then the city will need to repaint. If a community group is leading, then the city may require them to agree to maintain the project for a certain amount of time. If the project is temporary, the city will need to consider a removal plan. This will be a critical detail when choosing materials. See "Planning for Longevity" on page 88.

For projects that create pedestrian plazas, how will programming and stewardship be addressed on an ongoing basis?

Long-term stewardship is a critical part of the success of a project. Project teams need to consider how the space will be used after the project is complete. These responsibilities are often given to local arts organizations or Business Improvement Districts (BIDs) .

PROJECT MANAGEMENT & SCHEDULE

One of the first steps when initiating a project is establishing a time frame and deadline for the design and implementation of the artwork, along with an overall schedule of milestones. Set a date that works for you and your team given local weather, important holidays, or other events. This is especially important if you plan on working with volunteers or if your installation requires a complex traffic control plan.

For example, consider that many communities have seasonal peaks in tourist activity. You may want to plan the install around these seasons to avoid a traffic control conflict or, alternatively, install during the season as a way of showcasing local art and culture. In the case of the Coxe Avenue example on page 25, the installation was planned around the Fall "leaf" season, when Asheville sees a spike in tourists coming to see the leaves change color. The main mural painting activity became an attraction for many visitors.

Your schedule should act as a to-do list of tasks to be completed and matters to be addressed, outlining responsible partners for each task as well as internal deadlines to meet. Some items might function as an ongoing task, such as community and business outreach, while others may need to meet strict deadlines, like ordering materials and finalizing the design.

Consider the following common tasks as you lay out your schedule:

☐ Identify partners and stakeholders (ongoing task)

☐ Identify regulatory and political framework

☐ Pre-evaluation of the site

☐ Develop budget and procurement list

☐ Select artist or designer

☐ Meet with local government staff (if relevant)

☐ Outreach to local businesses and residents (ongoing task)

☐ Develop final design (make sure to incorporate time for revisions based on community feedback)

☐ Develop construction documents/striping plans

☐ Acquire permits/traffic control

☐ Material and supply procurement

☐ On-site programming or activation

☐ Create maintenence plan

☐ Create evaluation plan and monitor performance

Your schedule should act as a to-do list of tasks to be completed and matters to be addressed, outlining responsible partners for each task as well as internal deadlines to meet.

Assembling
a Team

A successful project team, like this one in St. Petersburg led by the Arts Alliance, will have representatives from city agencies, community organizations, and other members of the community.
(Case study on page 15)

Intersection mural by Cecilia Lueza
Photo by Beth Reynolds

The ideal team includes representatives from each entity collaborating on the project and a project manager(s) who will lead the team at every step of the process. Once the project manager(s) have been selected, their role is to identify the skills needed to complete the project and to find the balance between an inclusive team and an effective team that can make quick decisions. Those leading the project will direct other team members in their tasks, make sure deadlines are met, and make final decisions on any component of the project (e.g., designs, materials used, duration).

Many projects have a small executive Project Team and a larger Steering Committee. The Project Team makes critical decisions about the project and must be empowered to move things forward on a frequent (perhaps weekly) basis. The Steering Committee convenes less frequently (perhaps once a month) and is meant to include a larger pool of partners with varied expertise.

> ## The Project Team makes critical decisions about the project and must be empowered to move things forward

Team members may include:

- Entity initiating the project

- Site owner(s)

- Public works, transportation, planning, or other government departments that oversee the public right of way

- Entities that will implement the project, if different from above

- Community member(s) who will use the project

- Community member(s) who live or work near the project

- Artist or designer creating the content for the project

WHAT WILL THE PROJECT TEAM DO?

☐ Decide on roles and responsibilities for each team member

☐ Establish answers to the questions listed above

☐ Manage the administration of the project by coordinating funding, permission, reviews, permits, contracts, budgeting, payments, and communication

☐ Make sure the community impacted by the project is aware and supportive of the project

☐ Develop process for selection of the artist or designer to create the project

☐ Participate in design development and review

☐ Secure materials, equipment, and other necessary project materials

☐ Manage the implementation of the project by developing a detailed plan of action for painting and installation, being physically present at the site to assist with hands-on activities from painting to answering questions from passersby, managing project volunteers, assisting with day of site needs, and planning a celebration when it is finished

☐ Develop a schedule for repair, maintenance, or refreshing of the project

The most successful projects are collaborations between the city and a community partner. There is no one-size-fits-all blueprint for distributing roles and responsibilities. These will depend on the lead entity, the permitting framework established by the city, the capacity of the community organization, and the resources within the city. In the following sections, we describe some common roles for both community organizations and municipal agencies.

This project in Bankside, London, was awarded funding by the Transport for London's Future Streets Incubator Fund, a program created by the mayor to encourage projects that improve public spaces in London. (Case study on page 23)

Colourful Crossings mural by Camille Walala
Photo by Better Bankside

THE ROLE OF A COMMUNITY MEMBER OR NONPROFIT ORGANIZATION

Some of the common responsibilities of a community organization on the team are to convene the community to gather input, conduct volunteer and business outreach, and ensure an equitable and transparent process. The community group can be the communication conduit between the city and the community at large. Schools, churches, businesses, and other nonprofit organizations may all be potential partners.

If a community group is the project lead, it is imperative that they find a partner within the city government, either staff or an elected official, to champion the project and help with any regulatory issues. Making contact early with the city is key. Check in with your local planning, public works, or transportation departments to ask about permits, the design review process, potential partnerships, and how to implement your project within their workflow. They may have an existing program or funding stream to facilitate your idea, information about insurance requirements, as well as recommended materials. For example, the City of Austin has a creative crosswalk program for community-initiated projects. Ask members of these departments to join your project team and be sure to keep them informed as your plans evolve.

> If a community group is the project lead, it is imperative that they find a partner within the city government to champion the project

The community group or other third-party entity in many cases can also handle procurement of materials as a way of working around complex municipal procurement rules. They may also take on the programming or stewardship of a space once completed.

THE ROLE OF THE CITY

Some of the main roles of the city when leading a team or in a support role are to ensure an efficient and easy design and permitting process (e.g., waive fees, offer design review support), to provide traffic control for implementation, and to participate in or lead the marketing and data collection efforts. Many cities have created standards for the creation of asphalt art that also provide a permitting pathway for community-led projects.

The city should take the lead on those project elements for which they have resources or existing processes. These may include cleaning and preparing the site in advance of the project and providing any necessary restriping or touching up of existing striping. If available, the city should provide transport for or store materials for the implementation. In many cases, the city can provide support for implementation through the use of existing city equipment.

If this is the city's first time working on a creative street project, you must enlist the participation of local community members to bridge the gap between municipal leaders and the community at large. Many community organizations and artists may be inspired by your work and want to participate. Your role as the city is to help the community group identify key stakeholders and support the outreach effort by providing resources such as meeting space, printing costs, and other logistics.

Once a project has been identified, seek a variety of partners who can fill roles on the team. As a municipality, your public works and transportation departments have deep knowledge about the kinds of materials that work on your streets, taking into consideration climate, use, and future plans for specific locations. Involve these colleagues in the early planning stages to discuss materials, equipment, process for street closures, staffing requirements and availability, and other technical project needs.

After projects have been completed, conduct an exit interview with project participants to learn from your pilot, including artists, volunteers, and others who were on site during implementation. Consider establishing guidelines and procedures for ongoing projects to make it easy for community entities and artists to participate.

Managing a Budget

The projects featured in this Guide demonstrate typical funding sources for asphalt art projects:

- Municipal capital improvement funds or other construction funds

- Municipal art funds (usually based on a percentage of construction funds allocated for art)

- Grants or funds from local, state, federal, or private sources (e.g., Seattle Neighborhood Matching Fund, AARP Community Challenge grant program)

- Private or public sponsorships

For this ground mural in Times Square, artist Molly Dilworth was selected from over 150 submissions to NYCDOT's design competition launched in 2010. (Case study on page 41)

Cool Water, Hot Island mural and photo by Molly Dilworth.

PROJECT BUDGET

One of the main reasons why people turn to ground murals for improving streets and public infrastructure is that they are quick and relatively inexpensive. That said, a reasonable project budget is needed to account for everything from insurance to paint. Creative street projects can be affordable — you may be able to secure donations of high-quality supplies, and some work can be done by volunteers. However, there are hard costs associated with all of the project types in this Guide.

The following is a list of potential hard and soft costs that may be included in the budget, though not all of these items will apply to every project:

Planning:

☐ Administrative staff time

☐ Permits or application fees

☐ Legal fees

☐ Insurance

☐ Fundraising and managing project funds

Design:

☐ Artist / designer fees

☐ Testing materials or design elements

☐ Producing design review documents and presentations

Implementation:

☐ Materials and supplies

☐ Equipment

☐ Fabrication of components from specialty contractors

☐ Labor

☐ Maintenance of traffic (street closure fees, police, traffic control barriers)

☐ Water, cloths, and tarps for on-site cleanup

☐ Shade structures or cooling areas

☐ On-site hospitality for crew and volunteers, including water, food, and access to a restroom

☐ On-site storage or security for supplies, equipment, and personal belongings

☐ Opening celebration

☐ Documentation (during install)

Post-Installation / Maintenance for Long-Term Installation:

☐ Programming planned during the life of the project

☐ Documentation (post-install)

☐ Labor and materials to refresh project

☐ Labor and equipment to remove project

DESIGN FEES

To ensure a high-quality asphalt art project, many project teams formally hire an artist, architect, or designer to produce a design, develop design documents, and/or help organize volunteers or the installation crew to implement the project. In some cases, an artist may be willing to donate their time and design for the project, though it is best practice to include a design fee in a project budget so that artists get paid fairly for their work. Either way, someone will need to be responsible for both the creation of a design and the translation of that design into a built work — from permit drawings to stencil creation. A good benchmark for artistic design and project management is 10–20% of the project budget.

Keep in mind that if an artist or designer is fabricating parts of the project or materials needed for the installation such as stencils, funds will need to be allocated for materials in addition to the design and management fee.

FUNDRAISING

If your project is not fully funded from the start, a fundraising plan will need to be developed. Every member of the project team should participate in brainstorming funding sources. Consider approaching multiple funding sources with interests in the different aspects of these types of projects. For example, asphalt art projects are appealing to corporations and foundations that support placemaking, community

Each year, Mural Arts Philadelphia hires different artists to design and install a mural at the Eakins Oval. (Case study on page 31)

Summer Kaleidoscope mural by Jessie and Katey. Photo by Steve Weinik

development, public art, walkability, and community health. Other funders may be interested in the content of the artwork. For example, a project with natural and environmental content may be of interest to funders with an interest in those areas. Utility boxes wrapped with community photographs may be of interest to a funder who supports photography or journalism. It is also important to research foundations, corporations, and individuals who support the geographic area where your project is located.

When you involve artists in your project, you may become eligible to apply for funds from local and state arts councils. Larger-scale projects with ample time frames could apply to the National Endowment for the Arts.

Inquire if your municipal or county public works department could fund the project with capital construction dollars. If government capital funds are not available, government support could also come in the form of allocations from local or state elected officials. Be sure to meet with representatives from their offices to discuss other grant programs for which your project may be eligible. Small budgets could be covered or small gaps in larger projects could be bridged through an individual contribution campaign or crowd sourcing.

Finally, city departments and community organizations commonly work with fiscal sponsors to accept funding and facilitate contractual relationships. Fiscal sponsors are nonprofit organizations that provide their legal and tax-exempt status to other organizations in furtherance of charitable and civic goals and projects. It is important to determine whether the city or community partners will need a fiscal sponsor to accept funding, hold contracts, or facilitate other aspects of the project.

Design Development

ARTIST & ART SELECTION

Some of the projects included in this Guide were produced by ongoing arts programs with established methods for choosing artists and design professionals. If you are not collaborating with an ongoing program on your project, methods for artist selection include:

- Open call process by request for proposals or request for qualifications

- Invitational where a small group of artists are pre-qualified for the project

- Directly approaching a specific designer for a proposal

- Utilizing an in-house designer or other creative member of the project team

How the art is chosen is important to consider. Selecting the art will require care and expertise to run a process that is fair, sensitive to relevant communities, and will ensure a final product of high artistic quality. In order to execute an efficient and effective artist selection and engagement process, cities should consider working with an experienced arts administrator to oversee the artist selection process and to coordinate participating artists, such as in the Same Same, but Different project in Pittsburgh (page 27). If there is a request for proposals, the arts administrator could coordinate a jury of community members and/or arts professionals who can judge the artistic quality, feasibility, and community relevance of the proposals. Otherwise, selection may be led internally by the project team, but should enlist input from visual arts and design professionals and local

community members. In some cases, other selection models have been employed, such as in the Walks of Life mural in West Palm Beach (page 17), in which students at a nearby art school voted on several design options created by their peers with professional coaching from Street Plans.

In some selection processes, cities select a handful of finalists and request that they develop their design concepts beyond their initial proposals. Note that best practice is to offer compensation for additional design development even if the artists are not selected for the project. Once the winning artist is chosen, they must be given a contract to continue working on the project.

The butterfly mural in Asheville underwent several rounds of design review. The first step was meeting with the community to choose a location for the mural. The project team then worked with artist Jenny Faires to translate the initial sketches into an implementable design. The design drawing shown above was used by the team during the painting process. (Case study on page 25)

Aerial photo by Justin Mitchell
Drawing and additional photos
by Street Plans Collaborative

CONTRACTS & LEGAL AGREEMENTS

Unless you are working with an in-house designer to implement the project, you will need a contract. Most likely you will be working with an artist, designer, or other creative collective who should be paid for their work. The contract should outline all of the expectations for products, services, responsibilities, payments, ownership of the physical project, ownership of the copyright, liability insurance, maintenance, life span, and more. For the design and implementation of the project, the contract will likely engage the entity who owns the site, the entities implementing the project, and the entity who will own the project.

For projects on public property, work with your local planning, public works, or transportation department to see if other agreements will need to be put into place. For example, on public property, the government entity that owns the site may need to execute an agreement with the entity implementing the project to legally access the project site (see the Miami Dominoes project on page 61).

Your local government arts agency, public art program, or arts council will likely have a public art contract to adapt for the project. If you are starting from scratch or if you are an artist initiating a project, two good resources are Sarah Connelly Odenkirk's *A Surprisingly Interesting Book About Contracts: For Artists and Other Creatives* (2014, AMMO Books) or the Americans for the Arts' Public Art Network (publicartnetwork.org).

If you are seeking outside resources from a local, state, federal, or private entity, there will also likely be a contract to accept and distribute the funds.

Note that artists will retain the copyright of their work unless the project is specifically designated as a work-for-hire. The artist and commissioning organization can agree on how images of the artwork will be used and credited.

PERMITS

Depending on the jurisdiction of the project and the entity leading the project, a permit may be required. These permits will allow the project team to occupy and use the right of way temporarily during the installation and ensure that safety and mobility won't be compromised.

Some common requirements for submitting permits include:

- Description of the project and a detailed installation plan

- List of materials

- Traffic control plan if the project will occur in the right of way

- Proof of liability insurance, typically naming the site owner and other project partners as additionally insured on the certificate. This is typically a special event coverage for the installation.

- Approval from all or a percentage of property owners adjacent to the installation site

- Site use agreement outlining the responsibilities of all parties involved in relation to ownership, maintenance, and removal

For information on model legal agreements, permits, and insurance, see asphaltart.bloomberg.org.

COMMUNITY ENGAGEMENT & DESIGN REVIEW

Whether the project is being designed in-house (by members of the project team) or by contracted artists, developing a design with the community will require ongoing communications and meetings. Key members of the community should be a part of the core project team. Either the city or a lead nonprofit organization should convene a public meeting to discuss the site and preliminary design considerations. The team artist or designer should participate and might even co-lead this meeting. Following this meeting, the artist or designer should develop draft concepts for review by the project team. This offers the team the chance to share feedback about the content and the materials in a constructive environment and provides the artist or designer with enough time to evolve their concept as they respond to the feedback. Work with the artist or designer to develop a realistic timeline for revisions, and adjust the project schedule accordingly.

Once the design has been reviewed internally, it should be shared with the public at large at a community event in addition to any other reviews required of your project by community, art commission, design commission, site owner, traffic engineer, or other entities.

Ongoing regular meetings with the community and continued in-person outreach where designs are shared with both municipal partners and community members are critical factors in developing an authentic and informed design.

This mural at the Pittsburgh Airport was installed using runway-grade thermoplastic, a material that is engineered to last longer than other paint applications. This ensures the longevity of the project and reduces its maintenance costs. (Case study on page 27)

Same Same but Different mural by Ann Lewis. Photo by Pittsburgh International Airport

DESIGN PROCESS & STANDARDS

Several factors go into a successful and beautiful design. The first driver of a design should be the identity of the surrounding neighborhood, cultural characteristics, and diversity of the community. This may mean looking to local architectural or cultural traditions for inspiration or to the natural world.

For example, the design of Plaza Rue Vendome on page 47 was inspired by the local art deco architecture that is prevalent in Miami Beach. The design team made three potential designs and brought them to the public at a community workshop to vote on the design.

Another factor in the design process should be consideration of how the project will be implemented. Designers must find a balance between the complexity of a proposal and how difficult it will be to implement. This depends in large part on the resources available for things like paid contractor labor and stencils or if the project will be implemented with volunteer help.

Scale is also an important consideration in the design process. Consider how the project will be viewed and what the experience of a pedestrian will be when walking over the mural. Some designs look great as a drawing on an 8.5" x 11" paper, but do not translate to full scale. Similarly, some street murals look great in photos taken from a helicopter, but may be hard to decipher when standing directly on them. Using repetitive patterns and solid background colors may help create a design that can be appreciated from multiple angles and distances.

For projects that impact the layout of the street, the design may need to be submitted for approval to the city's or other government entity's traffic engineering department. No single national standard exists for art in the right of way. While the Manual of Uniform Traffic Devices (MUTCD) is the document that traffic engineers use to guide the use of pavement markings and paint colors, art on the street is not considered a traffic control device and thus is not regulated by MUTCD. However, where art is used as part of a striped crosswalk, the Federal Highway Administration has provided some guidance: "subdued-colored aesthetic treatments between the legally marked transverse crosswalk lines are permissible provided that they are devoid of retroreflective properties and that they do not diminish the effectiveness of the legally required white transverse pavement markings used to establish the crosswalk."[2]

Every city solves for approval differently based on local context. For example, some cities, such as Houston, allow for any combination of colors, symbols, and words, as long as they occur within the white transverse crosswalk lines. Other communities use the volume of cars or character of a street as a determinant of what is allowed. An engineer may allow for a brightly colored installation on a low-volume residential street, while being more restrictive on a higher-volume, suburban location.

Some city engineers may provide more specific color or pattern recommendations about what they find acceptable, while others might have a more flexible interpretation of the guidelines. The important thing is to have open communication with the approving traffic engineer to translate the community vision into an approved plan.

Asphalt art projects, particularly murals, are generally not considered advertising as long as they do not incorporate commercially recognizable symbols or draw attention to a product, activity, or service. The inclusion of logos or commercial symbols and characters may be subject to regulation as a sign or advertising in certain jurisdictions and thus should be avoided. Be sure to check the local sign ordinance to verify any additional regulations.

The first driver of a design should be the identity of the surrounding neighborhood fabric.

[2] "Interpretation Letter 3(09)-24(I) – Application of Colored Pavement" Memorandum, U.S. Department of Transportation Federal Highway Administration, August 15, 2013.

PLANNING FOR LONGEVITY

Before developing a design and implementing the project, decide how long the project will last, if it will be allowed to fade, if it will be maintained, or if it will be replaced by another project after a predetermined amount of time. In addition, decide who will be doing the hands-on work of maintenance and removal. Options include the artist or designer, the site owner or manager, city staff, or community volunteers.

It is important to make this decision in the planning stages, since these factors impact the choice of materials, content, and qualifications of an outside artist or designer. For example:

- An asphalt art project with a one-season life span will require a material easy to remove with a power washer. It may also be a good opportunity for project teams working on this scale for the first time.

- A project with a multiple-year life span that will not be maintained will require sturdier materials and a design with continued aesthetic appeal as the project becomes worn by pedestrian, bike, and vehicular traffic.

- Asphalt art projects that will be maintained will require materials, design, and a project site appropriate for the reapplication of materials.

- Artwork meant for spaces that will be eventually driven on will fade much more quickly than artwork on pedestrian-only spaces.

MATERIALS & SITE CONSIDERATIONS

When it comes to materials, each project will require a different selection. Materials will vary depending on the project's desired use and duration. For most projects, local government entities will also require the selected paint to be mixed with a non-slip additive such as Shark Grip® to avoid surfaces from becoming slippery once the installation is in place. Below is a list of common products used for asphalt art projects that range from very temporary to more permanent:

- Tempera paint

- Water-based field-marking paint

- Latex or acrylic household paint

- Acrylic traffic marking paint (Roadzilla® MMA, Rustoleum®)

- Epoxy-based pavement coating

- Thermoplastic (TrafficPatterns®, DuraTherm®, DecoMark®)

To ensure the paint's durability or to extend its life, you may also consider the following methods:

- Power wash and clean the site from any debris the day before or a few hours before the installation begins

- Apply a primer coat prior to the artwork installation

- Apply a sealant once the artwork has cured or, in the case of vertical infrastructure murals, apply anti-graffiti coating. Some projects in this guide have used products like Graf-X WB anti-graffiti coating and Clear Shield anti-graffiti coating.

- Make sure the artwork area is completely closed off to vehicles and foot traffic until the paint has completely dried

- If using light colors, consider applying a white base coat

- Freshly paved areas will absorb more paint. Make sure to account for extra layers of paint if painting over a recently paved surface.

- Consider testing a range of installation tools before purchasing them and making sure the installation crew or volunteers receive proper training to ensure the application process matches your expectations

- If using stencils, make sure they are cleaned before reusing to avoid damaging other parts of the project

- Set up a workstation that will hold all of your painting materials in one place by covering the surface with a large tarp. This will ensure that your working area remains clean even if some paint spills.

- Some cities utilize materials that combat particular environmental challenges. For example, innovative new paving materials have been developed to mitigate rising urban temperatures. "Cool pavements" come in a variety of forms, from a coating on street surfaces that increases the solar reflectivity to entirely new, permeable concrete that can absorb water, which later evaporates and cools the surrounding area.

For Lincoln Hub, the project team used an epoxy traffic paint that is durable enough to be driven over, but can also be used for pedestrian spaces like curb extensions and sidewalks. This paint was intended to last 3 years, but has lasted several years longer with a yearly application of sealant. (Case study on page 37)

Photo by Lakeview Chamber of Commerce

CONNECT WITH SUPPLIERS & MANUFACTURERS

The people who make and distribute products will have information to share about application methods, curing time, reaction with different temperatures and materials, maintenance, and removal. Much of this information can be found on material spec sheets/cut sheets. They may even be willing to participate in the application. Ask for color samples and examples of where the product has been used, giving you a chance to follow up with questions. Share this information with the entire project team, including the artist or designer developing the project. They may consider design adjustments based on how the product performs. In many cases, designs may have to be changed based on available colors.

PROCUREMENT

One challenging part of asphalt art projects can be the procurement of materials. Many cities have procurement rules that prescribe specific brands or materials or require a minimum number of bids when the cost a material exceeds a certain threshold. If the project is being led by a city, they may be able to work within these rules by breaking material orders into smaller increments that fall below procurement thresholds or they may include the material costs within a larger contract with an on-call vendor. Depending on the source of funding, the city may consider offering a grant to a local community organization to procure materials or the city and community group may work together to pool resources. The city may also have some types of paint stock that can be used in conjunction with materials procured by others.

TESTING MATERIALS & TRAINING CREW

Unless the artist, designer, or your community has extensive experience working with a specific material on your project surface, it is wise to test materials ahead of time. It is also a good idea to test the application of the materials with the tools you will be using. Additionally, set aside time to train your installation crew if they are not yet familiar with the materials or application process. The test should approximate the pavement conditions as closely as possible — and also use this as an opportunity to test paint removal. Spending an hour testing now can keep you from making costly mistakes later.

Engaging the Community
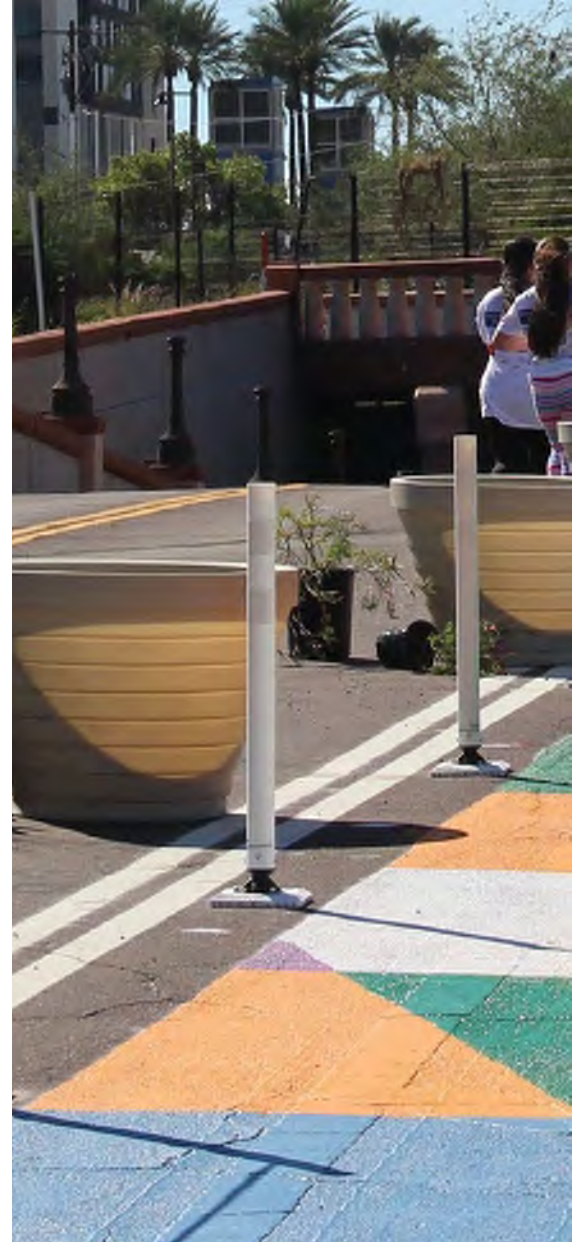
There are many opportunities to involve community members in the process of asphalt art projects. It is a best practice to inform and engage people who are physically or conceptually connected to a site's location through live, work, play, and interest. Having a variety of engagement strategies will increase the diversity and number of participants as well as support for the project.

Not everyone has the time or ability to attend a public meeting, but they might have time to attend a free event where they can see the design and meet the design team or artists. Transportation, time of day, language spoken, cost, and daycare are common barriers to participation. The project team can develop solutions to remove barriers to participation in your community. For communities with little public participation, building awareness of the process is a way to increase community enthusiasm for future projects. Making the effort to widely engage the community is a strategy to build broad support for the arts.

For all projects, whether undertaken by city departments, local organizations, or neighborhood groups, community engagement tools can include the following:

- Door-to-door outreach

- Handing out flyers and creating educational signage

- Public meetings for presenting the project idea and design options

- Allowing the community to vote on the design or be involved in the review process

- Inviting locals to become volunteers during the installation and participate in the creation of the artwork

- Engaging local businesses or institutions such as schools and art organizations to become part of the project team

- Purchasing materials and supplies from local businesses

- Hosting a celebration party once the installation is complete

- Building an ongoing program for activating the space with community events

- Conducting pre- and post-installation surveys to evaluate the community's expectations and receptiveness to the project

In Tucson, the Living Streets Alliance worked as a liaison between the city and the community. They handled community outreach both during the design development phase and handled volunteer management during the installation event. (Case study on page 35)

Photo by Taylor Miller

Implementing the Project
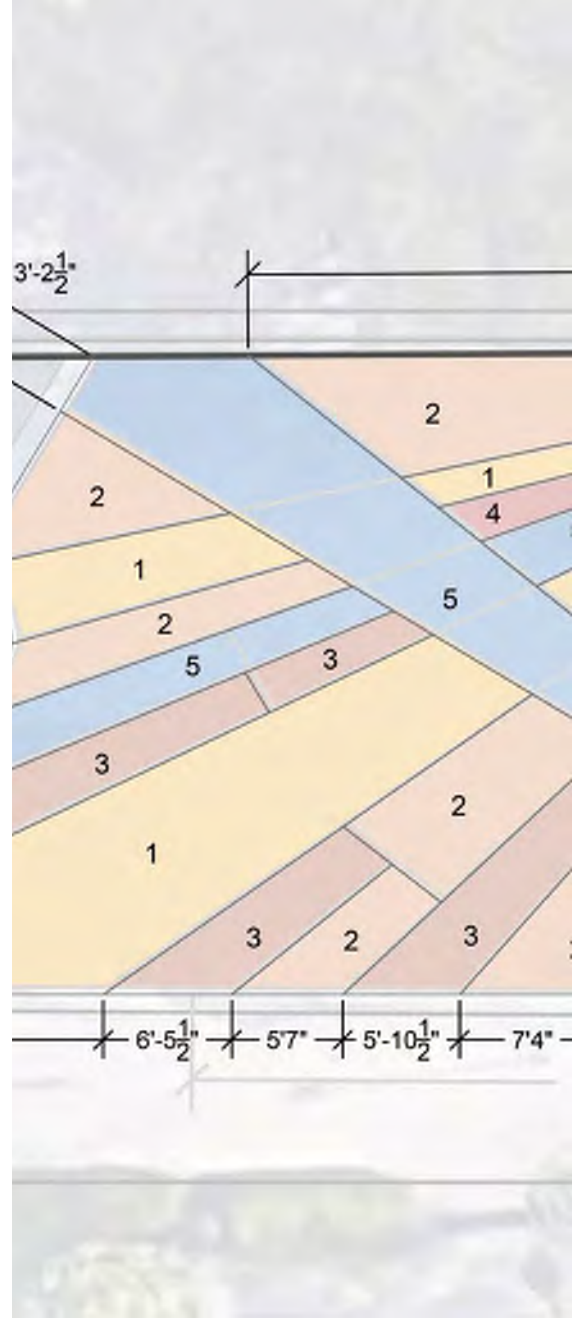
MATERIALS STORAGE

Project teams should secure materials and place them in storage at least a few weeks before the installation begins. Consider longer lead times for custom or large orders of paint and think about the size of any stencils or other equipment needed for install. Work with a local business or public facility near the project site to store supplies, materials, and personal belongings prior to and during the installation. If a space is not available, you can rent a portable storage locker for the site.

CONSTRUCTION DOCUMENTS

Asphalt art projects are guided by a set of construction documents that describe both the final design and the traffic control needed to implement them. These documents will allow the project leaders to instruct the on-site crew and volunteers and include instructions for how to lay out the design, dimensions of the site, and other important design measurements as well as a color key.
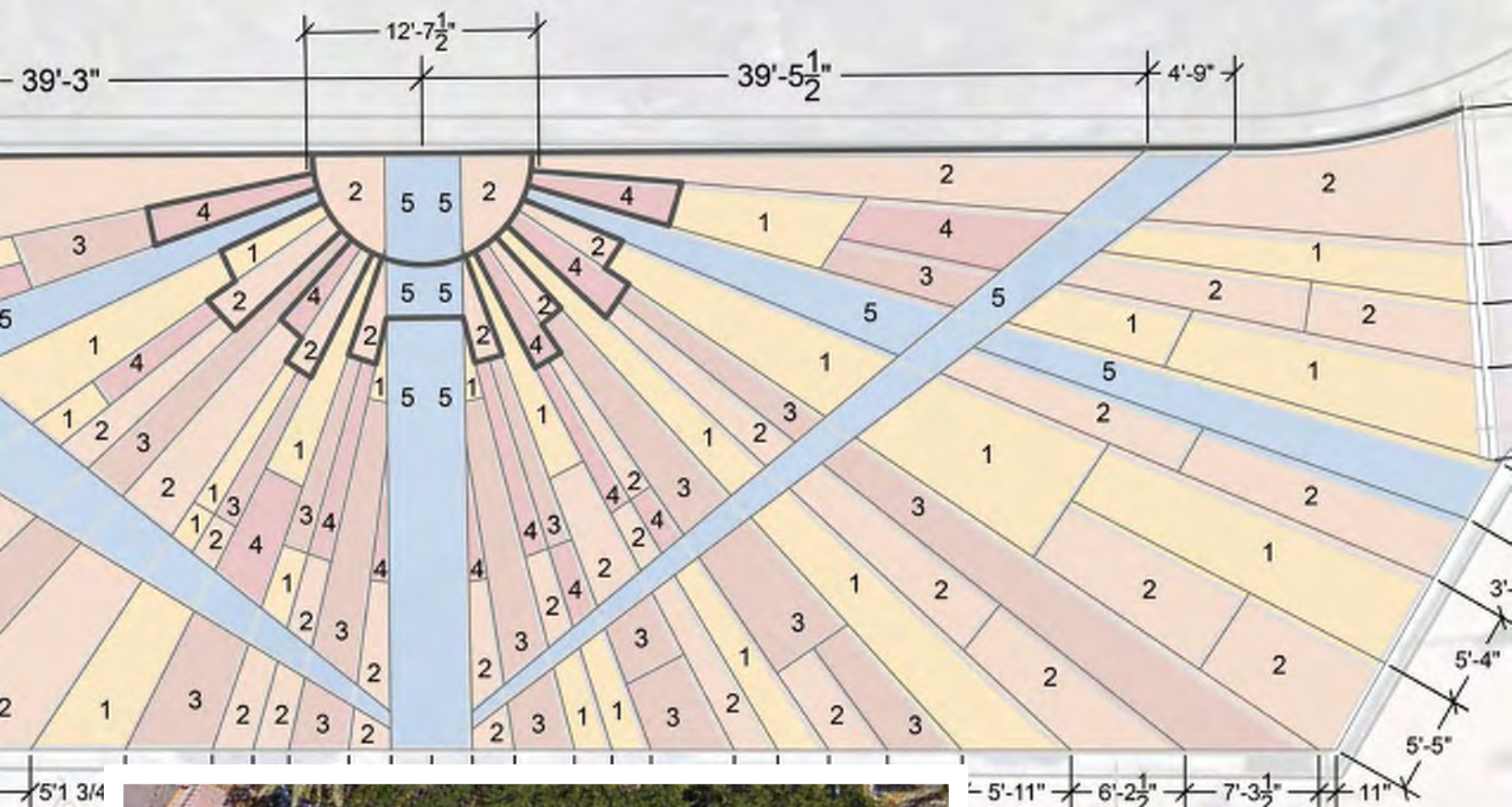
Significant planning and detail go into the implementation of asphalt art projects. This design document was used to lay out the mural for Rue Vendome in Miami Beach. (Case study on page 47)

Photo by Andrea Lorena

SITE SAFETY & TRAFFIC CONTROL

Everyone on site producing the project will benefit from having a safe, secure, and comfortable place to work. Long days in the summer sun painting a mural on the street are physically challenging, and dehydration and heat stroke are a risk. Make sure that you have water, food, bathrooms, seating, and shade structures available to everyone during the installation so that the experience is safe and enjoyable.

Another part of project implementation involves traffic control. If the project will be installed on the right of way or will require a temporary detour of traffic, you will need a traffic control plan. The plans will show the area to be closed off to vehicles and a temporary plan for how to guide road users through the work zone with traffic control devices. This document will ultimately ensure the safety of all crew and volunteers moving through the installation site. It is always helpful to plan the installation during hours with low traffic volume and to allow time for the artwork to dry before the road is driven on again.

To ensure the public is aware that the project happening is a sanctioned activity, install temporary signage describing the project. Be sure to train volunteers in case they are questioned by community members not familiar with the project and keep copies of permits on site in case they are needed.

DOCUMENTATION

It is important to have professional-quality documentation of the project. Many teams draft documentation plans that describe the types of documentation needed of both the installation process as well as of the completed project. Consider bird's-eye locations for before/after shots taken from adjacent buildings; aerial drones may be very useful in documenting these projects. Also consider getting action shots of the project being installed on the build day.

The documentation produced will be a helpful reference for maintaining and reapplying the project and will provide examples to show other communities who are interested in the work. Photos may also be needed for grant reports and will be the only way to show the history of what is usually a temporary project. In addition, proper documentation can also serve as a tool to visually showcase the project's success and will help cities or other project stakeholders defend their asphalt art projects or advocate for new ones. Be sure to share the documentation with the artist/designer who developed the content of the project.

Traffic control for the Walks of Life project in West Palm Beach was provided by the city's Engineering Department.
(Case study on page 17)
Photo by Maxwell Zengage

Maintenance & Stewardship
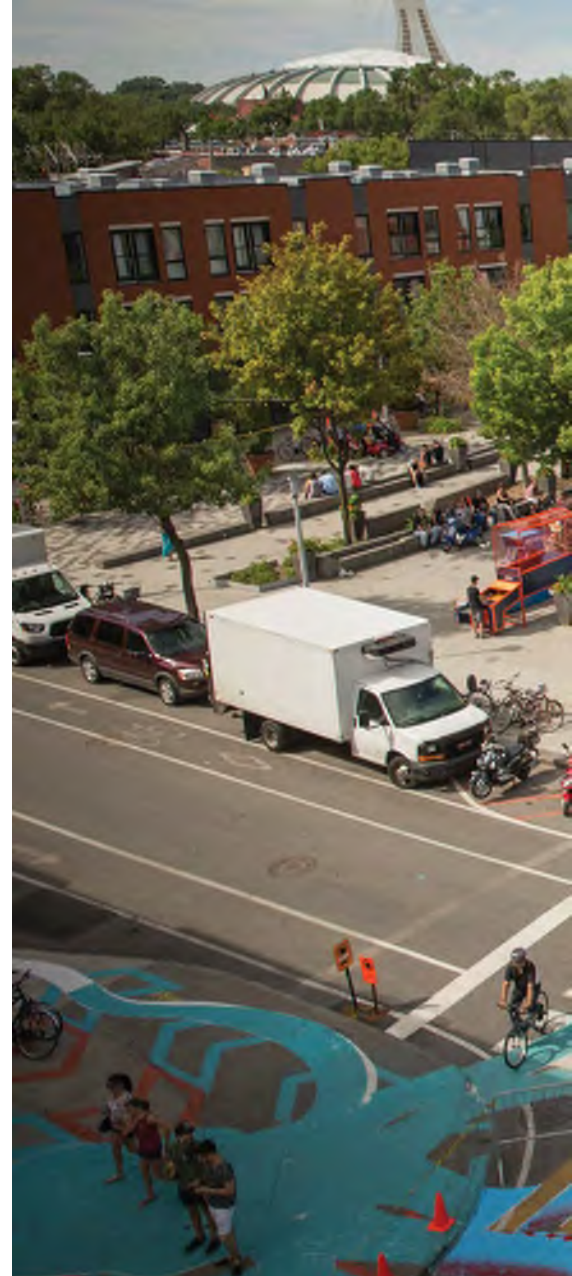
PROGRAMMING & ACTIVATION

For projects that seek to use asphalt art to create pedestrian spaces or plazas, activating the project site with programming and events will help ensure the project's longevity. It is important to build a robust program around a newly created public space for the project to grow on the community and for the space to become a celebrated and stewarded neighborhood spot.

One way to host successful events and create traditions around a space is by partnering with local art or cultural organizations that specialize in event production and have the necessary expertise to plan activities that celebrate the creative reclamation of public space (see Rue Vendome project on page 47). From markets and live music to children's games and community-building activities, these organizations will likely know which entities to involve in event planning and program building and how to engage locals from across your community.

PROJECT ADJUSTMENTS OR REPLACEMENT

Note that some projects may require adjustments if the results are not performing as intended or if the installation has unexpected outcomes. These changes may include readjusting the size or boundary of the design or changing the design's overall geometry. If a project will be replaced with a different design in the future, the artist's or designer's contract must outline the predetermined life span. Plans also need to be made to prepare the surface for the next project. This is the responsibility of the site owner or entity managing the project.

MAINTENANCE

If the project will be maintained by someone other than the artist or designer, the artist or designer can help develop a maintenance manual that includes the following information:

- Images of the original project

- Description of how much fading and wear are expected

- Detailed descriptions of each material used in the project, including exact colors

- Application instructions for each material

- List of equipment and tools needed for application

- Tips from the artist or designer about the site and materials

The entity managing the project or the owner of the project will need to organize the permits, street closures, and other steps to ensure the project can be maintained. Proper maintenance will always require a plan and budget. Costs for materials, labor, permits, street closures, and other needs should be included in the project budget, and a new budget should be developed for ongoing maintenance.

Once the Sexapus mural was completed in Montreal, the City of Montreal hosted events and activities that were crucial for creating community buy-in for the project to transition from an interim pilot project to a permanent shared street. (Case study on page 29)

Sexapus mural by Peter Gibson. Photo by Melanie Dusseault

STEWARDSHIP

Spaces that reflect a sense of community ownership and stewardship, especially those that encourage individuals to actively engage in social behavior, usually generate a greater place attachment among visitors. Involving the community in the planning and design stages of the project can create a space that is conducive to social gatherings and can adapt to and support the communities they serve.

Public space enhancement projects and programs are a benefit to the community and should be maintained accordingly. An effective stewardship model can be created through cooperative agreements made between municipal agencies and private entities to maintain public space projects with help from the local community. These agreements should include a written understanding outlining duties and responsibilities of each party involved in the process as well as a set of goals and recommendations for the durability of the project.

The following recommendations can help your project team play a leadership role in project management and stewardship:

For community-led projects:

- Identify fiscal sponsorship resources that will help fund your community project

- Find organizations that specialize in mobilizing volunteers, managing clean up, landscaping, and events such as Detroit's Summer in the City or Tucson's Days of Caring

- Support the sharing of organizational knowledge and practices among grassroots groups

- Designate funding for project maintenance in the planning stages

For city-led projects and programs:

- Ensure that future public space policies and programs emphasize maintenance needs and identify the responsible parties

- Create a permit structure to allow community groups to host a series of small-scale community events in one public space site

- Consider creating an open-source guide for the creation of asphalt art projects in your city

To complete the Underground at Ink Block murals in Boston, development firm National Development worked hand in hand with the Massachusetts Department of Transportation to test materials and manage the planning and permitting of the highway underpass murals. (Case study on page 63)

Photo by Marka27

Project Evaluation

A key factor in measuring the success of asphalt art projects is using data to quantify the impact of the project, whether it is tied to mobility, walkability, or general livability. Whether its measuring the speed of vehicles, the perception of safety, or people's likeliness to use the space after the installation, this information will help effectively communicate the intentions behind any given project. In addition, any data collected along with community input will allow the leading entity to make better decisions when implementing similar projects in the future and creating a streamlined process for project approval, funding, and buy-in.

Below are some metrics that can be used to measure a project's impact:

- Speed of vehicles before and after implementation

- Stop bar compliance

- Pedestrian crossing behavior

- Foot traffic counts

- Likeliness to use the intervened space before and after implementation

- Perception of safety before and after implementation

- Amenity use before and after implementation

Tools to collect data include surveys (either in person or online), speed guns, counting machines, digital counters, or other data collection methods. Data-driven evaluation will allow project teams to justify their project and demonstrate its impact, and ultimately lead to a more effective approach for implementing asphalt art projects. See the Corbett Porch case study on page 35 for an example of project metrics.

This project in Miami Beach has ongoing programming and events organized by third-party organization Prism Creative Group.
(Case study on page 47)

Photo by Andrea Lorena

To guarantee the longevity of the murals created for the StreetArtToronto Program, each utility box is primed before artists arrived and coated with anti-tagging material by Goodbye Graffiti, the city's graffiti management contractor, once the mural is completed. (Case study on page 55)

Colorful Horizon mural by Yasaman Mehrsa. Photo by Jocelyn Renyolds

Establishing a **Dog Park** in Your Community

What's a dog park and how does it benefit the community?

With cities becoming more and more crowded and leash laws becoming more restrictive, many concerned dog owners are looking to the creation of dog parks as a solution to their need for a place to spend quality time with their pets. But what *is* a "dog park," and what benefits can one bring to your city or town?

A dog park is a public park, typically fenced, where people and their dogs can play together. Similarly, a dog run is a smaller fenced area, created for the same use, that is often located within an existing park. As the names imply, these places offer dogs off-leash play areas where their owners can have the chance to socialize with other canines and their owners. Dog parks, which are sometimes managed by park users in conjuction with city or town officials offer a wealth of benefits to dogs, dog owners and the community.

More than just "room to roam," the creation of a dog park...

- *Allows dogs to exercise and socialize safely.* Puppies and adult dogs need room to run, and enclosed play areas permit them to do so while preventing them from endangering themselves and others (for example, by running into the path of an oncoming vehicle). In addition, dogs who are accustomed to playing with other dogs and people are more likely to be well-socialized and react well toward strangers.

- *Promotes responsible dog ownership.* Dog parks prevent off-leash animals from infringing on the rights of other community residents and park users such as joggers, small children, and those who may be fearful of dogs. Parks also make it easier for a city to enforce its leash laws, as resident dog owners with park access have no reason to allow their canine companions off-leash when outside of the park.

- *Provides an outlet for dog owners to socialize.* Dog parks are a great place for owners to meet other people with common interests. The love people share for their dogs reaches beyond economic and social barriers and helps foster a sense of community. Park users also benefit from the opportunity to ask questions of other owners and find solutions to problems they might be having with their pet.

- *Makes for a better community by promoting public health and safety.* Well-exercised dogs are better neighbors who are less likely to create a nuisance, bark excessively, and destroy property.

How to Build a Dog Park in Your Community

By now perhaps you've recognized the need for a dog park in your area, and you're eager to see one established. So, how can you get started? The following are some strategies for a successful campaign:

The First Steps ...

- *Start with a core group of commited dog park activists.* Talk with a half dozen other individuals who are concerned about the lack of off-leash spaces. This group may form a park association and will be responsible for meeting with public officials, making presentations, maintaining the park and defusing any problems that arise.

- *Hold a public meeting.* Once the core group is in place, a larger community meeting will help you get the word out to supporters and solicit input and suggestions. Contact other dog owners, dog-related clubs, veterinarians, and local humane society and animal control officials to gather interest and support. Do so by posting, mailing, or distributing notices in areas such as neighborhood bulletin boards, pet supply stores, animal hospitals, and shelters. Encourage people to write letters of support to public officials and the media, and to make presentations to community groups whose backing would be valuable.

- *Educate your fellow dog owners on the need to be responsible.* The owner who neglects to pick up after his dog or who allows an aggressive dog to run loose can do a lot of damage to your cause.

- *Write a clear mission statement that details the need and purpose of the park, stressing the benefits to dog owners, their dogs, and the greater community.* The Redwood City [California] Responsible Dog Owners' statement says it all: *"To establish a fenced-in, off-leash dog park where well-behaved canine citizens can exercise in a clean, safe environment without endangering or annoying people, property or wildlife. To develop a beautiful, well-maintained space open to all dog lovers and friends who are willing to uphold the park's rules and restrictions. To view this park as a community project, in partnership with the City of Redwood City, designed to satisfy the needs of dog owners and non-dog owners alike."*

- *Choose a site.* The ideal area will be a safe, accessible location that takes into account the needs of park users as well as the effect the park will have on neighbors and the environment.

- *Create a budget.* Determine how much it will cost to construct and maintain the park - costs for grass, fences, garbage removal, lawn maintenance, drinking water, field drainage, lighting, benches, and a pooper-scooper station. Some cities are willing and able to finance a dog park; others would rather share the cost with a group committed to maintaining the park and ensuring that park rules are followed. If it is within your budget to do so, sharing expenses with the city can be a great public relations tool. It shows officials that you are committed to the project.

  You will need to determine how you will generate revenue for your budget. Annual or daily fees to acquire a required permit (obtained from the city, town or through the park association) and fund-raisers are ways to generate money to cover costs. Also, consider soliciting town or city sources. By convincing elected officials that there is wide support for a dog park among taxpayers and voters, you may help encourage funding for the park.

- *Solicit the input and seek the approval of significant organizations in your community.* Meet with the proposed park's neighbors before talking to city hall. As soon as someone brings up a concern, address it and try to come up with a solution.

SUCCESS STORY #1

Monmouth County, New Jersey

In the summer of 1999, a newly organized group of Monmouth County dog owners petitioned the county park system and several local municipalities to establish an off-leash dog park. The Bay Shore Companion Dog Club and New Jersey D. O. G. (Dog Owners Group) helped recruit members and collect signatures from owners of nearly 40,000 licensed dogs living in the county.

After collecting 12,000 signatures, the group presented its proposal to the county park system's Board of Recreation Commissioners and municipal park system officials. Officials agreed that a dog park would offer many benefits to residents. They talked to other counties with successful parks about liability issues, rules, and regulations, before voting to approve funding for the establishment of an off-leash area in Monmouth county. The Thompson Park Dog Run opened on October 30, 1999, to enormous popularity.

Once the park opened, area dog owners concentrated on forming a core group to help keep up the site and prevent potential problems. Just because dogs are allowed to run free doesn't mean that owners will not be responsible for their animals' actions. There are rules to be followed, guidelines to be maintained. "Public education for dogs owners will be critical to the park's success," notes one of the organizers. The park itself provides a terrific venue for teaching people to be responsible dog owners. Members of the local dog community have already held a "Park Do's and Don'ts" seminar and plan to host future programs there.

Ok, you've gathered your resources. Where do you go from here?

- *Create a proposal.* Your presentation will include your mission statement and goals, and should address issues such as location, funding, maintenance and enforcement. Committee members will be expected to establish and enforce reasonable health and safety rules for the park, and these should be included in the proposal as well. A good proposal will also do the following:

- *Demonstrate need.* Do this by gathering statistics on the dogs and people in your community, such as how many dogs would use the dog park, what are the demographics of the people in your city, and who currently uses city parks - and who doesn't. Downplay the "dog factor" and emphasize people issues. Dogs don't pay taxes or vote.

- *Demonstrate support.* In many communities, organizers found that a simply worded request, circulated on a petition, helped convince city officials that there was a indeed both a need and widespread public support for a responsibly run dog park.
  - Place petition gatherers at supermarkets, pet-supply stores and other high-traffic areas.
  - Enlist the support of local veterinarians, groomers, dog walkers, and others who have a real interest in seeing a community filled with healthy, well-socialized dogs. Involve them in gathering petitions, writing letters to the editor of local papers and generally spreading the word.
  - Organize local residents to contact their community representatives, parks department officials, and media in the form of letters, e-mails, and phone calls, asking for their support.
  - Consider sending press releases to local media, explaining how the community will benefit from a dog park and providing information about the success of existing parks in other areas.
  - You'll need to get the neighbors' approval too. Explain your proposal to them, as well as the ways that a dog park will benefit them, and ask them to sign a separate petition stating that they are willing to have the park in their neighborhood.

- *Get to know local officials - your city council members and the director of your department of parks and recreation.* Attend meetings, join them at fund-raisers. Find out what they need from you to move the dog park forward. To help you get started, the AKC's Government Relations Department can provide you with brochures offering tips on working with government officials.

- *When you're ready, request a hearing with city government to discuss your proposal.* Have two or three knowledgeable and articulate members of your group present your plan, clearly expressing its many benefits to the community and calmly addressing any concerns. Be prepared to answer questions regarding risk of dog fights, dog bites, noise level, parking and traffic needs, liability issues, and maintenance.

- *Be patient and flexible.* Dealing with city government is rarely a quick process, but don't give up! Follow through with continued letters and e-mails, and be willing to work toward compromise.

They approved it! Now what?

Your efforts hve been successful, and development of the dog park is moving forward. Now is the time to thank everyone who helped bring the park to fruition, including volunteers, government officials, and community residents. As a

In early 1991, the City of Sausalito passed a law requiring dogs to be leashed at all times within the city limits. After receiving a citation and fine for walking her dog Remington without a leash, one owner led a citizen group that worked with the city council, the parks and recreation department and the Marin Humane Society to establish a dedicated enclosed area where the dogs of Sausalito could be off leash.

During that summer, volunteers raised funds to fence a 1.3 acre area in the Martin Luther King School area, located on the north side of Sausalito, to be used as a dedicated dog park. In November 1991, the "Remington Dog Park" was officially opened with a gala ribbon cutting attended by city council members, local citizens, and their dog companions.

Although the city provides utilities, including water, electricity, and garbage removal, the park has been maintained by its users since the opening. Regularly scheduled work parties cut the grass as well as maintain and improve the grounds.

Improvements to the park in excess of $36,000 have been made through donations solely from park users. In addition to original fencing, the park now has lighting, a storage shed, a riding lawnmower, picnic tables, benches, a dog drinking-water area, and a "scooper" cleaning station.

The park is home of champion show dogs as well as mixed breeds. Dog owners have adopted over 30 "rescue" dogs. Many owners now have two dogs as a result of this program.

Having received the highest rating of "4 Paws" in The California Dog Lover's Companion, the Sausalito Dog Park is now used by over 300 dogs per day.

result of everyone's hard work, many dog owners will soon have a new opportunity to enjoy their canine companions!

The key to future and continued success of the dog park will lie in responsible park-association members and park users who strictly enforce the rules. For the most part, this will mean getting people to clean up after their dogs, quiet excessive barking and curtail any aggressive behavior.

Maintenance will be another important consideration. In some areas, park associations work in conjunction with local kennel clubs and parks department officials to organize volunteer "park cleanup" days. Kennel clubs and other dog organizations may also be willing to donate funds for future supplies of scoopers, trash bags, and cans.

The development of a successful dog park requires a great deal of planning and effort. But your involvement and dedication will hopefully lead to the ultimate reward - the joy of creating and maintaining a special place where dogs and their families can run, romp and socialize.

Dog Park Design:

The Ideal Dog Park Should Include ...

- One acre or more of land surrounded by a four- to six-foot high chain-link fence. Preferably, the fence should be equipped with a double-gated entry to keep dogs from escaping and to facilitate wheelchair access.
- Cleaning supplies, including covered garbage cans, waste bags, and pooper-scooper stations.
- Shade and water for both dogs and owners, along with benches and tables.
- A safe, accessible location with adequate drainage and a grassy area that is mowed routinely.
- If space allows, it is preferable to provide separate areas for small and large dogs. This will enable owners of large

Rules and Regulations

Members of a dog park committee should establish and enforce reasonable health and safety rules for the park, such as the following:

- Owners are legally responsible for their dogs and any injuries caused by them.
- Puppies and dogs must be properly licensed, inoculated, and healthy.
- Animals should wear a collar and ID tags at all times.
- Owners must clean up after their dogs.
- Dogs showing aggression toward people or other animals will be removed from

dogs to allow their pets to run freely, while protecting smaller dogs who may not be suited to the enthusiastic play of larger breeds.
- Signs that specify park hours and rules.
- Parking close to the site.

the park. Animals who exhibit a history of aggressive behavior will not be permitted to enter.
- Puppies using the park must be at least four months old.
- Owners should not leave their dogs unattended or out of sight. If children are permitted in the dog park, they too should be under constant supervision.
- Dogs in heat will not be allowed inside the park.
- Owners must carry a leash at all times. Dogs should be leashed when entering and leaving the park.
- Violators will be subject to removal from the park and suspension of park privileges.