

# Measuring Impact Of Art Projects in LA

**USC**Marshall  
School of Business

DSO: 545 Statistical Computing and Visualization  
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[https://marshallproject.shinyapps.io/marshall\\_project\\_dashboard/](https://marshallproject.shinyapps.io/marshall_project_dashboard/)



**Our Objective:** To *define, analyze, and predict* the economic and societal impact of the Public Works Improvements Arts Program in Los Angeles.



Approach

Findings

Dashboard

Future



## Step One:

### Hypothesized KPI's

We brainstormed potential ways art projects can make an impact on a community and found the relevant data using open sources.

## Step Two:

### Tested KPI's

Using R, we visualized what types of changes occurred in each zip code and over time.

## Step Three:

### Created Model

We used a regression model to test the significance of the variables. From there, we built a model to predict future impact of projects.

## Step Four:

### Designed Dashboard

Using Shiny R, we designed an interactive dashboard for the City of LA to easily visualize the impact of their projects.



# Step One: Hypothesized KPIs

01

## DEMOGRAPHICS

Do the demographics impact the response to the projects? (Age and Ethnicity)



02

## HOUSING PRICES

How have art investments impacted housing prices in zip code?



03

## CRIME RATES

How have art investments impact crime in a zip code?

04

## BUSINESS GROWTH

How have the number of businesses changed in an area with art investments?



05

## TYPE OF ART PROJECT

Does the type of art project impact the success?

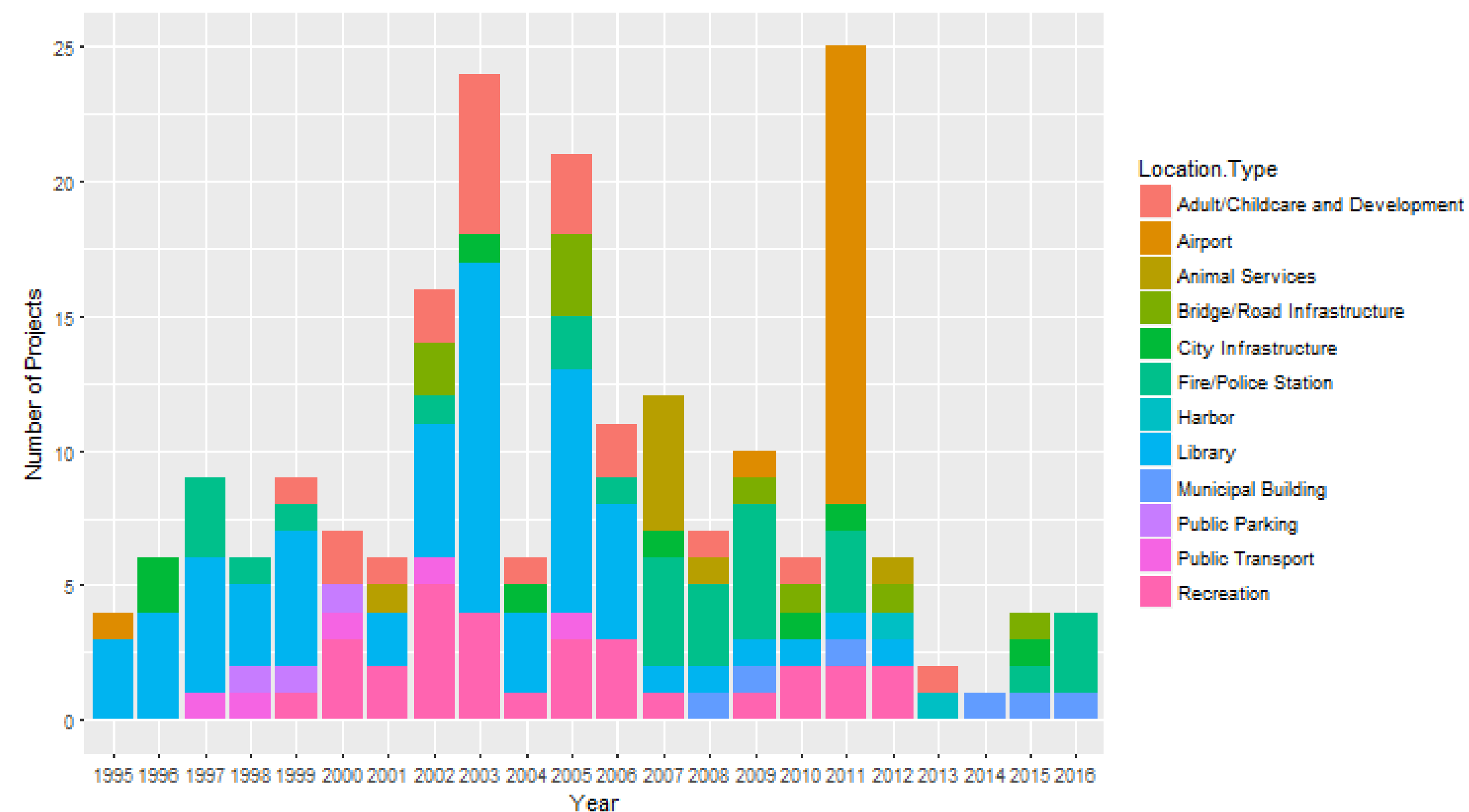


06

## NEIGHBORHOOD PRIDE

Does the success of a project change if the artist is from the same area?

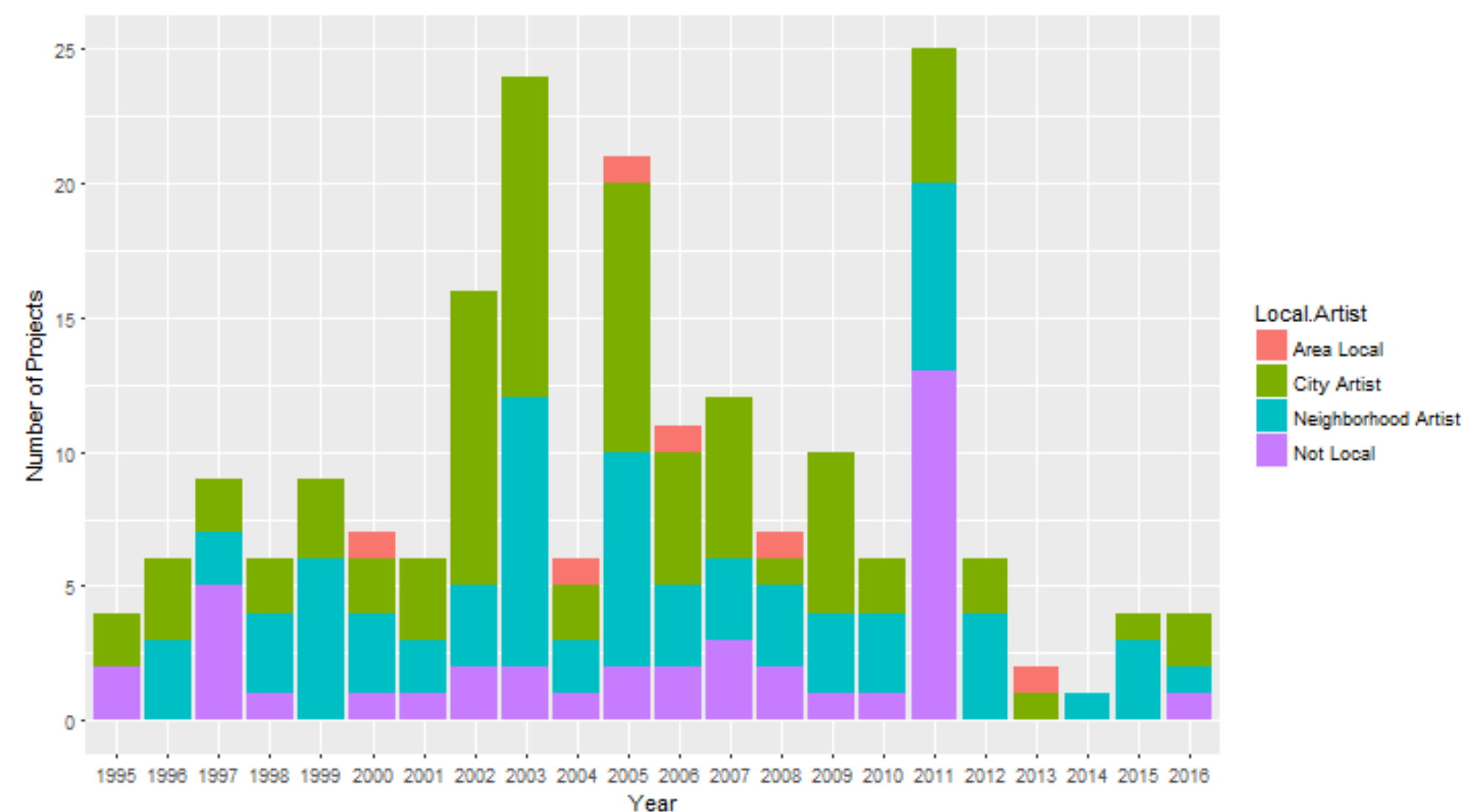
# Step Two: Visualized KPIs



05

## TYPE OF ART PROJECT

Does the type of art project impact the success?



06

## NEIGHBORHOOD PRIDE

Does the success of a project change if the artist is from the same area?

# Step Two: Visualized KPIs

Zip Code

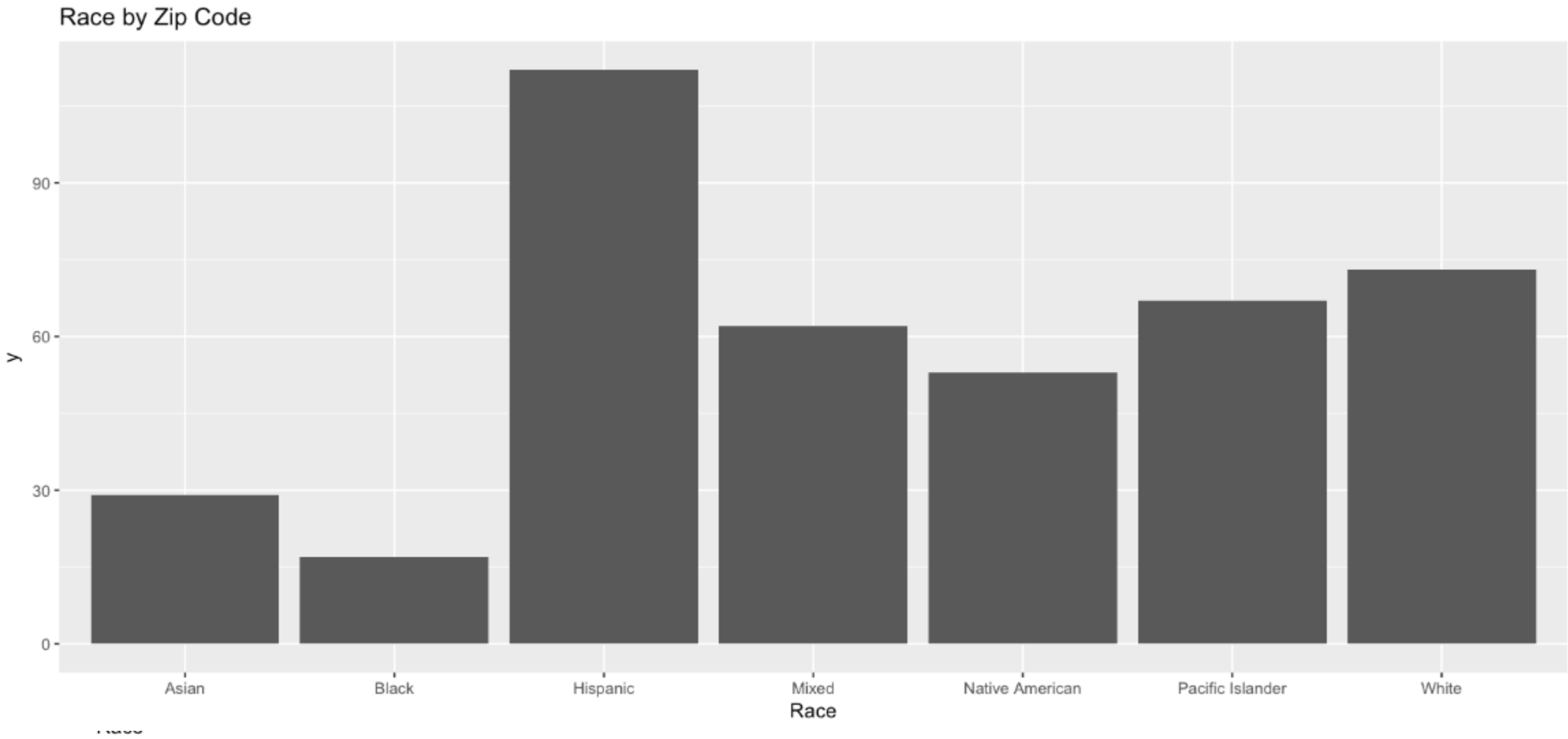
90037

data

Junipero Serra Branch Library

Exposition Park Intergenerational Community Center

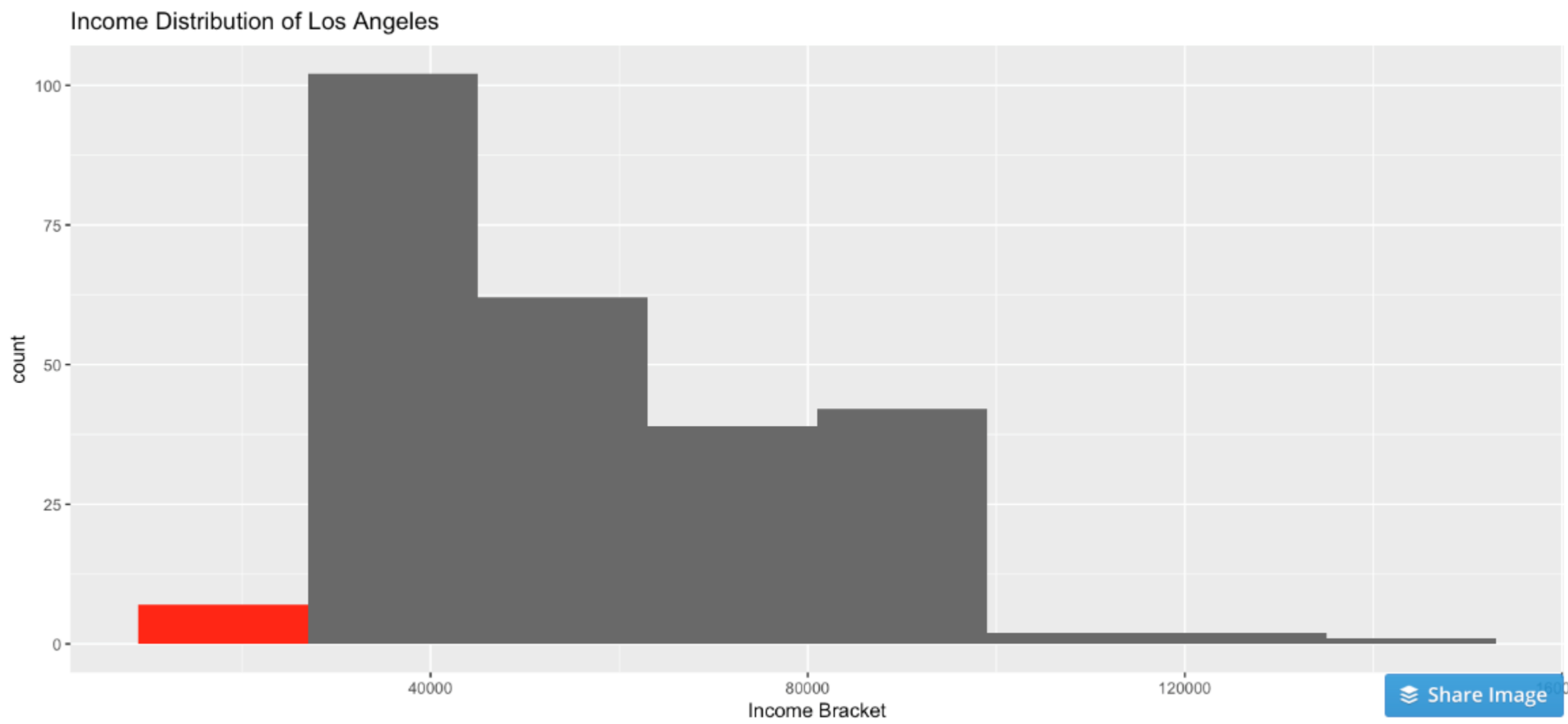
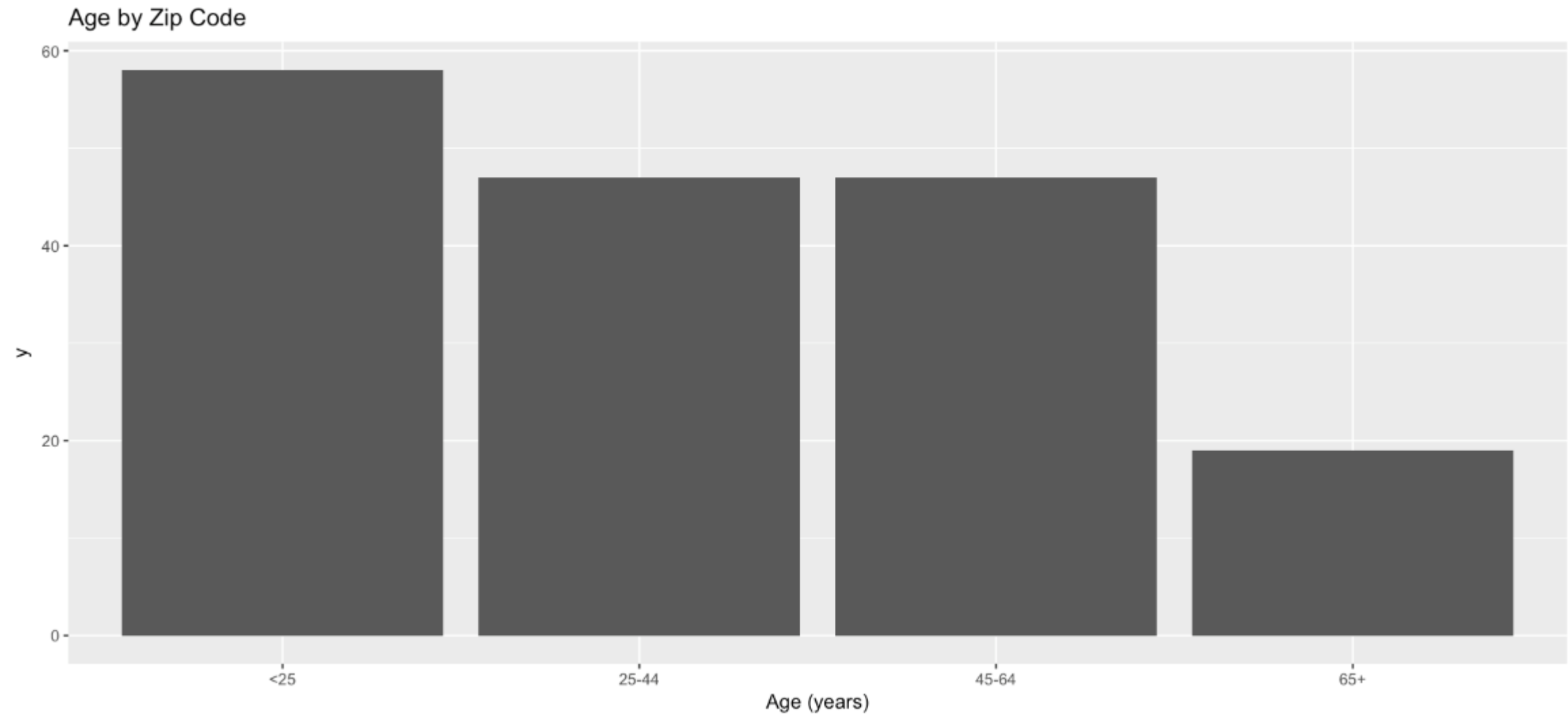
Vermont Square Branch Library



01

DEMOGRAPHICS

Do the demographics impact the response to the projects?  
(Age and Ethnicity)

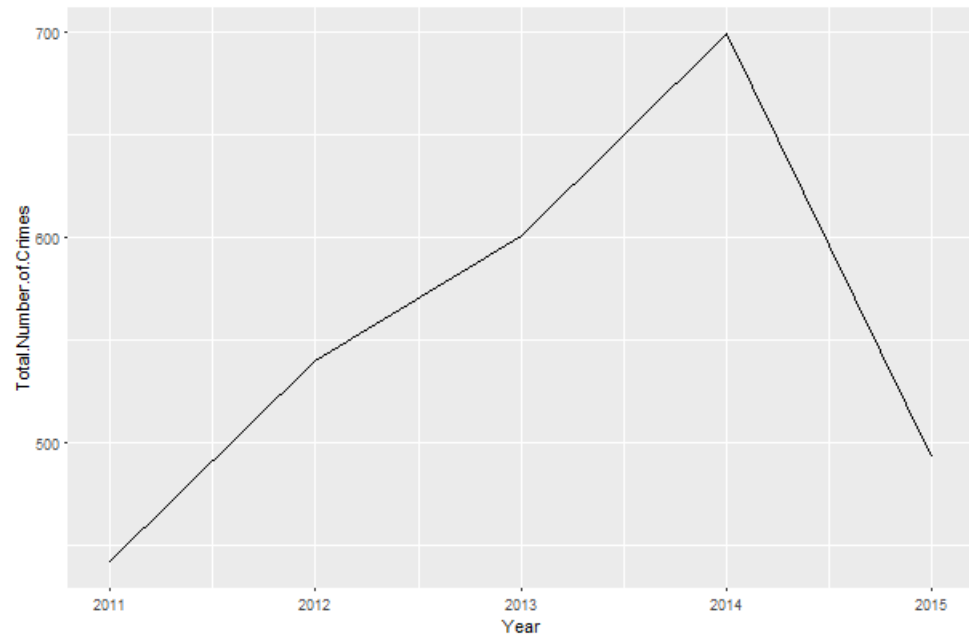


# Step Two: Visualized KPIs

Crime Data over Time

Zip Code

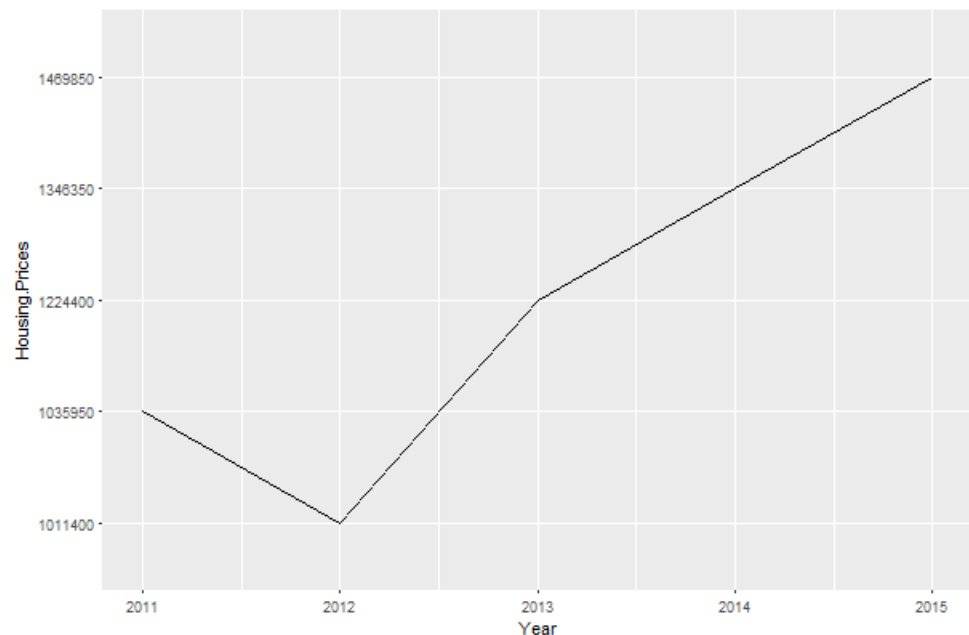
90002



Housing Prices over Time

Zip Code

90036



02

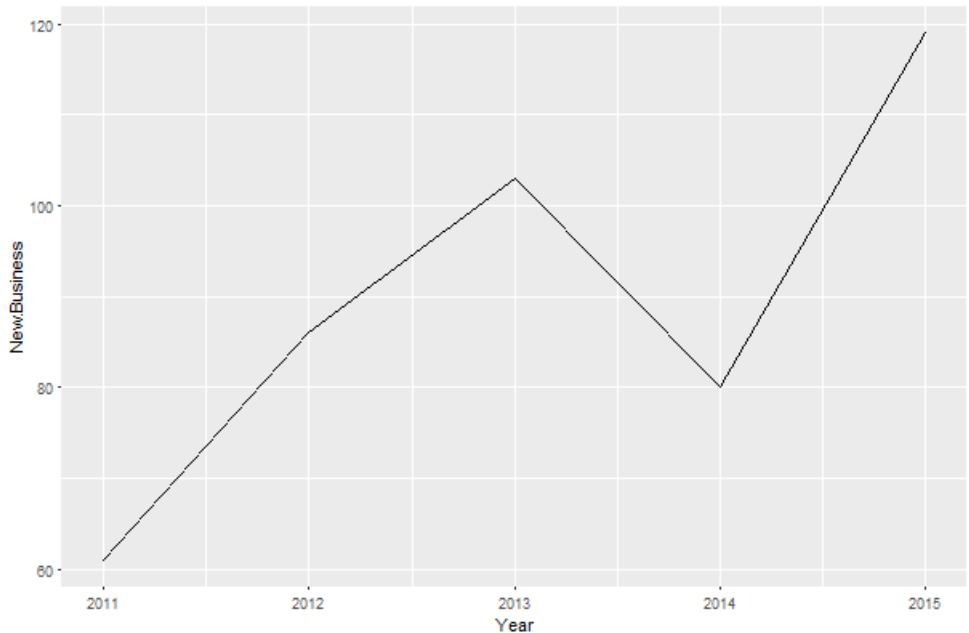
## HOUSING PRICES

How have art investments impacted housing prices in zip code?

New Businesses over Time

Zip Code

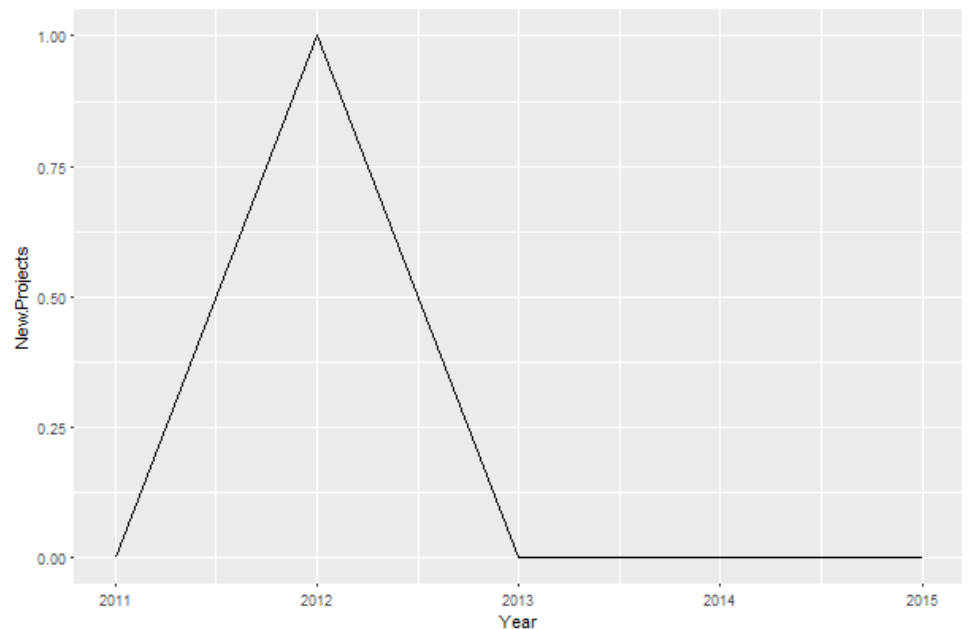
90002



New Projects over Time

Zip Code

90032



03

## CRIME RATES

How have art investments impact crime in a zip code?

04

## BUSINESS GROWTH

How have the number of businesses changed in an area with art investments?

# Step Three: Regression Model - Housing Prices

## Regression Output

	<i>Dependent variable:</i>
	Housing.Prices
New.Business	-0.071 p = 0.040**
Total.Number.of.Crimes	-0.059 p = 0.0002***
ZIP	0.014 p = 0.123
Project.Count	4.487 p = 0.011**
Year	8.366 p = 0.043**
New.Projects	1.701 p = 0.778
Constant	-17,878.850 p = 0.032**
Observations	369
R <sup>2</sup>	0.064
Adjusted R <sup>2</sup>	0.049
Residual Std. Error	103.105 (df = 362)
F Statistic	4.131*** (df = 6; 362)
Note:	*p<0.1; **p<0.05; ***p<0.01

## 01 MODEL DEVELOPMENT

To test if the art projects have any significant impact on housing prices, we developed a linear regression model in R with housing prices as the “Y” Variable

## 02 SIGNIFICANT VARIABLES

Unsurprisingly, crime was the most significant variable impacting housing prices. Additionally, the number of art projects also was found to be significant

## 03 OVERALL RELATIONSHIP

Although the model is significant overall, with an R<sup>2</sup> of 6.4%, this model does not help predict housing prices very well. However, we can infer that number of art projects is statistically proven to increase housing prices in the surrounding area



# Step Three: Regression Model – New Businesses

## Regression Output

	Dependent variable:
	New.Business
Total.Number.of.Crimes	-0.093 p = 0.0001***
ZIP	-0.004 p = 0.747
Project.Count	9.354 p = 0.0004***
Year	42.764 p = 0.000***
Housing.Prices	-0.164 p = 0.040**
New.Projects	-7.610 p = 0.404
Constant	-85,385.150 p = 0.000***
Observations	369
R <sup>2</sup>	0.168
Adjusted R <sup>2</sup>	0.154
Residual Std. Error	156.423 (df = 362)
F Statistic	12.183*** (df = 6; 362)
Note:	*p<0.1; ** p<0.05; *** p<0.01

01

### MODEL DEVELOPMENT

To test if the art projects have any significant impact on creation of new businesses we developed a linear regression model in R with number of new businesses as the “Y” Variable

02

### SIGNIFICANT VARIABLES

Year was the most significant predictor, in addition to crimes and project count being significant at the .01 level. New projects were *not* found to be significant

03

### OVERALL RELATIONSHIP

The model is significant overall, with an R<sup>2</sup> of 16.8%. This model does not help predict housing prices extremely well, though it does have some value and we learned that the number of art projects is statistically proven to increase number of new businesses in the surrounding area

# Step Three: Regression Model – Crime

## Regression Output

	<i>Dependent variable:</i>
	Total.Number.of.Crimes
ZIP	-0.100 p = 0.001***
Project.Count	52.962 p = 0.000***
Year	25.570 p = 0.062*
Housing.Prices	-0.648 p = 0.0002***
New.Business	-0.446 p = 0.0001***
New.Projects	-55.484 p = 0.006***
Constant	-42,240.930 p = 0.127
Observations	369
R <sup>2</sup>	0.296
Adjusted R <sup>2</sup>	0.284
Residual Std. Error	342.011 (df = 362)
F Statistic	25.311*** (df = 6; 362)
Note:	*p<0.1; **p<0.05; ***p<0.01

01

### MODEL DEVELOPMENT

To test if the art projects have any significant impact on crime in a zip code, we developed a linear regression model in R with total number of crime in that zip code as the “Y” Variable

02

### SIGNIFICANT VARIABLES

Surprisingly, project count was the most significant variable impacting crime. All other variables were considered significant, but number of art projects was the most significant.

03

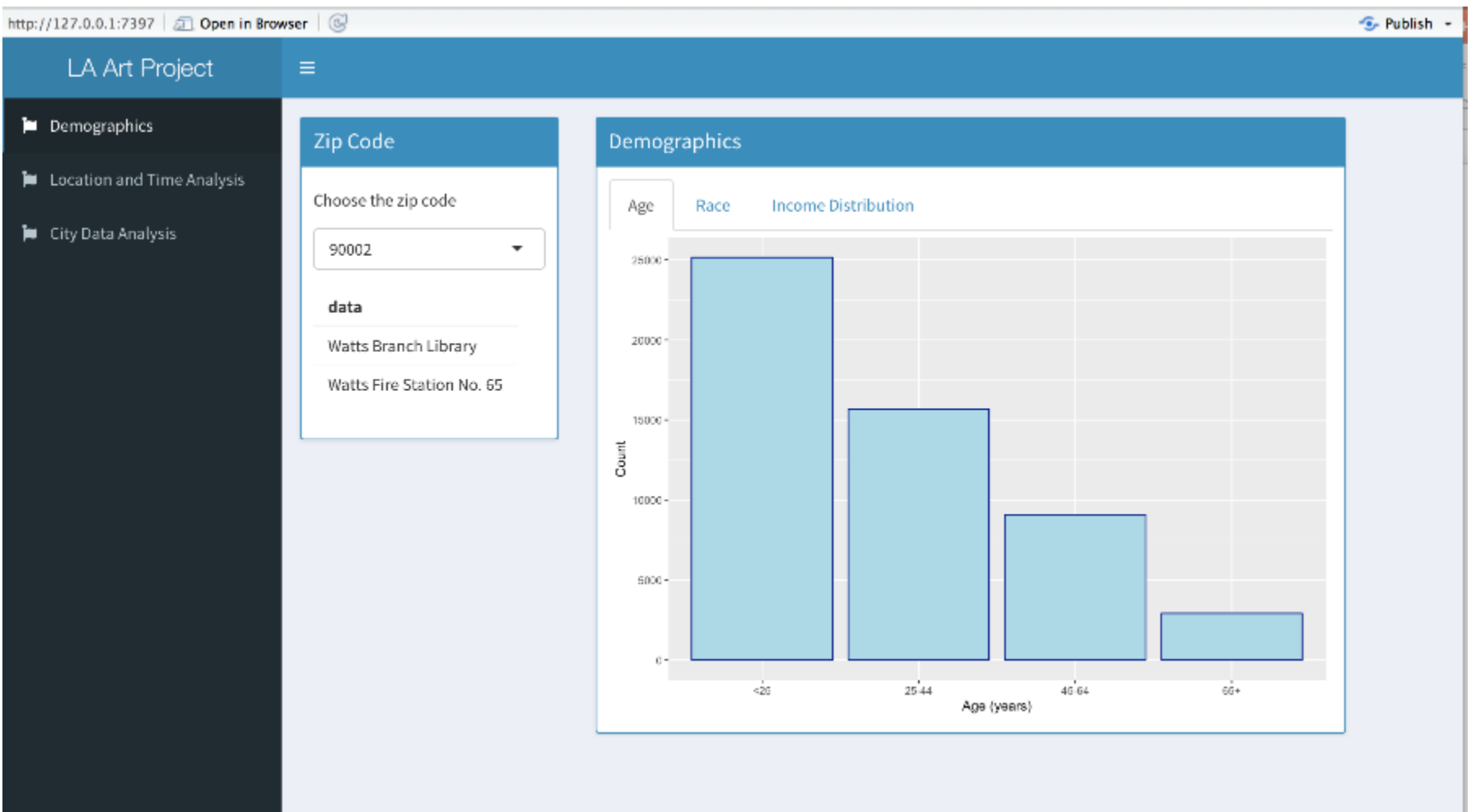
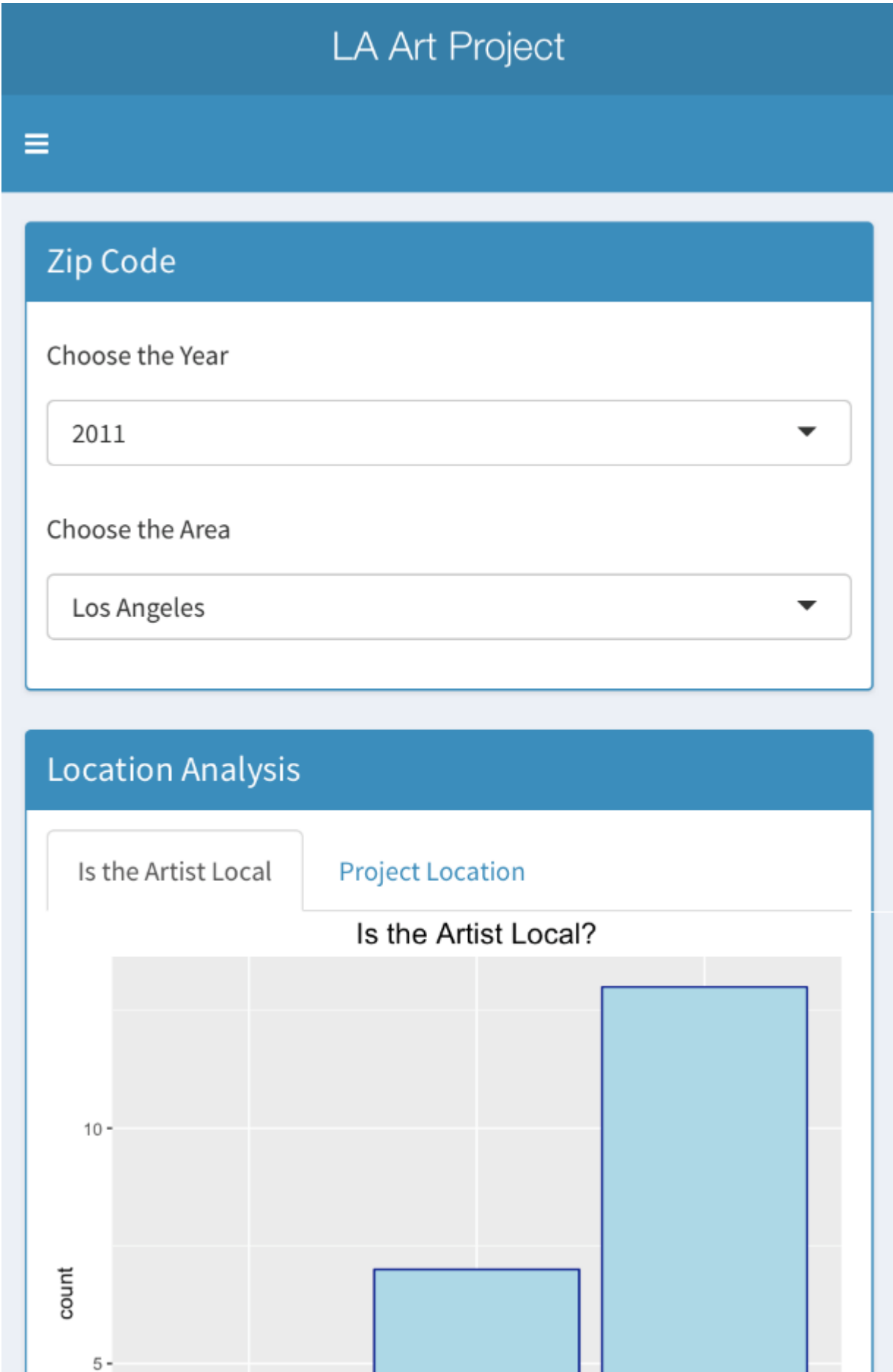
### OVERALL RELATIONSHIP

The model is significant overall and does a decent job of explaining crime with an R<sup>2</sup> of 29.6%. Again, the number of art projects is statistically proven to be significant, as it has been in the previous two regressions.

# Step Four: Designed Dashboard

## APPROACH USED:

- 01 Sourced a template from open source templates available on GitHub
- 02 Used the elements in the template to define dashboard sections for the project
- 03 Consolidated the code into one single format and theme to create the final dashboard





# Future Recommendations

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We recommend the City of Los Angeles collect the following data in the future to measure impact of art projects, if possible:



## **BUSINESS INCOME**

If you can obtain local business income, can you measure if the projects have increased foot traffic and thus local business income?



## **ADDRESSES OF EACH LOCATION**

Obtaining addresses of each location could ease the process of mapping the data, and could allow for understanding the radial impact.



## **ART INSTALLATION TYPE**

Obtaining addresses of each location could ease the process of mapping the data, and could allow for understanding the radial impact.



## **MEASURE DOLLAR AMOUNT PER IMPACT**

Using more sophisticated data modeling, it would be worth asking how much money invested creates impact? For every \$10,000, do you see an incremental impact and at what point are there diminishing returns?





We recommend the City of Los Angeles take the following next steps to assess the potential success of these various art projects:



## FOSTER LOCAL TALENT

When looking for artists for your projects, always consider local talent first. Using local talent fosters pride in the community, and keeps the money invested in the project local, revitalizing businesses.



## MAKE THE INSTALLATION MATCH THE LOCATION

Art projects should be appropriate to their installation location. For murals on bridges and freeways, people don't have time to enjoy small details. Focus on big, bold, easy to read projects. In contrast, projects in locations like parks need to be more durable, but locals can take the time to appreciate finer details.



## PROJECTS HAVE LONG LASTING IMPACTS

As our regression demonstrates, while the number total projects has a statistically significant impact on the number of new businesses and the housing prices. Locations with many art projects are more valuable for home owners and businesses. For both homeowners and new businesses, the number of new projects was not statistically significant, suggesting that the total number of projects is more important than how new they were.



Thank You