

Developing an Equitable Community Greening Plan for Avondale Borough Using Community-Led Research

As part of an effort to develop a community green infrastructure plan to mitigate flooding in Avondale Borough, the [White Clay Watershed Association](#) (WCWA) employed Community Led Research methods to better understand flooding impacts in the borough and other related needs and priorities of the community.

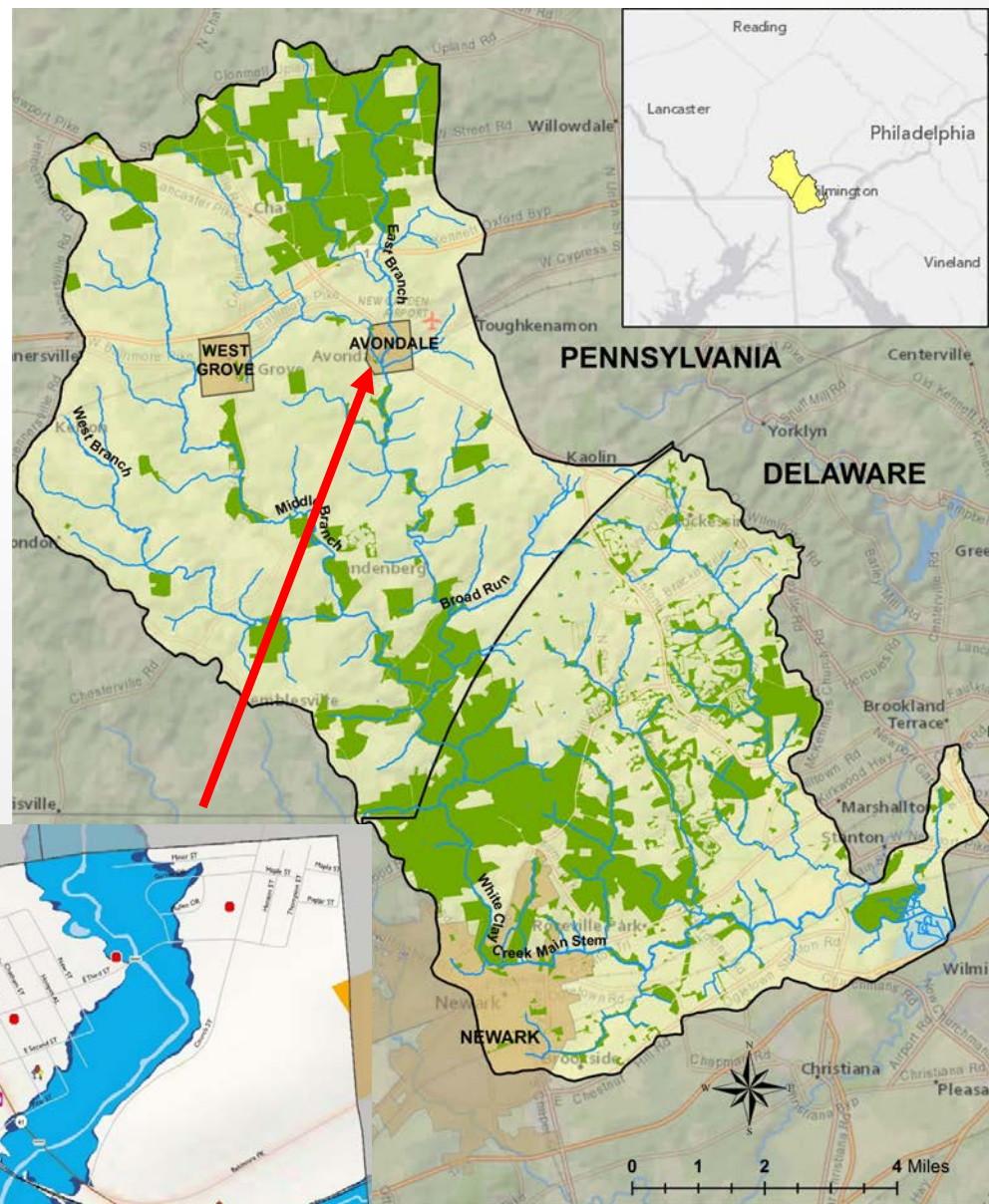
The responses to the survey are guiding the green infrastructure plan, as well as informing local advocacy on several related issues like safe pedestrian corridors, improved emergency services, and additional affordable housing options outside of the flood zone.



Funding provided by National Park Foundation (\$75,000), National Park Service (\$7,500) and River Network (\$6,500)

BACKGROUND INFORMATION:

- Avondale Borough covers a 0.5 square mile area in Southern Chester County, Pennsylvania
- Approximately 1276 people call Avondale Borough home (2020 Census)
- 65% of residents are Hispanic
- 57% of households are renter occupied



THE PROBLEM: RECURRENT FLOODING



What is the yearly precipitation trend in Chester County, Pennsylvania?

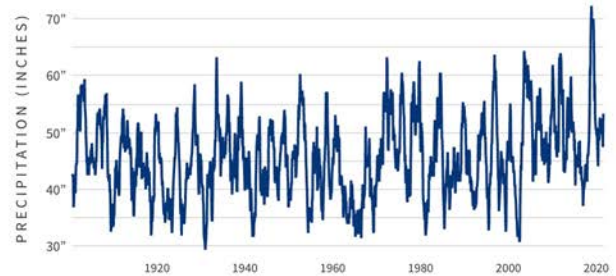
72.3 inches
FEB 2018–JAN 2019
Wettest 12-month average

29.4 inches
MAR 1930–FEB 1931
Driest 12-month average

The 12-month total precipitation increased 11.1 inches from November 1900 to October 2021. From November 1900 to October 2021, the average 12-month total precipitation was 45.8 inches.

Source: [National Centers for Environmental Information](#)

12-month precipitation values in Chester County



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COMMUNITY-LED RESEARCH TOOLKIT

TOOLS *for* EQUITABLE
CLIMATE RESILIENCE

FOSTERING
COMMUNITY-LED
RESEARCH AND
KNOWLEDGE



 **river**
NETWORK
connecting people · saving rivers

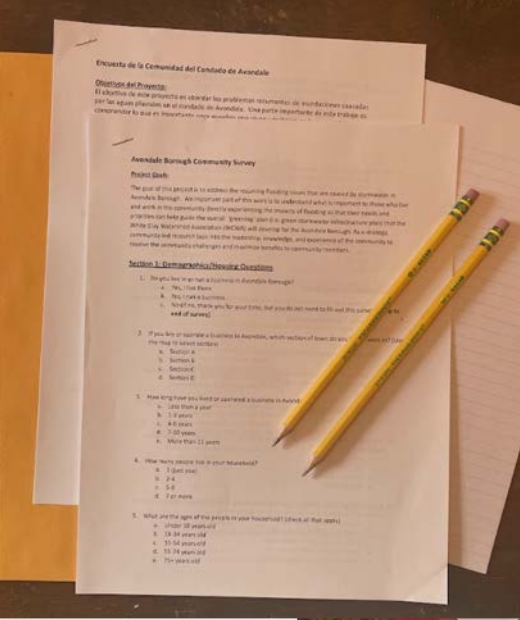
Process:

- Establish Project Team
- Define Project Purpose
- Scope Project
- Design Project
- Implement Project/Collect Data
- Analyze Data/Take Action

THE PROJECT TEAM:



THE CLR METHOD: PERSON TO PERSON SURVEYING

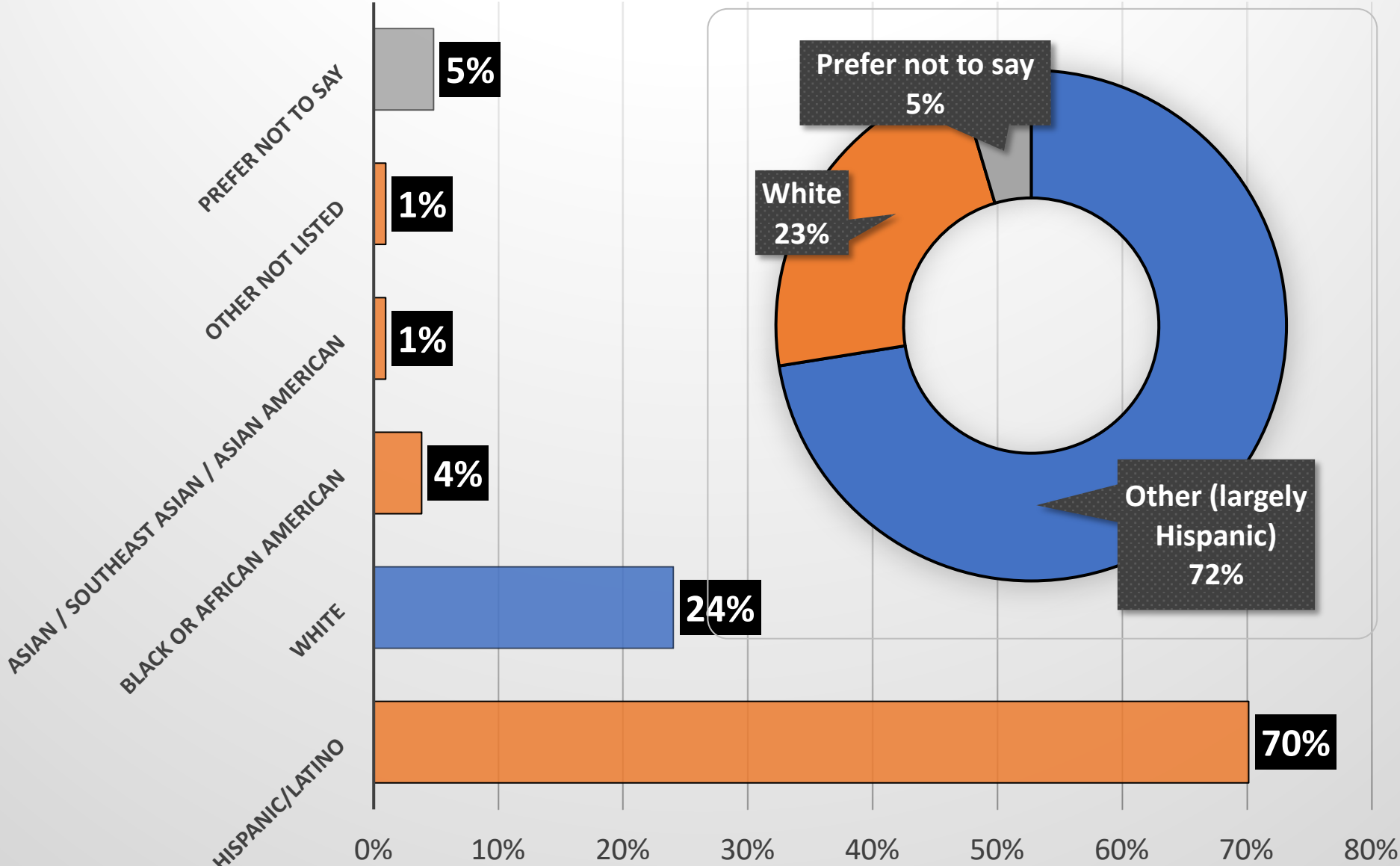


104 surveys completed during the month of May 2022

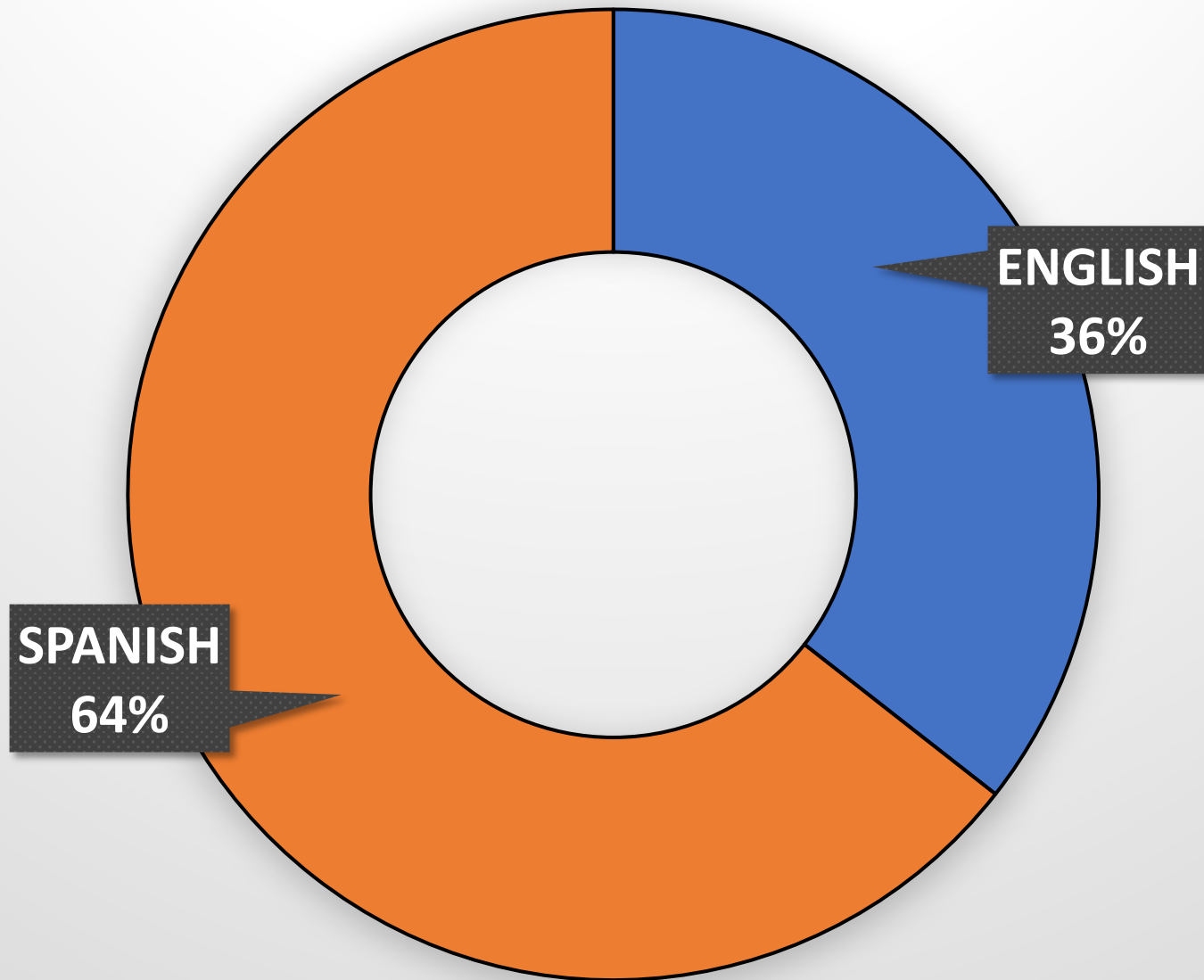


DATA ANALYSIS: DEMOGRAPHICS

WHICH BEST DESCRIBES YOUR RACE OR ETHNICITY? (check all that apply)

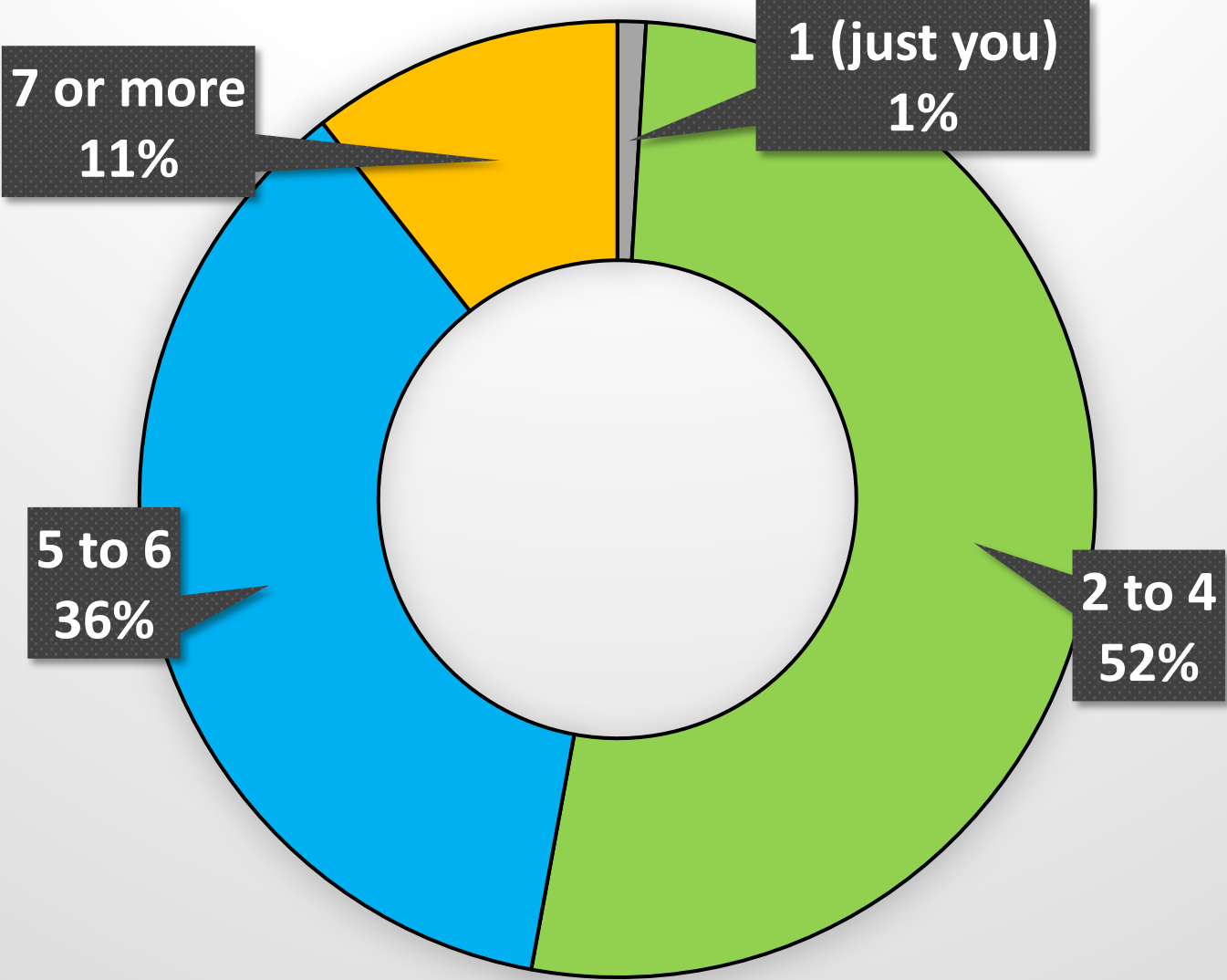


WHAT IS YOUR PRIMARY LANGUAGE?

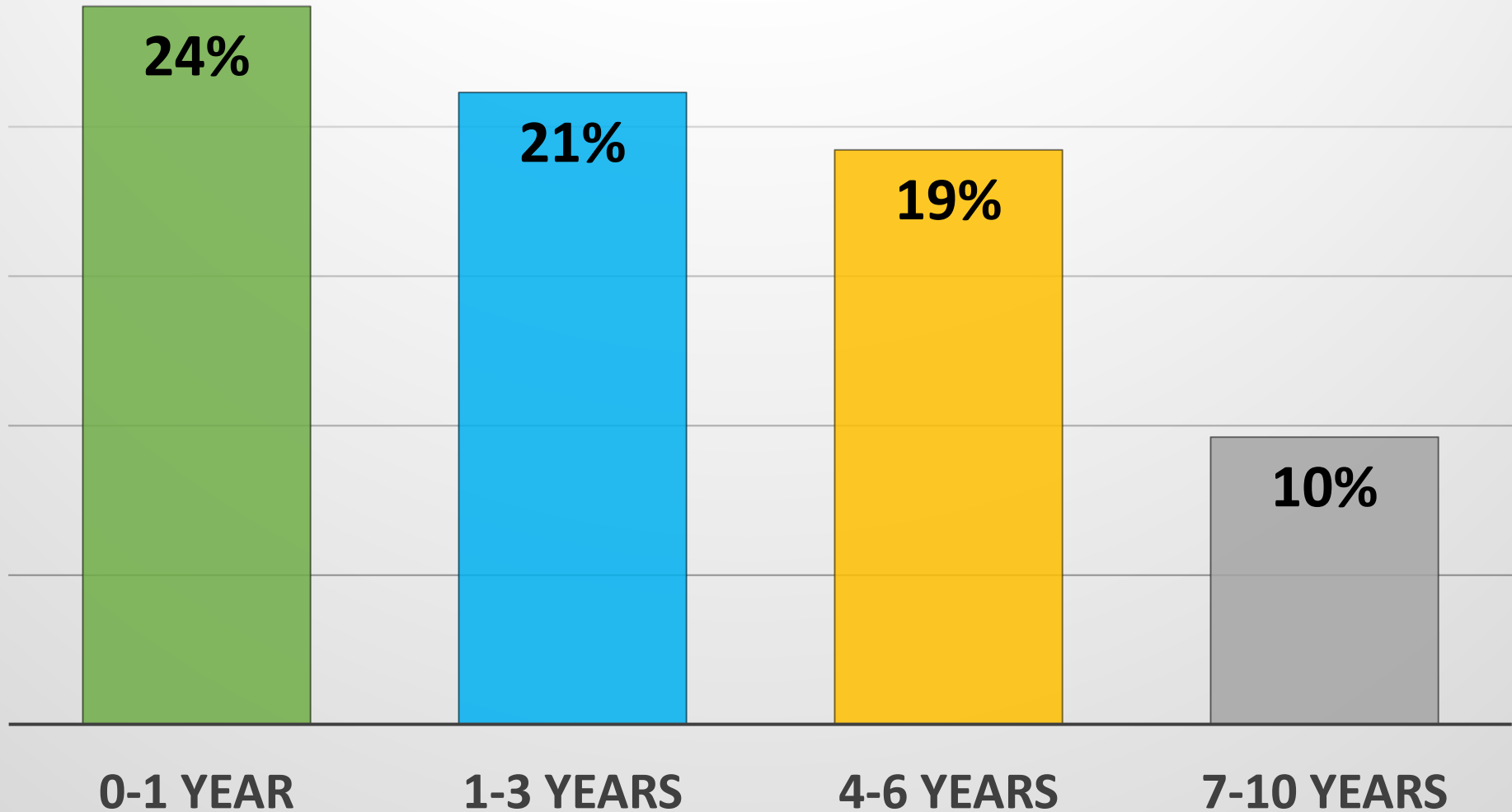


GOING FORWARD PRIMARY LANGUAGE WAS USED AS A PROXY FOR ETHNICITY

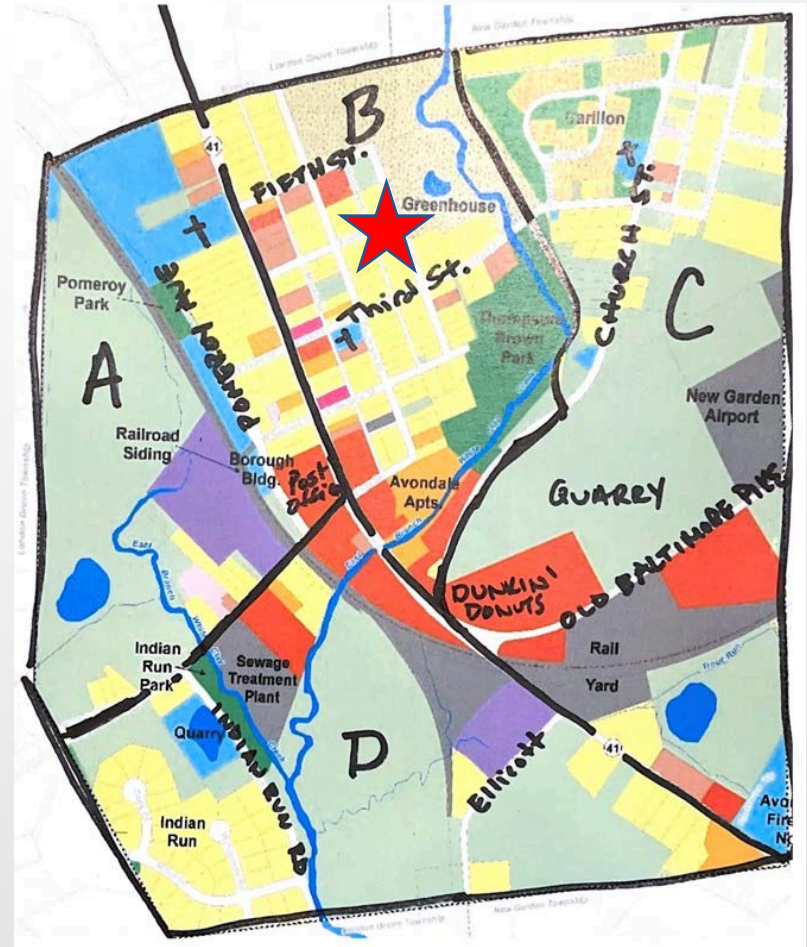
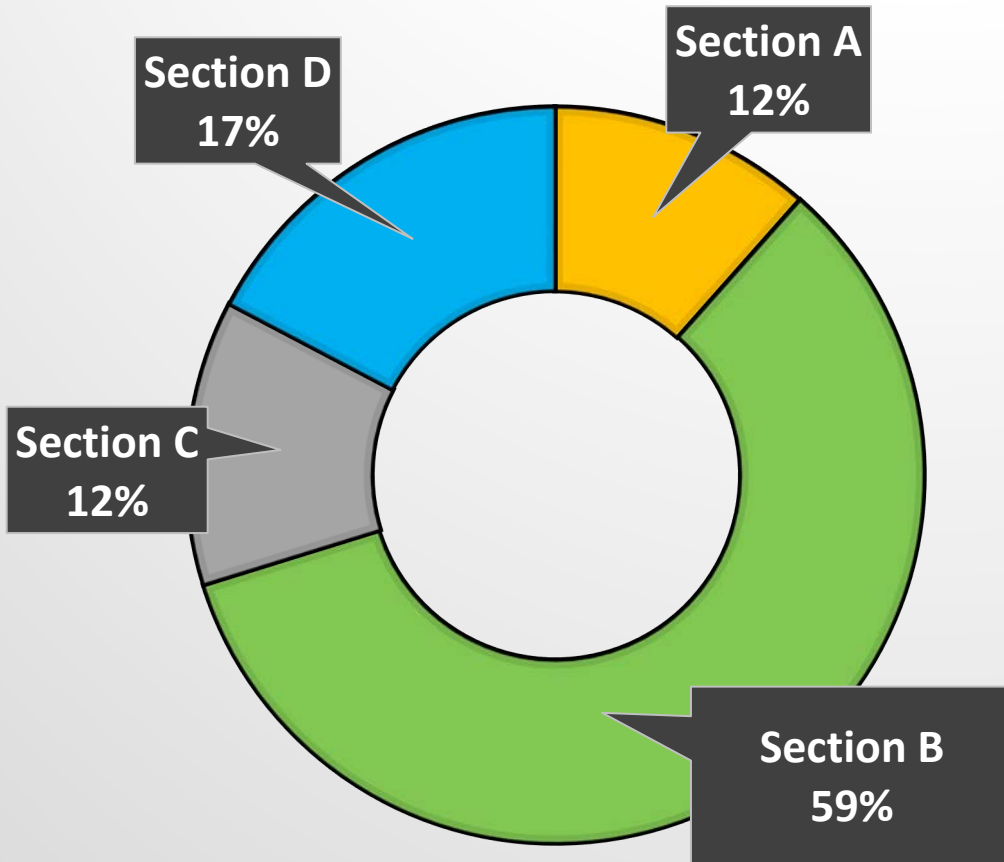
RESPONDENTS' HOUSEHOLD SIZE



LENGTH OF TIME LIVING/WORKING IN AVONDALE



SURVEY RESPONDENTS BY SECTION OF TOWN



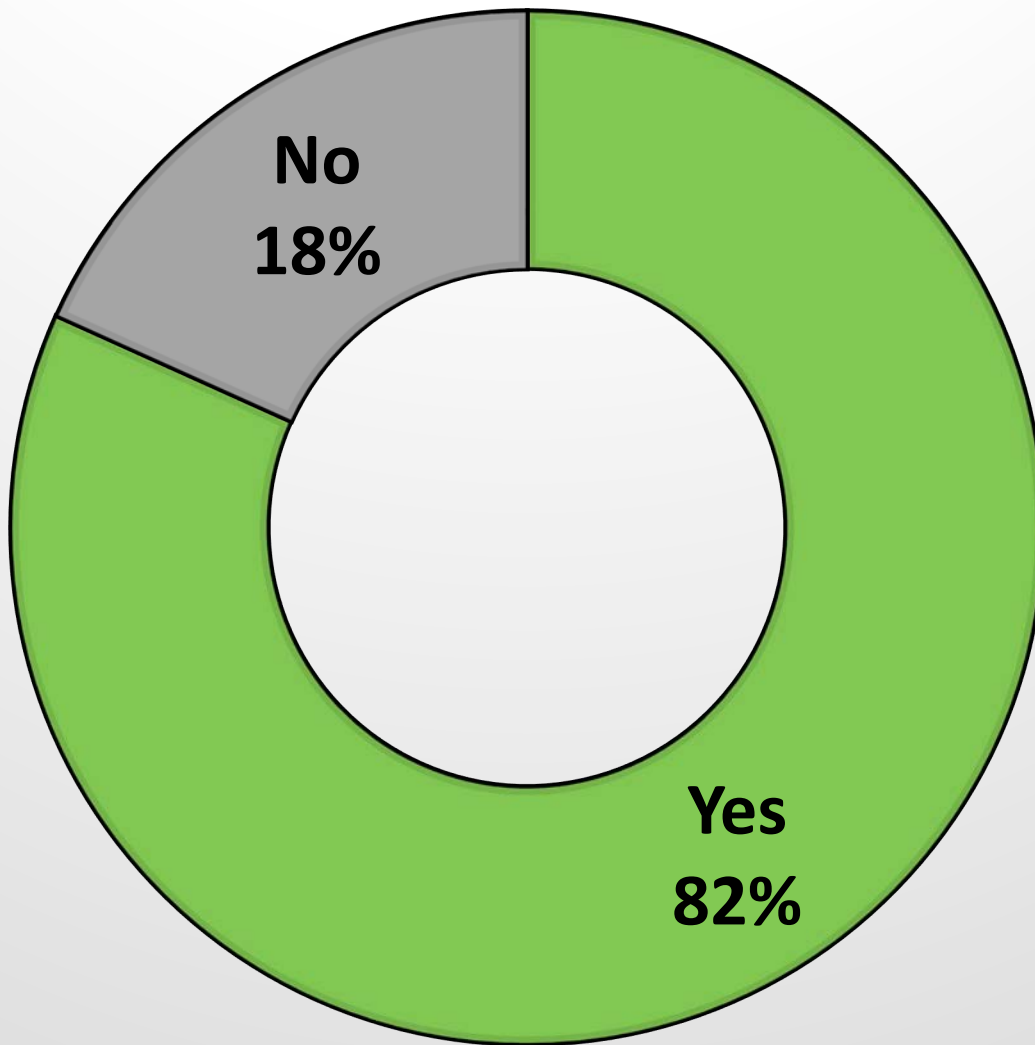
SUMMARY OF KEY DEMOGRAPHICS

- Survey sample may represent a quarter to just under a half of borough residents given average household sizes.
- The survey sample correlates with US census data for Avondale Borough.
- Majority of households include children.
- Majority of households live in section B.
- Majority of residents are Hispanic.
- Majority of residents speak Spanish as their primary language.



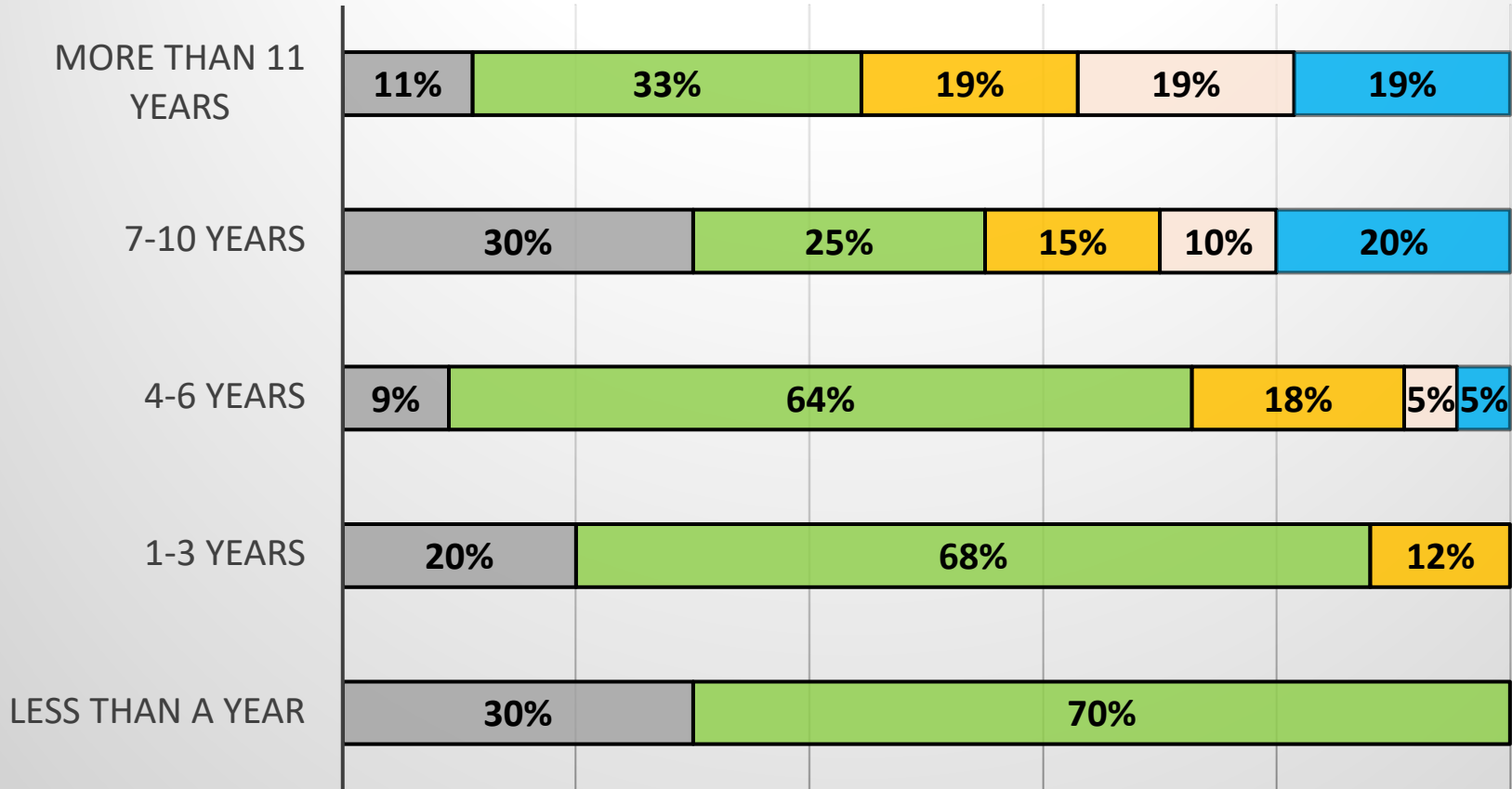
DATA ANALYSIS: FLOODING EXPERIENCE

RESPONDENTS' WHO HAVE EXPERIENCED FLOODING WHILE LIVING IN AVONDALE BOROUGH



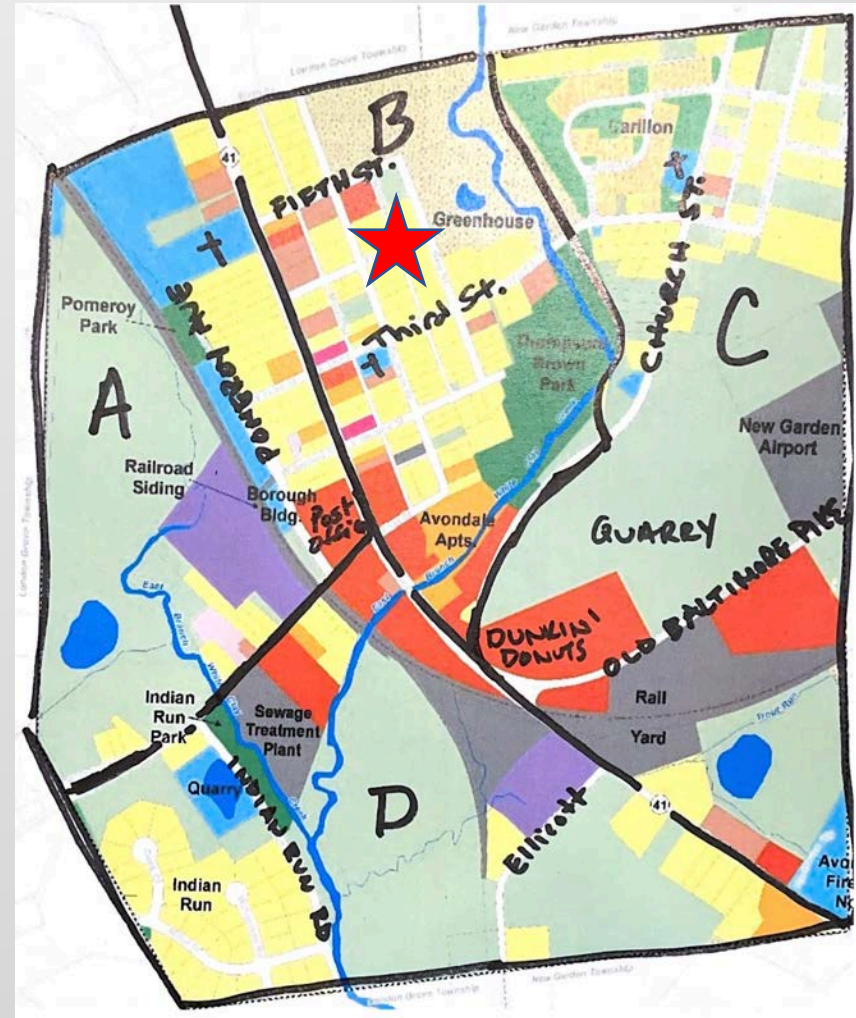
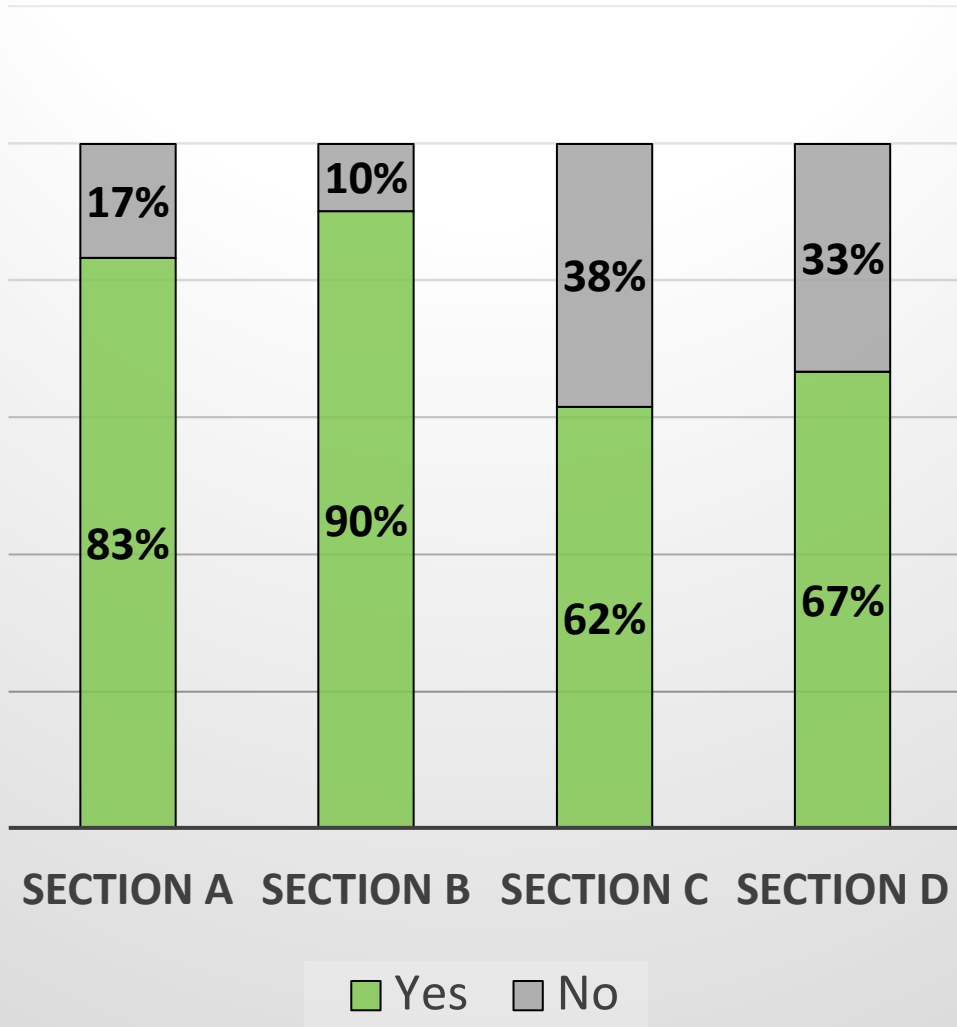
SINCE YOU HAVE LIVED OR OPERATED A BUSINESS IN AVONDALE, HOW MANY TIMES HAVE YOU EXPERIENCED FLOODING?

Never 1-3 times 4-6 times 7-10 times More than 11 times



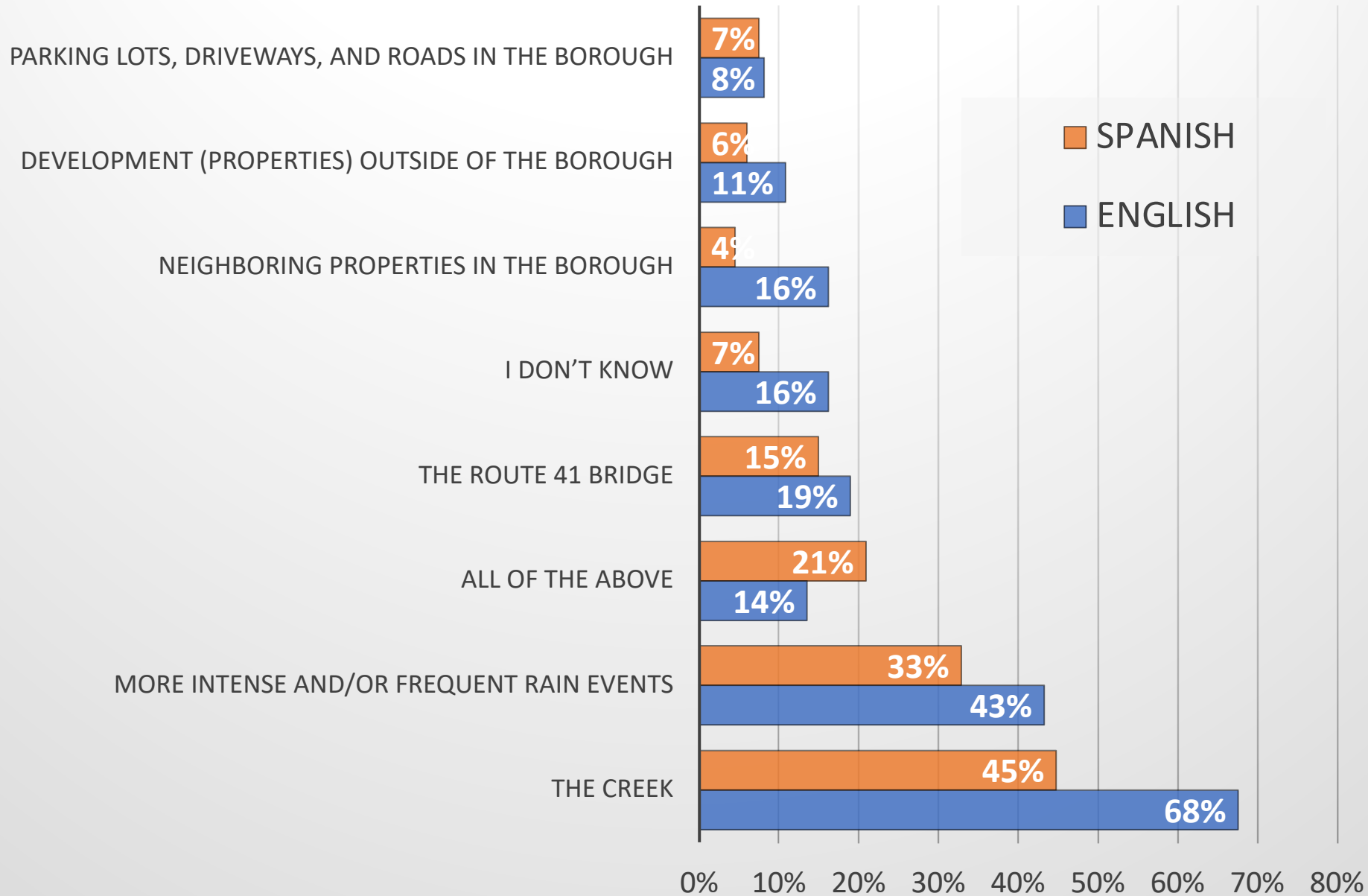
Flooding is frequent and very likely to happen on any given year because even those who have recently moved to the community have experienced flooding

RESPONDENTS' WHO HAVE EXPERIENCED FLOODING WHILE LIVING IN AVONDALE BOROUGH BY SECTION OF TOWN

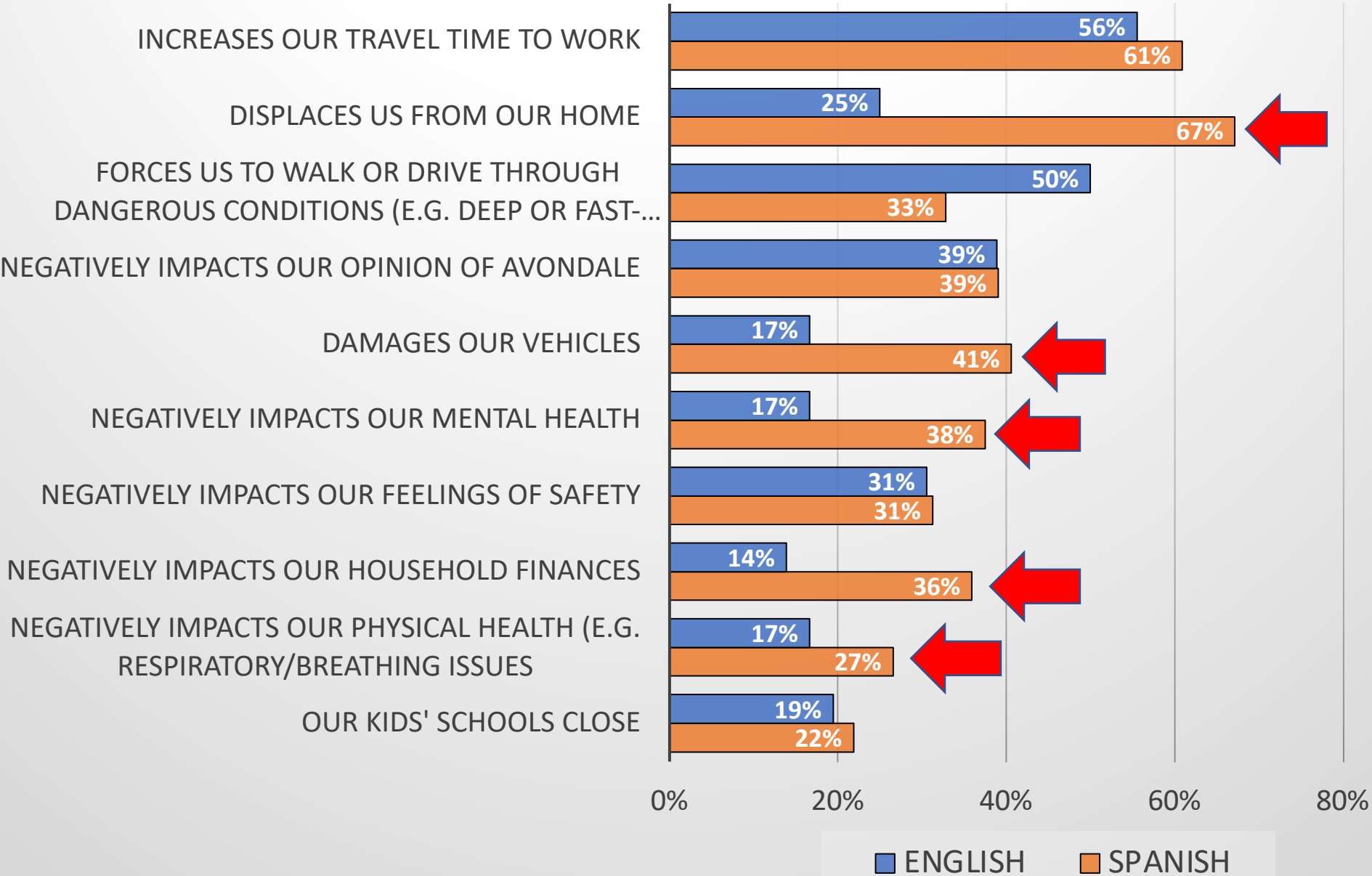


Over 60% of respondents in every section of town have been impacted by flooding

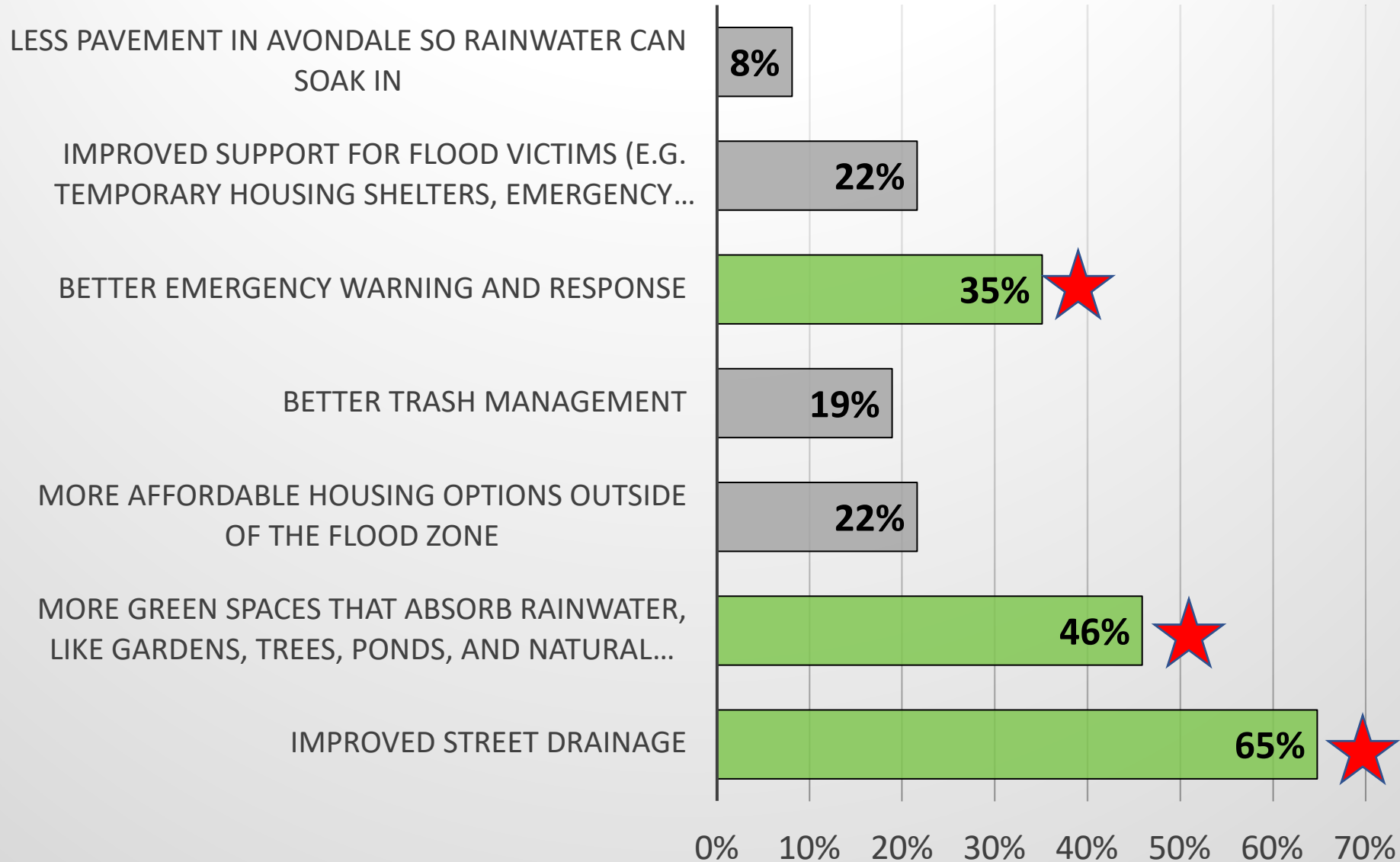
RESPONDENTS PERCEPTIONS OF WHERE WATER IS COMING FROM WHEN AVONDALE FLOODS



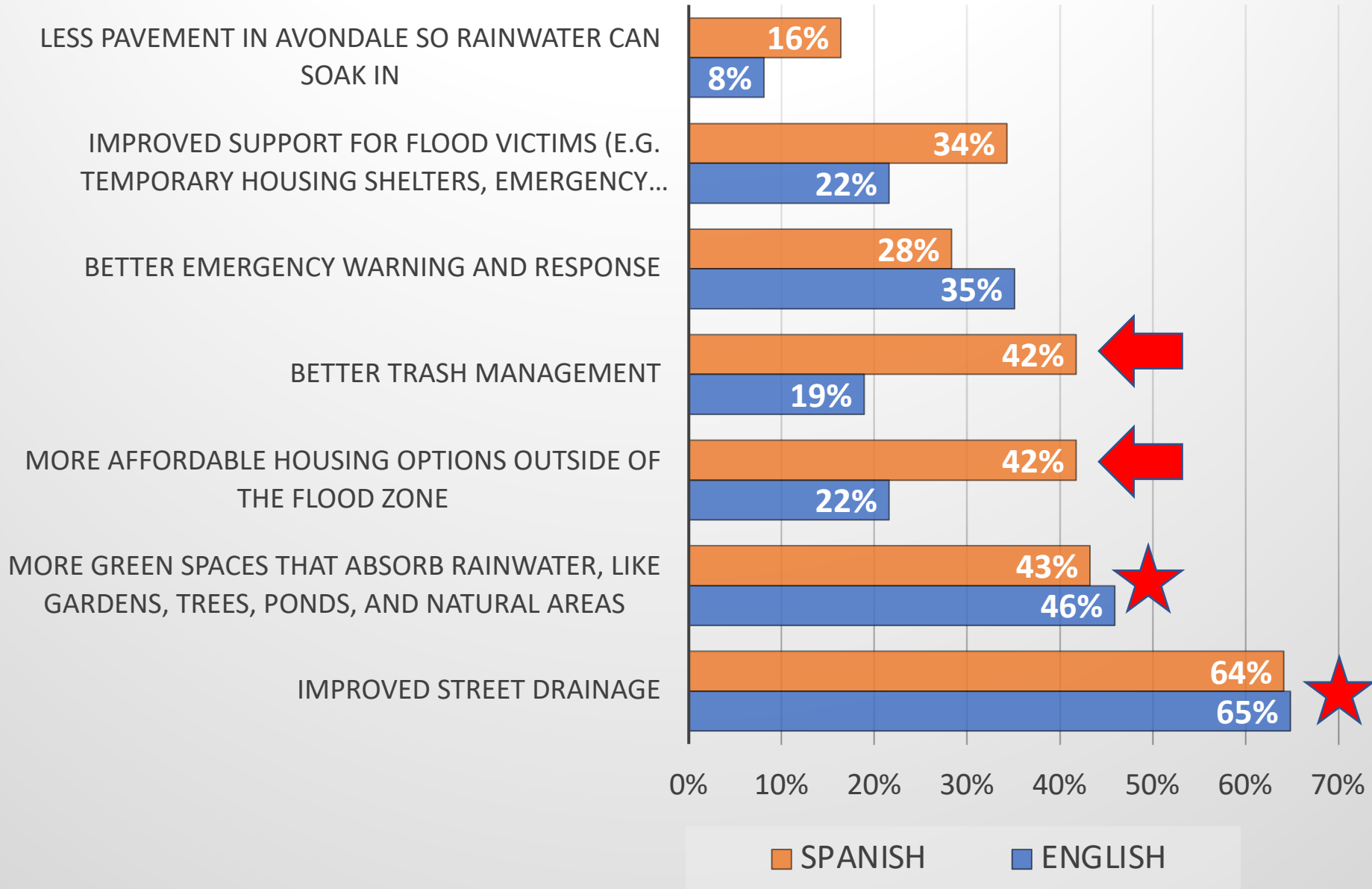
WHEN AVONDALE FLOODS, HOW DOES THAT AFFECT YOU AND MEMBERS OF YOUR HOUSEHOLD?



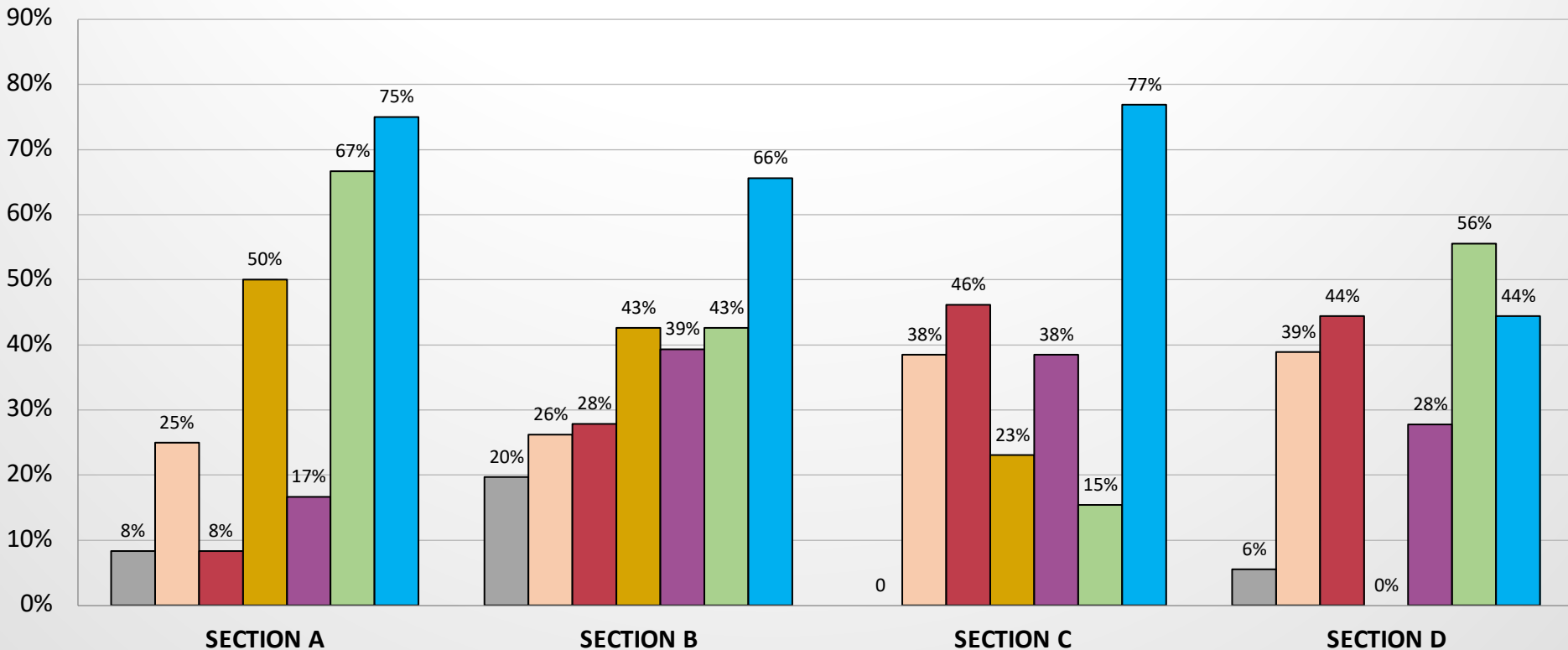
RESPONDENTS' PREFERRED FLOOD REDUCTION/MITIGATION STRATEGIES



PREFERRED FLOOD MITIGATION STRATEGIES BY RESPONDENTS' PRIMARY LANGUAGE



PREFERRED FLOOD MITIGATION STRATEGIES BY RESPONDENTS' SECTION OF AVONDALE



- Less pavement in Avondale so rainwater can soak in
- Improved support for flood victims (e.g. temporary housing shelters, emergency supplies, mental health services)
- Better emergency warning and response
- Better trash management
- More affordable housing options outside of the flood zone
- More green spaces that absorb rainwater, like gardens, trees, ponds, and natural areas
- Improved street drainage

SUMMARY OF KEY FLOODING IMPACTS

- Flooding is pervasive!
 - 82% surveyed have experienced the impacts of flooding
 - Impacts over 50% surveyed from each section, but 90% of section B (higher density, more rentals, more Spanish speaking) experience flooding impacts
- Most common impacts of flooding include:
 - increased travel time to work
 - temporary housing displacement
 - dangerous walking/driving conditions
- Flooding impacts are not equally distributed – more varied impacts on the most vulnerable
 - mental health
 - respiratory
 - finances
 - vehicular damage

SUMMARY OF KEY MITIGATION STRATEGIES

The top two choices across the board:

- Improved Street Drainage
- More Green Spaces that Absorb Rainwater, like gardens, trees, ponds, and natural areas

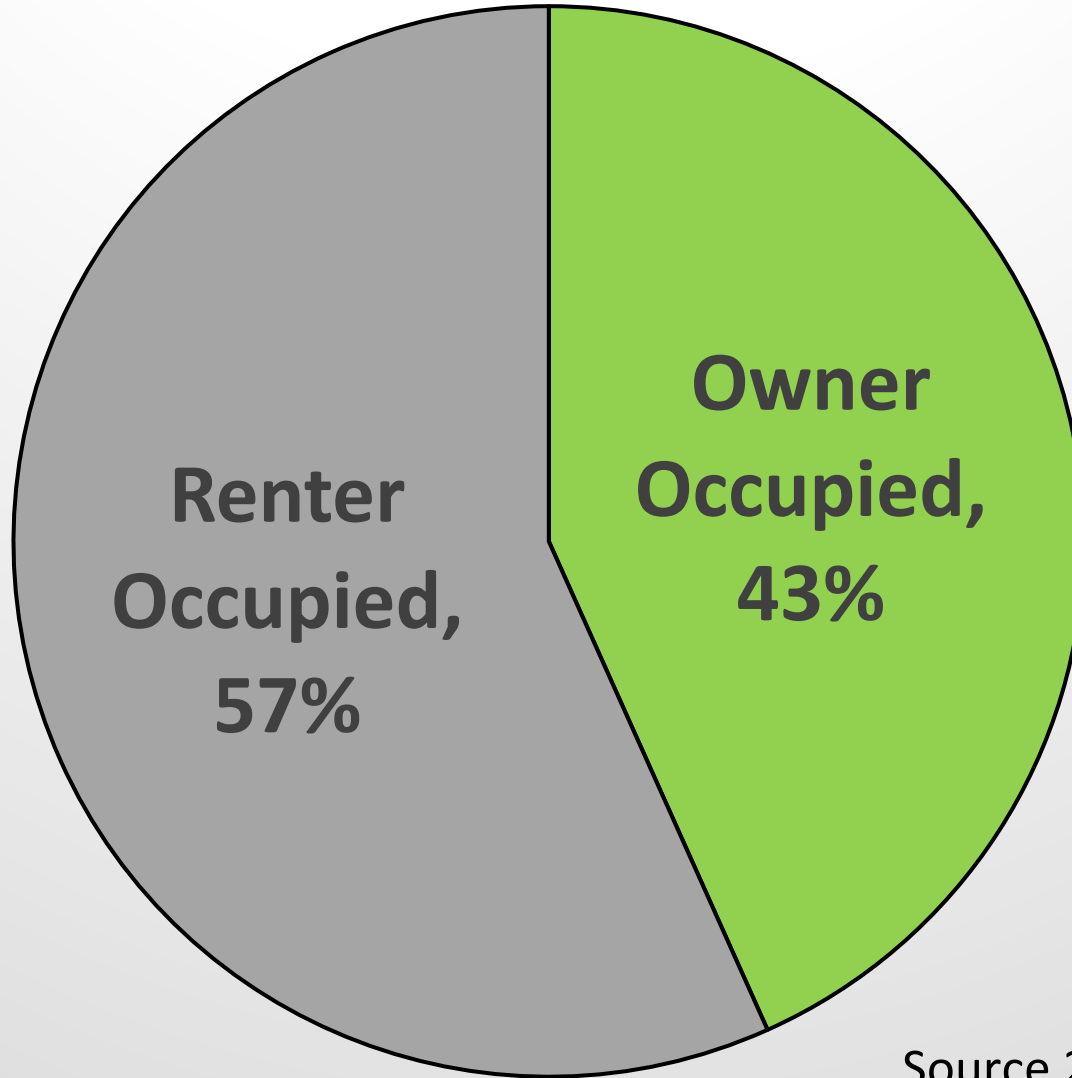
Difference between primary language occur after top two strategies

- Spanish speakers: more affordable. housing and better trash management are also important, followed closely by improved support for flood victims
- English speakers: better emergency warning and response



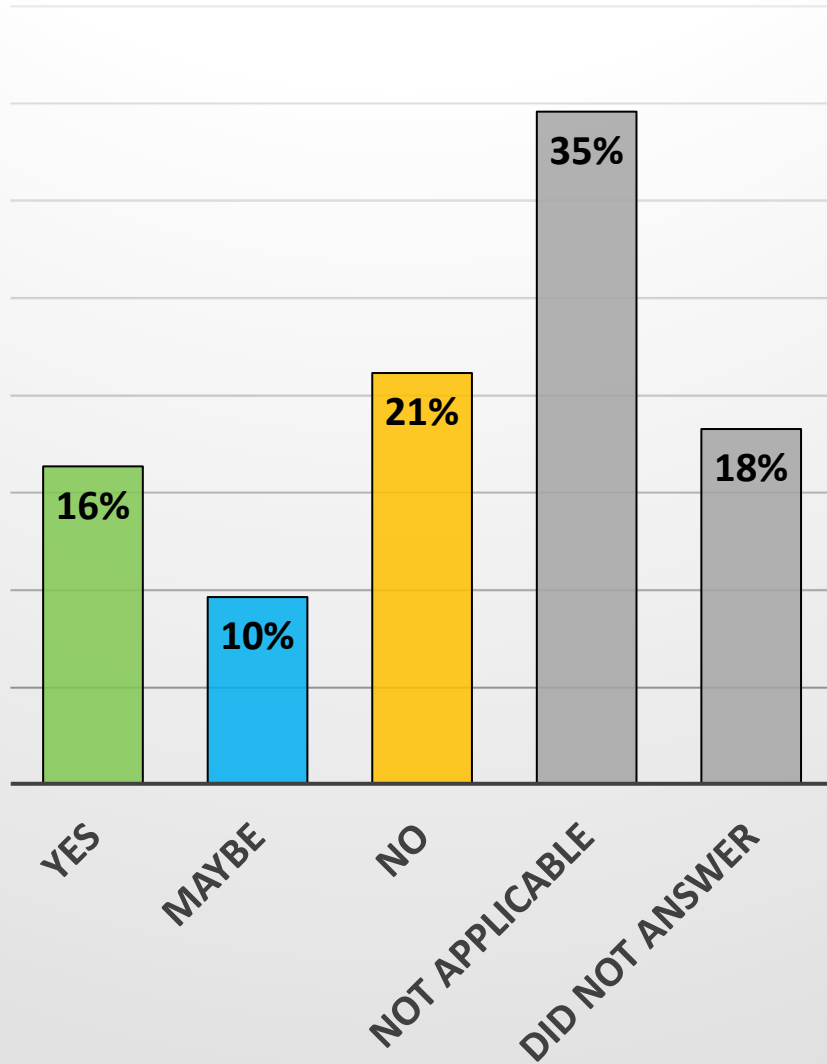
DATA ANALYSIS: HOUSING

AVONDALE HOUSEHOLD TYPES

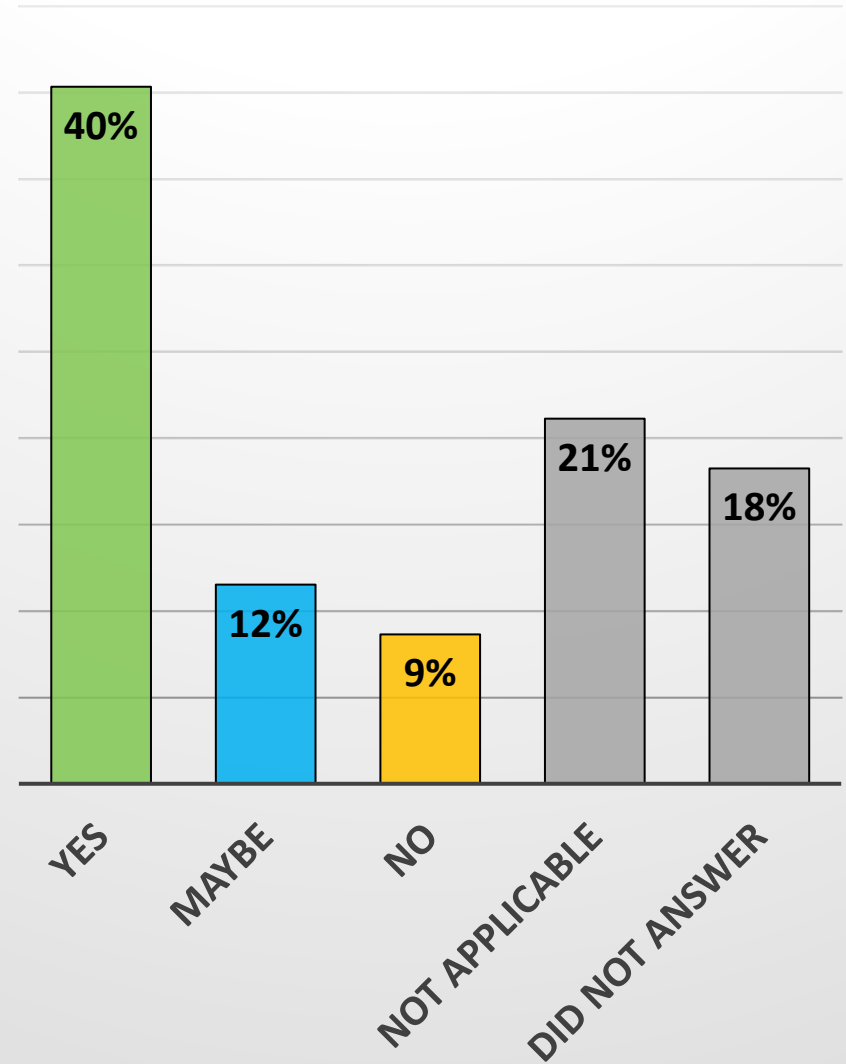


Source 2020 Census Data

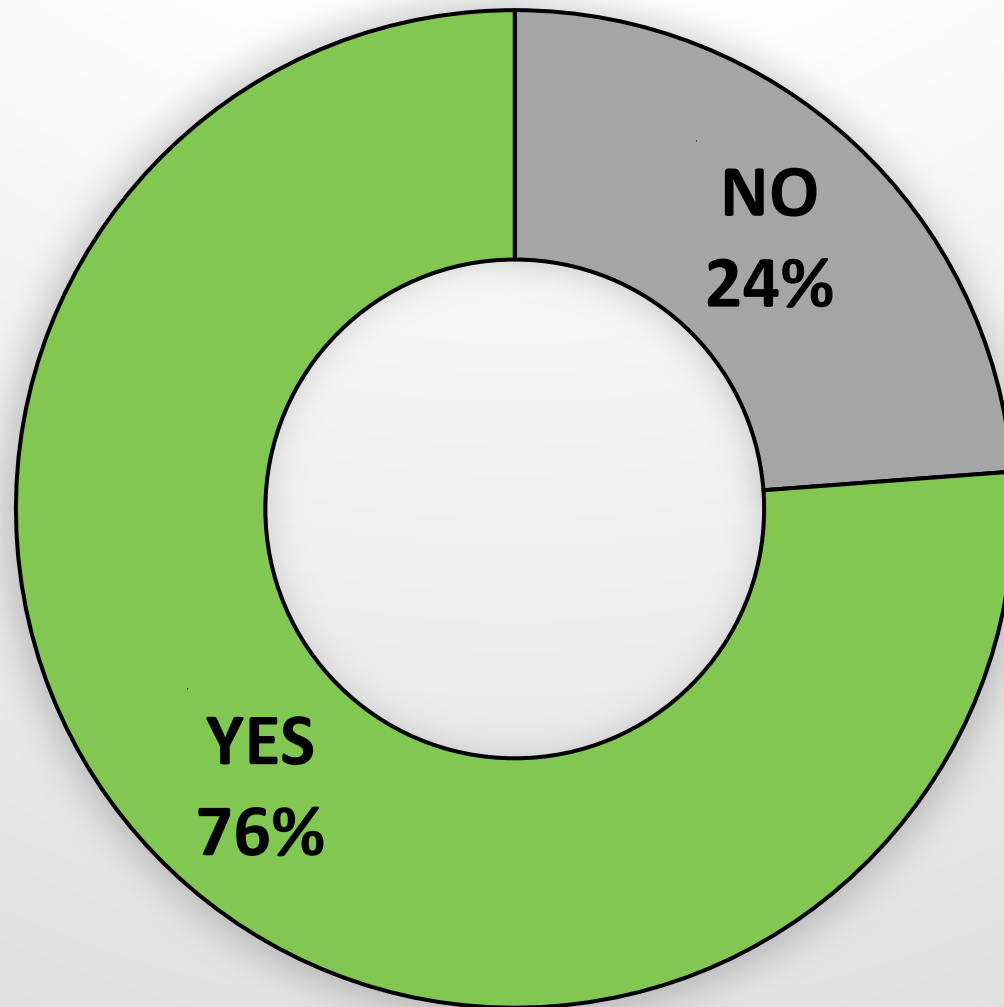
HOME OWNERS' WILLINGNESS TO CONSIDER PARTICIPATING IN HOME BUYOUT PROGRAM?



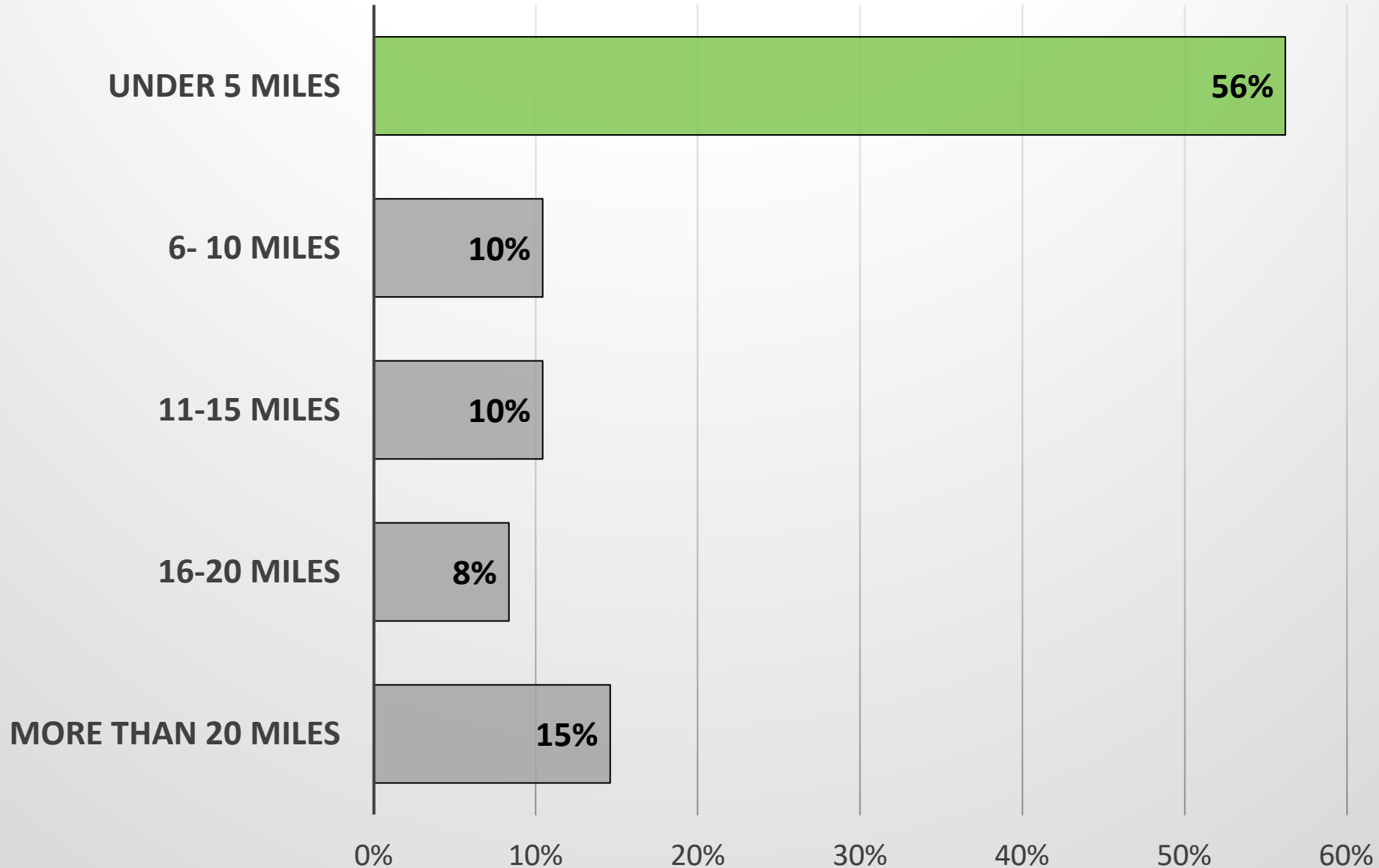
RENTERS' WILLINGNESS TO RELOCATE TO AVOID FUTURE FLOODING



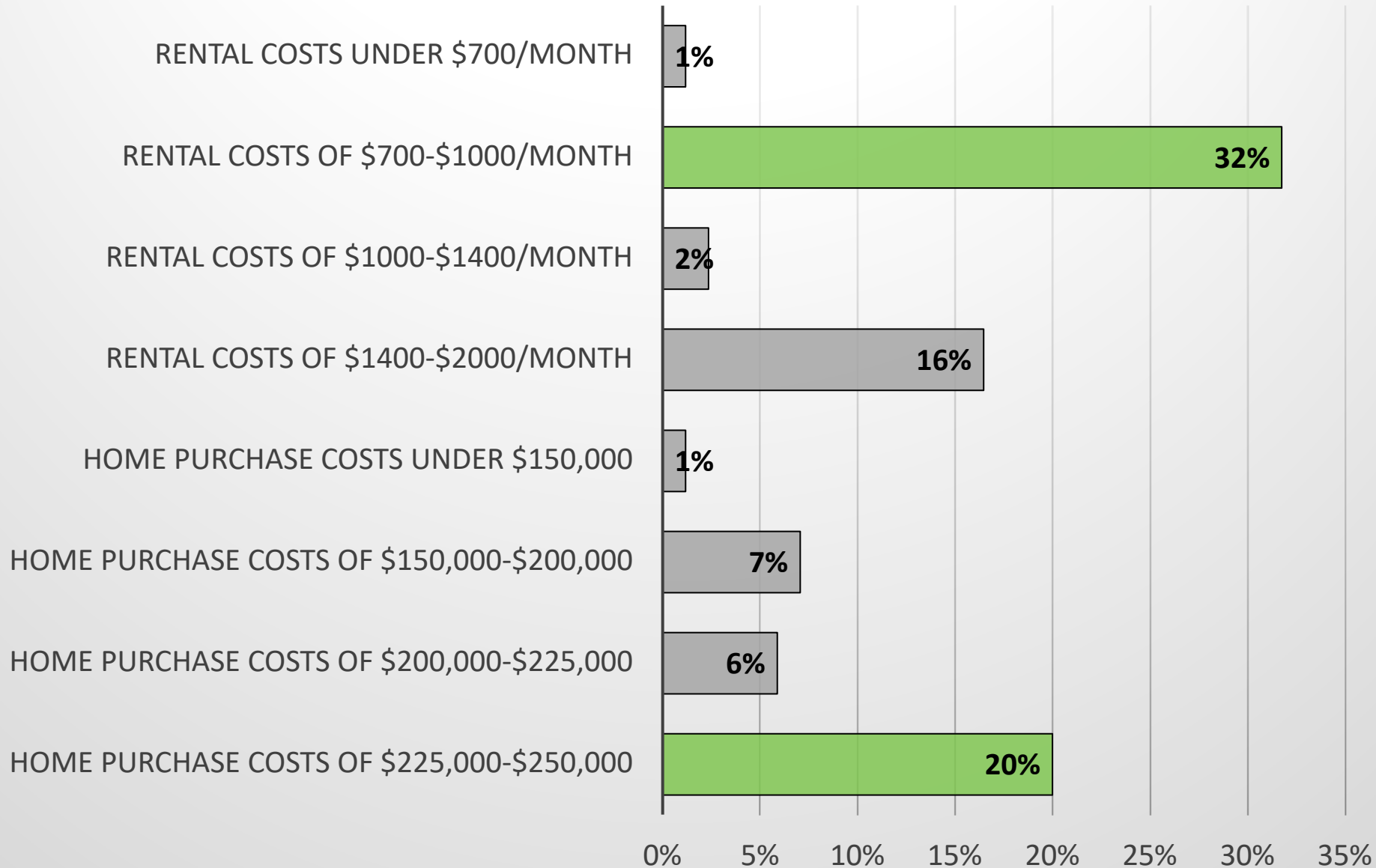
WOULD YOU CONSIDER RELOCATING TO AVOID FUTURE FLOODING?



Q: IF WILLING TO RELOCATE, WHAT IS THE FURTHEST DISTANCE YOU'D BE WILLING TO CONSIDER?



Q: IF WILLING TO RELOCATE, WHAT HOUSING COSTS WOULD BE AFFORDABLE TO YOUR HOUSEHOLD?



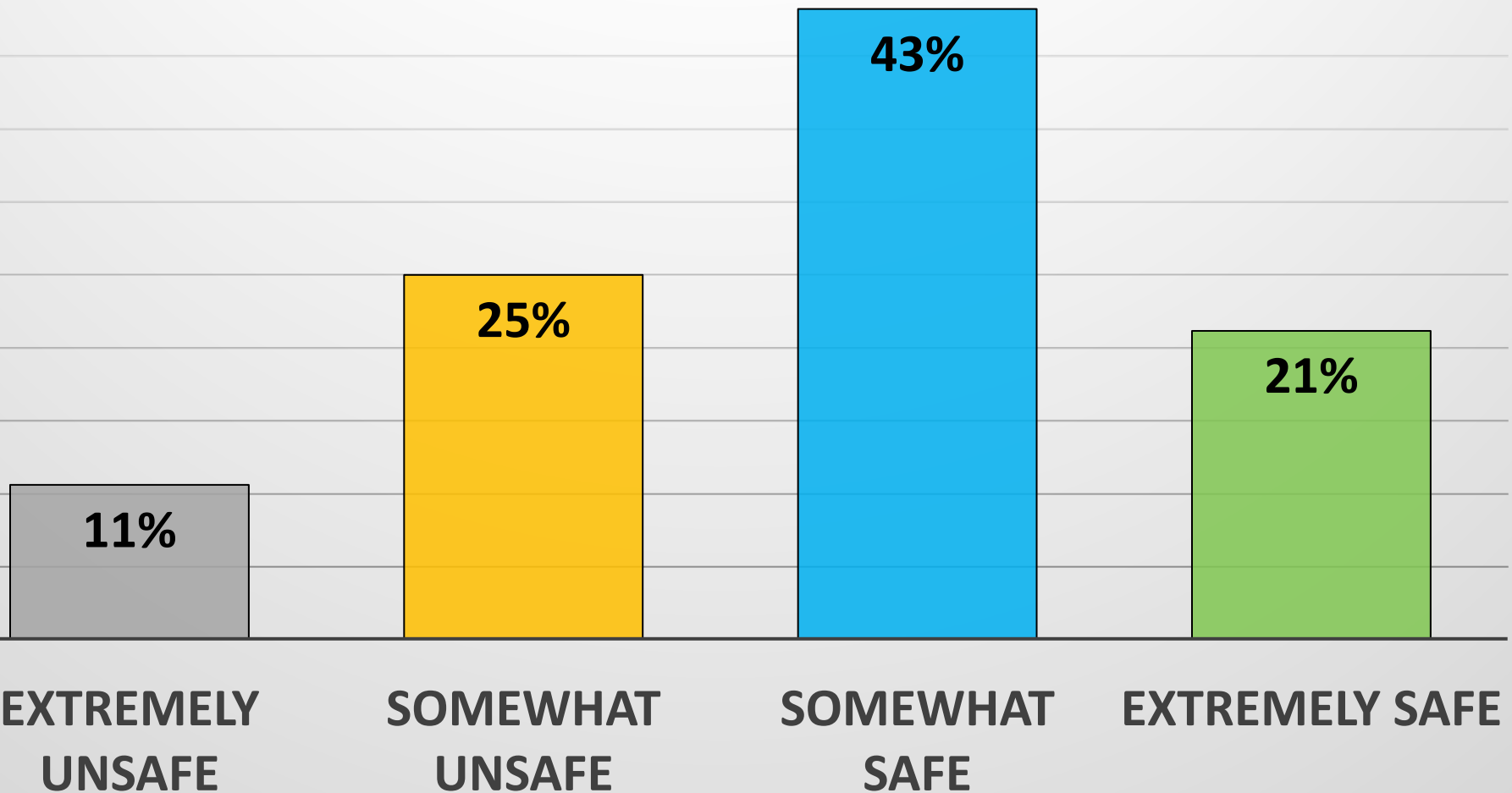
SUMMARY OF KEY HOUSING ISSUES

- Residents were overwhelmingly willing to consider relocating (or home buyouts where applicable) to avoid future flooding.
- The major barriers are lack of affordable housing in the area.
- Respondents desire to reside close to where they currently live and work (<5 miles preferred).

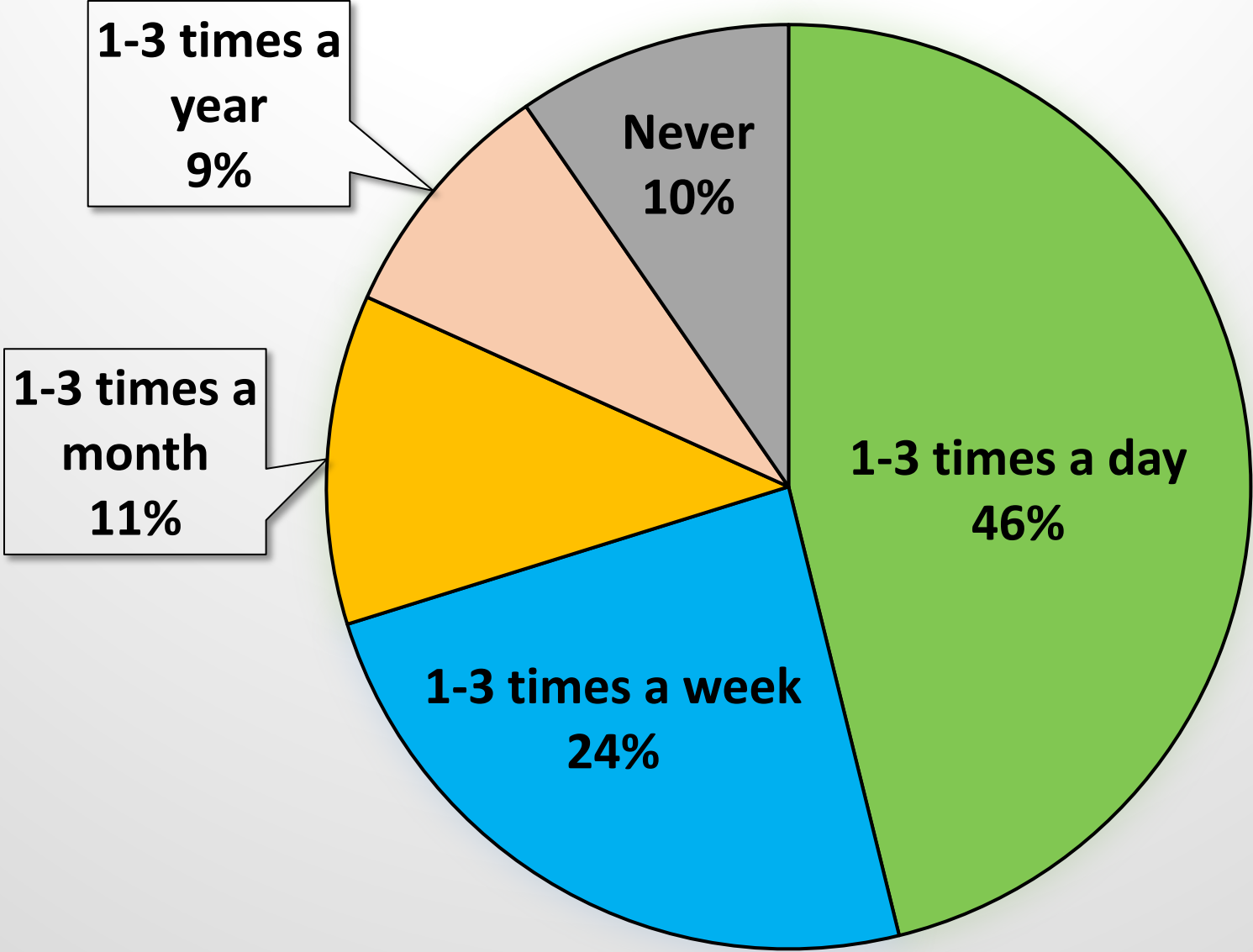


DATA ANALYSIS: PEDESTRIAN SAFETY

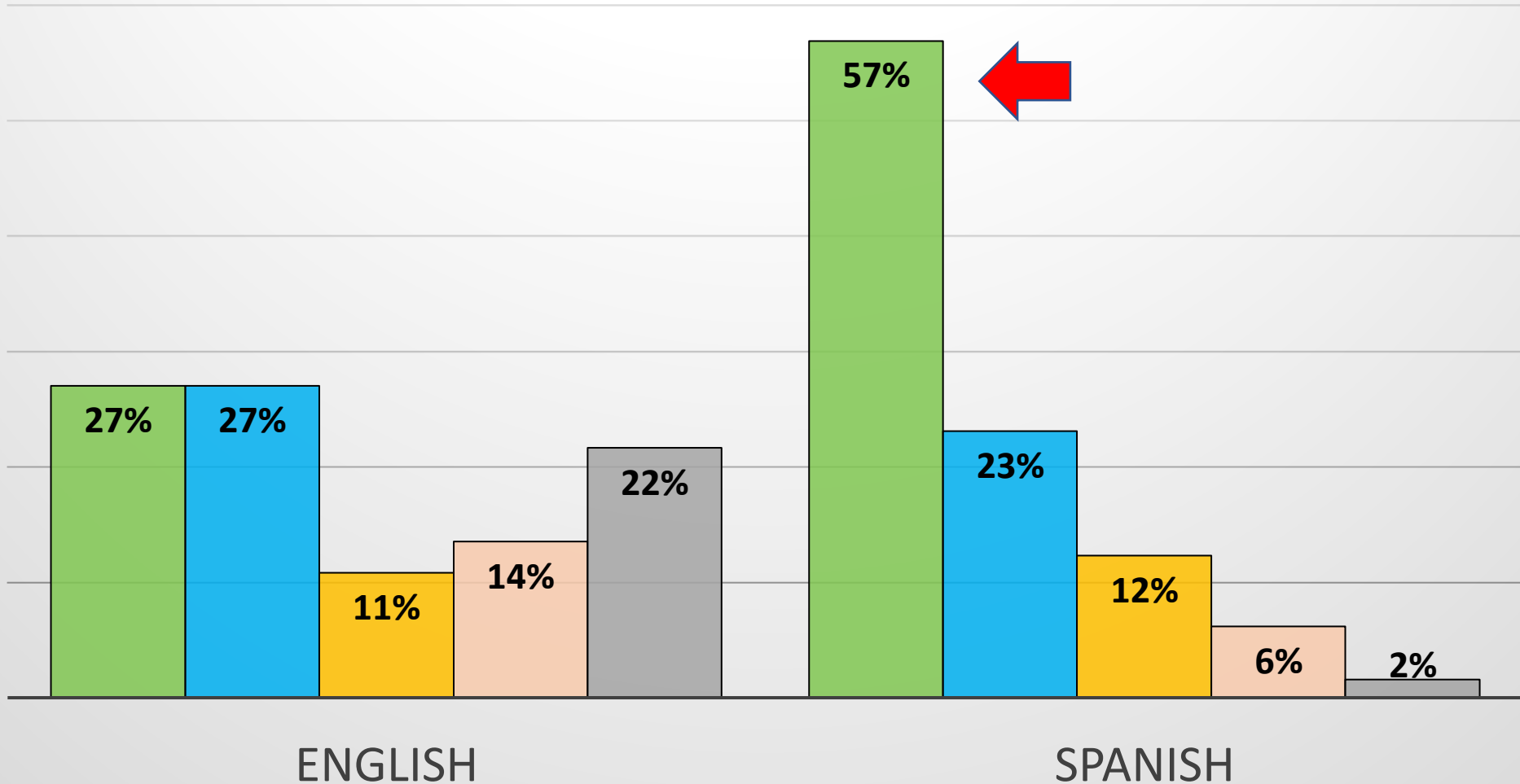
Q: HOW SAFE DO YOU FEEL WALKING GIVEN CURRENT TRAFFIC LEVELS AND PATTERNS?



FREQUENCY OF CROSSING ROUTE 41



FREQUENCY OF CROSSING ROUTE 41 BY PRIMARY LANGUAGE



1-3 times a day

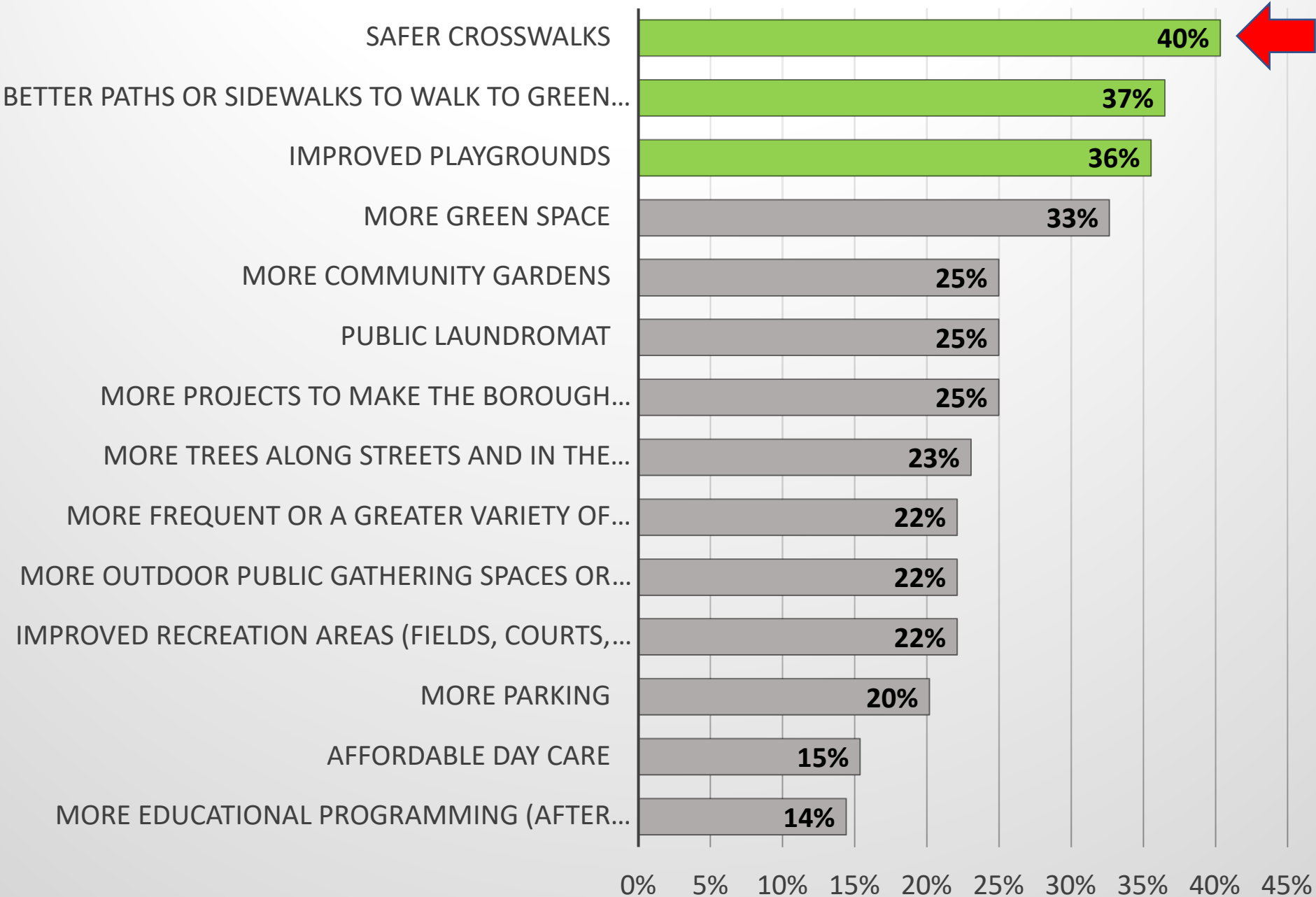
1-3 times a week

1-3 times a month

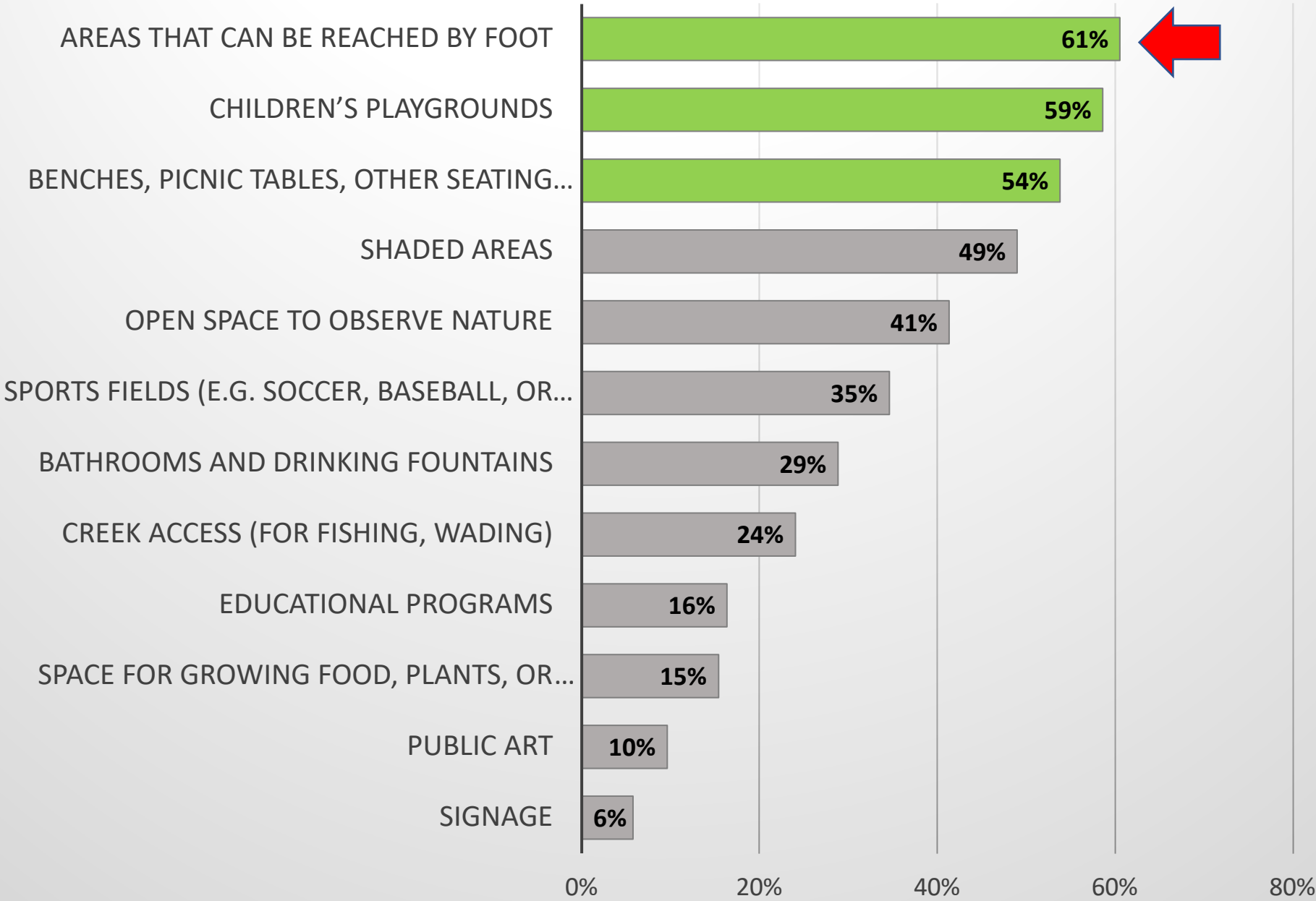
1-3 times a year

Never

DESIRED CHANGES FOR AVONDALE BOROUGH



IMPORTANT ELEMENTS OF PARK & OUTDOOR SPACES



SUMMARY OF PEDESTRIAN SAFETY ISSUES

- A third of respondents feel unsafe walking in Avondale given current traffic levels and patterns.
- Route 41 is crossed regularly, but more frequently by Spanish speakers.
- Safer crosswalks are desired by the entire community
- Areas that can be reached by foot are considered an important element of a park or outdoor space.
- Better Street Drainage was a favored mitigation strategy (this can be combined with safer crosswalks).

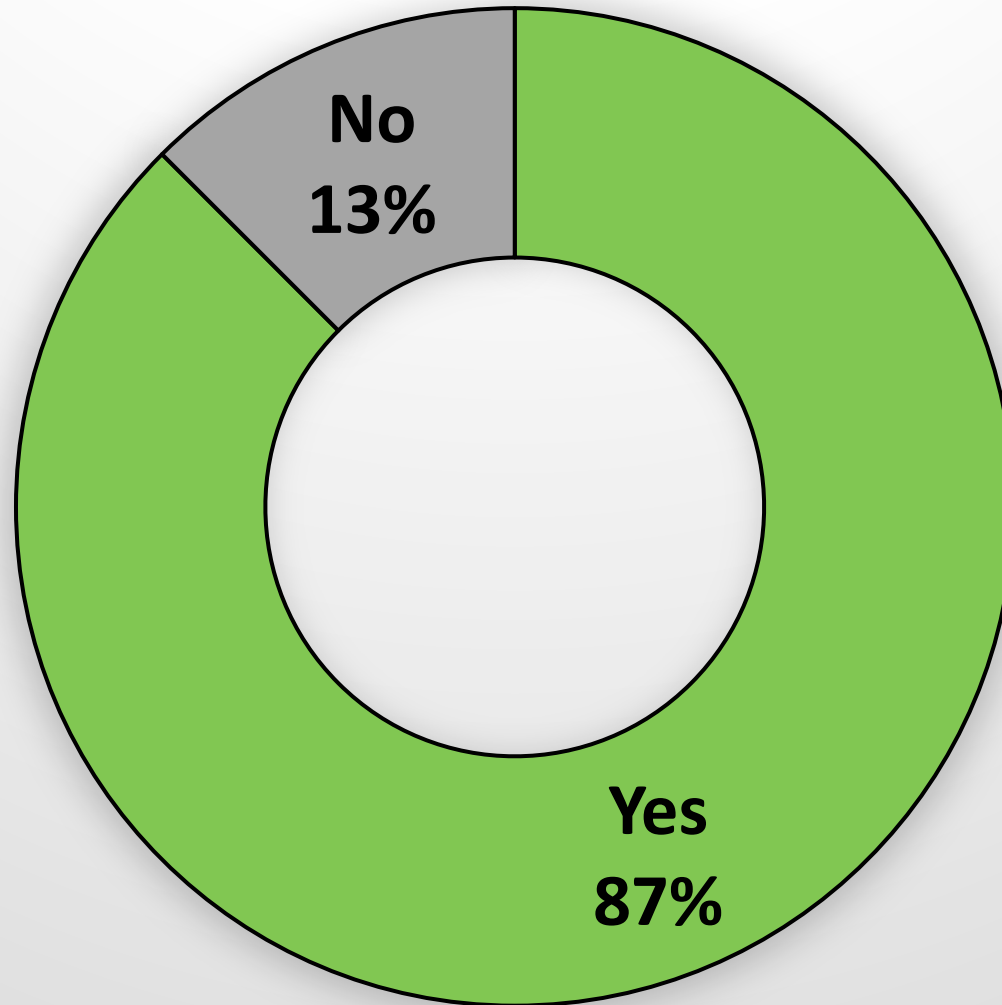




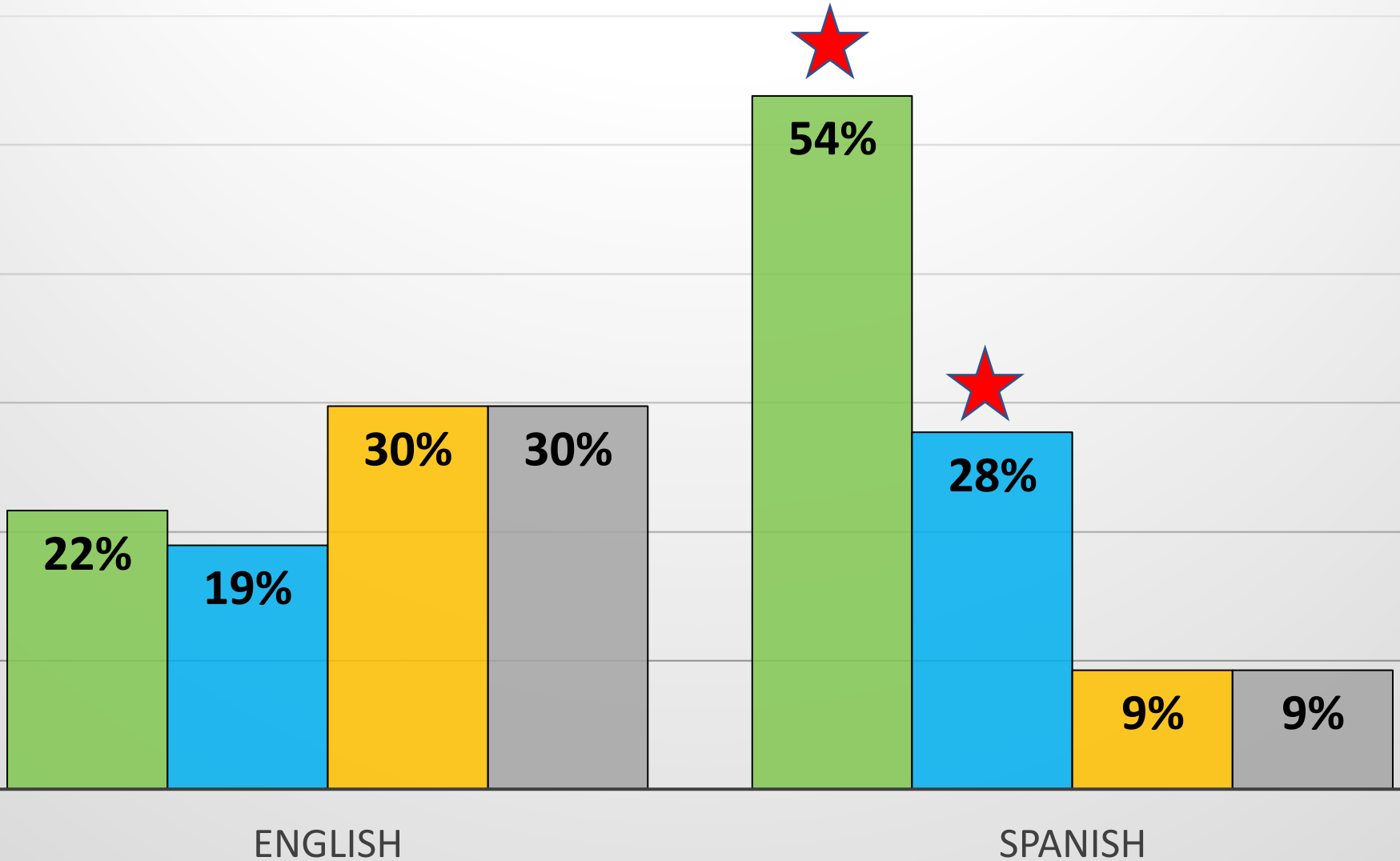
DATA ANALYSIS: DESIRED AMMENITIES



DO YOU HAVE REASONABLE ACCESS TO OUTDOOR SPACE?

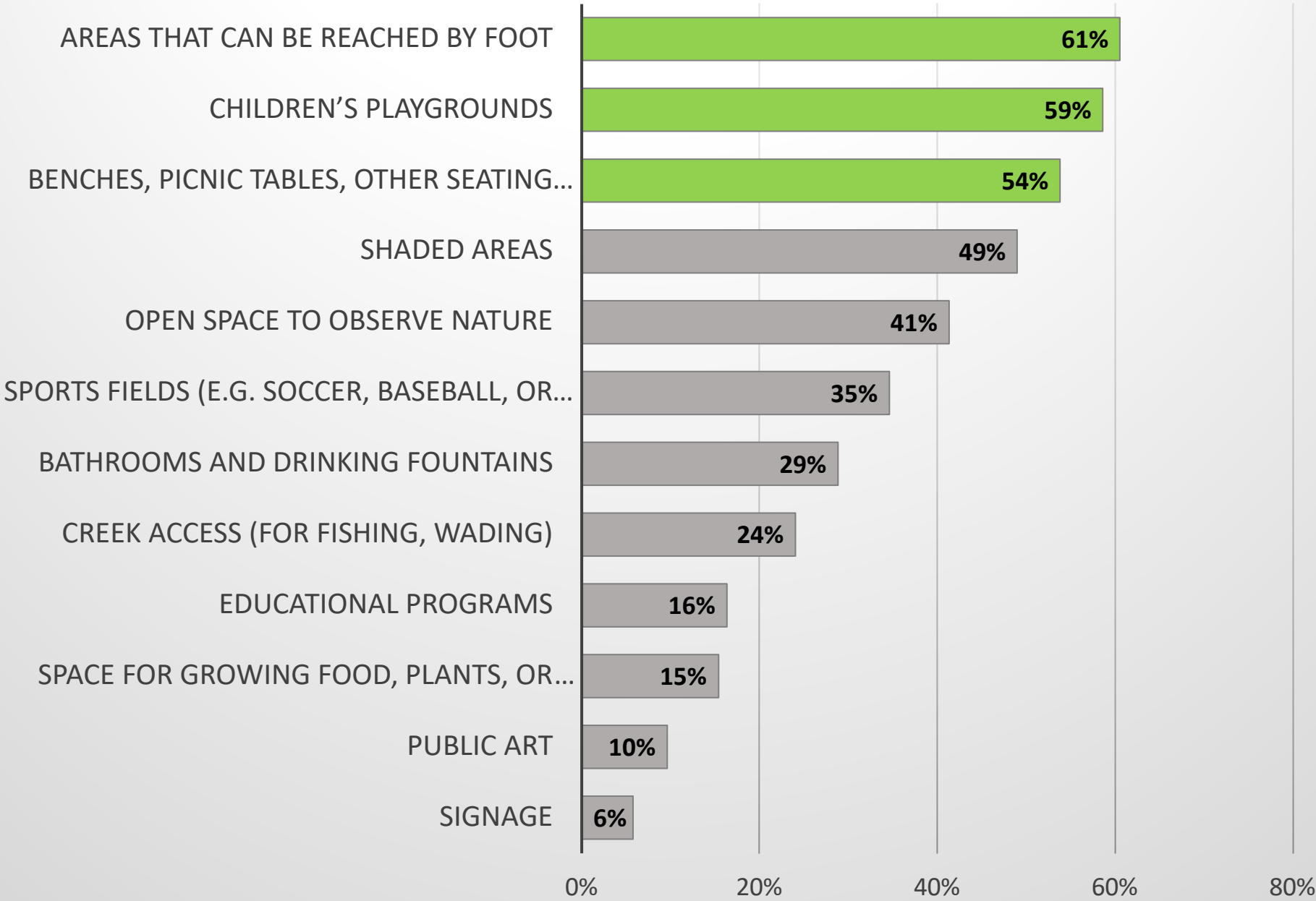


FREQUENCY OF PARK USE BY PRIMARY LANGUAGE

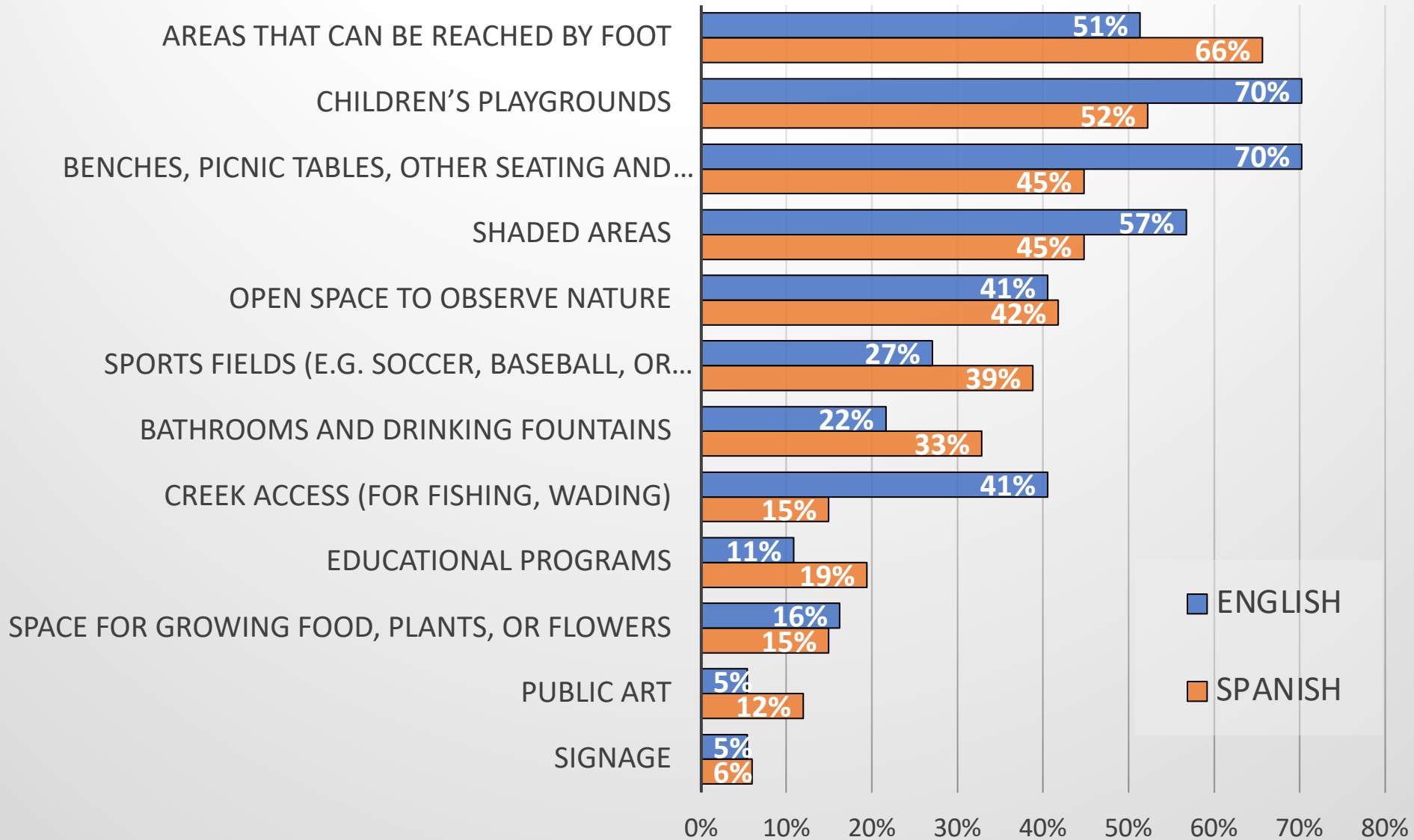


■ 1-5 times a week ■ 1-5 times a month ■ 1-5 times a year ■ Never

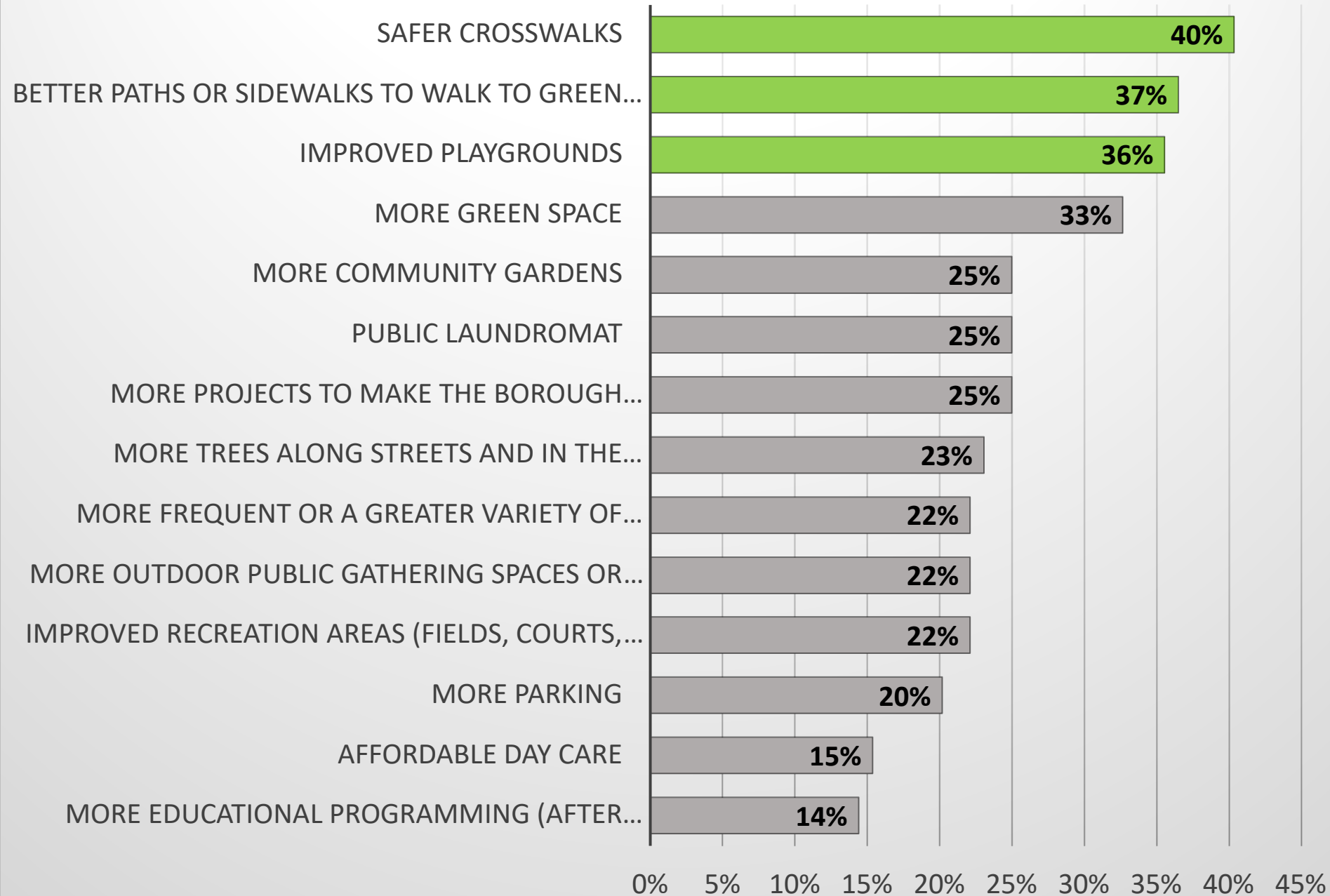
IMPORTANT ELEMENTS OF PARK & OUTDOOR SPACES



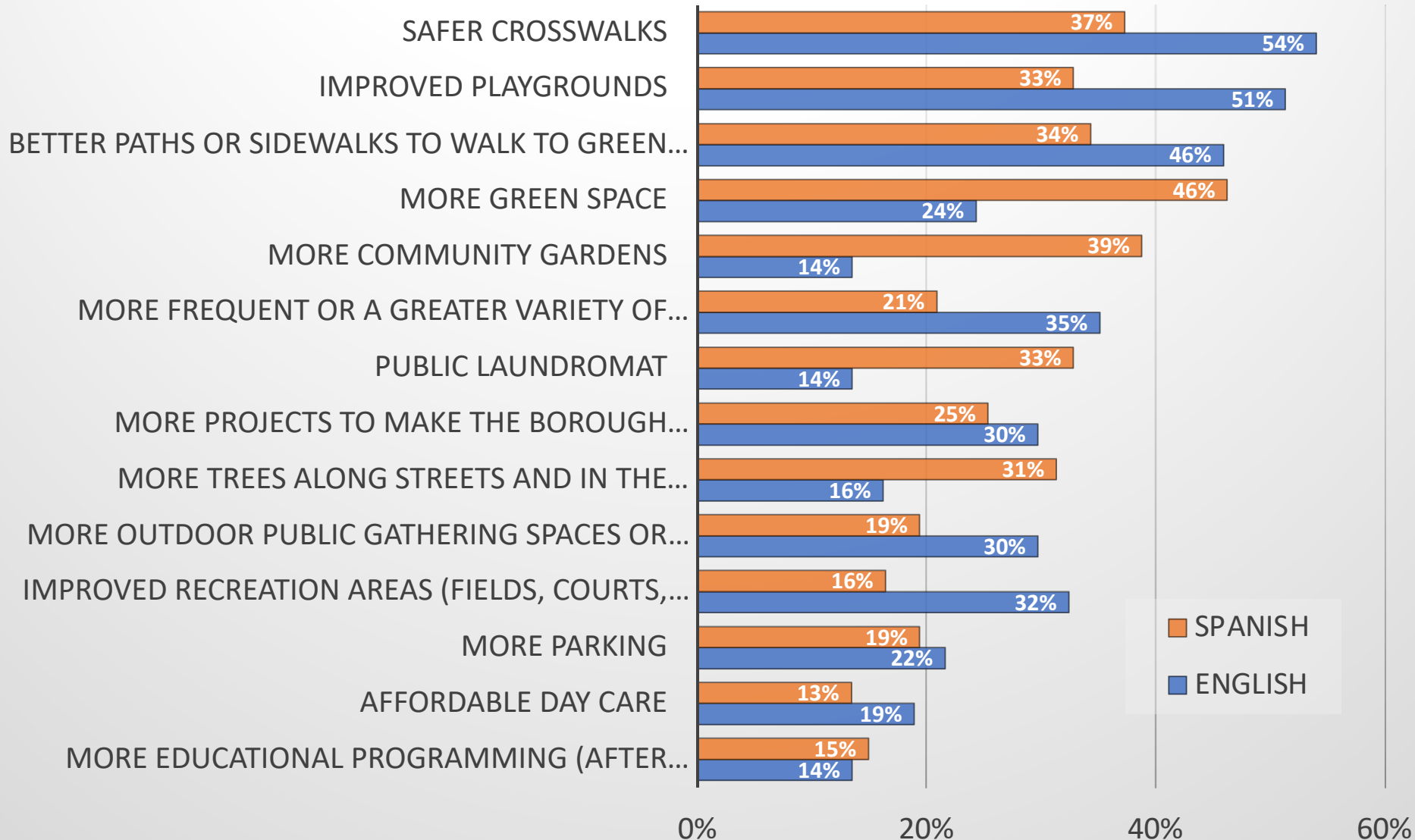
IMPORTANT ELEMENTS OF PARKS & OUTDOOR SPACES BY RESPONDENTS' PRIMARY LANGUAGE



DESIRED CHANGES FOR AVONDALE BOROUGH

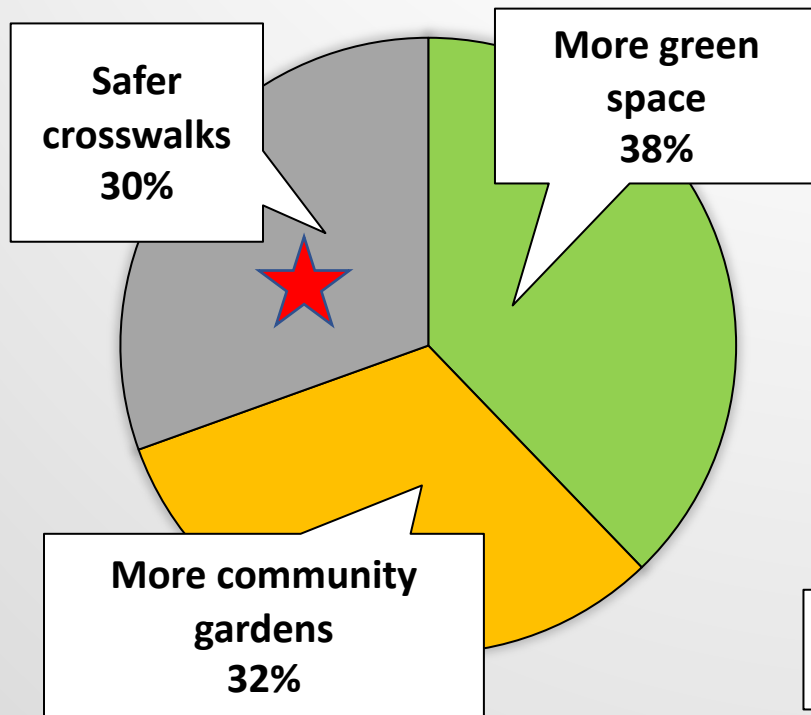


DESIRED CHANGES FOR AVONDALE BOROUGH BY PRIMARY LANGUAGE

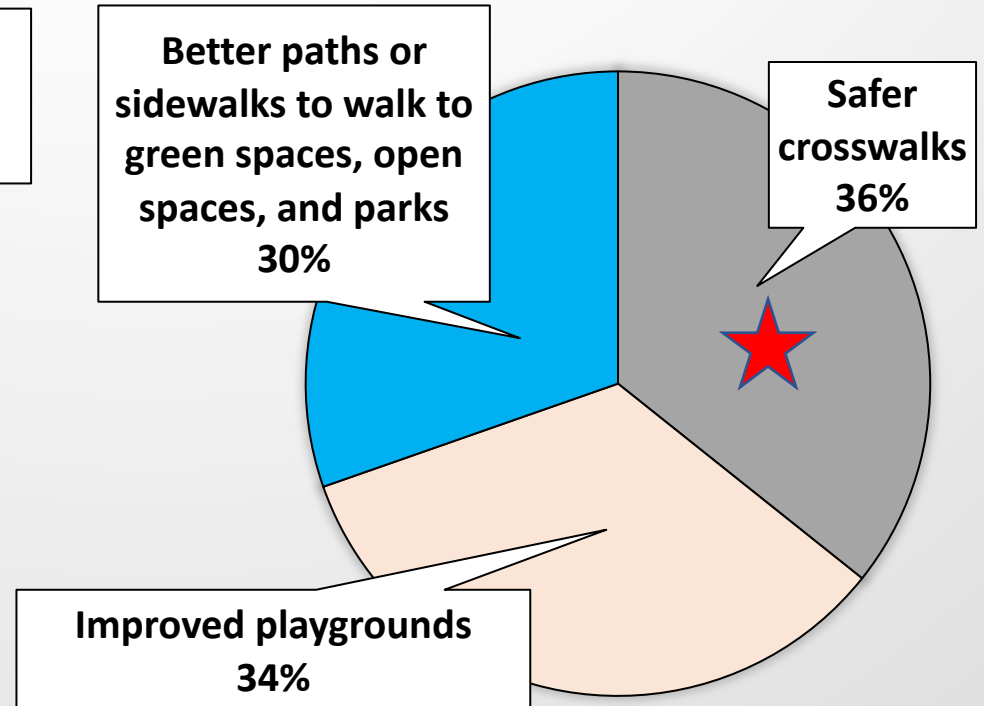


TOP THREE DESIRED CHANGES FOR AVONDALE BOROUGH BY PRIMARY LANGUAGE

SPANISH

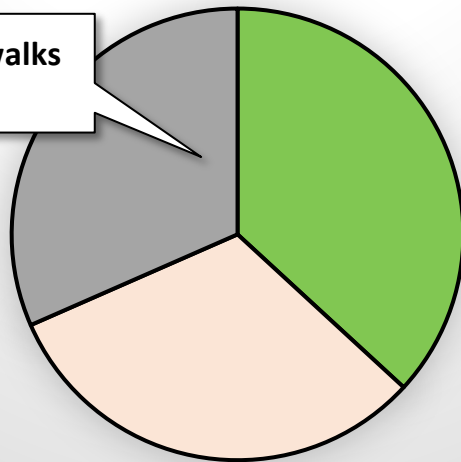


ENGLISH



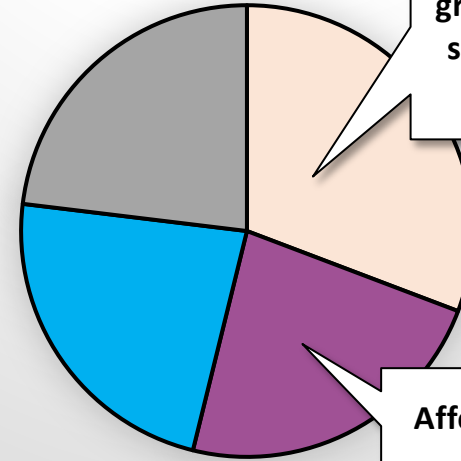
TOP DESIRED CHANGES FOR AVONDALE BOROUGH BY SECTION OF TOWN

SECTION A



Safer crosswalks
32%

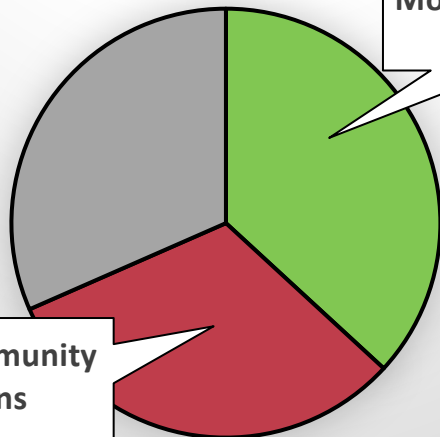
SECTION C



Better paths or sidewalks to walk to green spaces, open spaces, and parks
31%

Affordable Day Care
23%

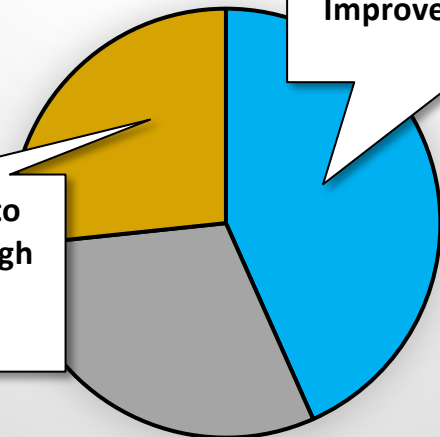
SECTION B



More green space
37%

More community gardens
31%

SECTION D



Improved playgrounds
43%

More projects to make the Borough beautiful
27%

SUMMARY OF DESIRED CHANGES TO AVONDALE

- Overall, respondents feel they have reasonable access to outdoor space
- Municipal parks see high visitation (1-5 times per week) with Spanish speakers being the primary users.
- Areas that can be reached by foot, children's playgrounds, other seating and gathering spaces, and shaded areas were considered the most important elements to an outdoor space by all
- Green spaces that absorb rainwater and better street drainage were the top two desired mitigation strategies the community would like to see used to reduce the impacts of flooding. These can be overlapped with pedestrian safety and desired town and park amenities to provide multiple, layered benefits to the community.

NEXT STEPS



Lay groundwork for continued community advocacy outside of the scope of this project (ex. housing)



Incorporate the needs and desires of the community into the overall greening plan for layered benefits.



Continue to engage with the Community and Borough Council on these issues.



Incorporate Community Led Research into future outreach efforts.

TAKE AWAYS



CLR is a useful strategy to help support more equitable investments



CLR can supplement information gathered through more typical engagement processes



CLR can lead to better projects - designed to provide overlapping benefits