

THE RULES OF ATTACHMENT

ANGELA MINSTER

TEMPLE UNIVERSITY

The Knight Foundation surveyed residents in 26 communities across the United States annually from 2008 to 2010. The survey, named The Soul of the Community, is designed to discover what makes people more **ATTACHED** to their community. Attachment is important because it has been shown that attachment is positively correlated with local GDP.

In the survey data, **ATTACHMENT** is calculated from responses to a set of questions about **LOYALTY** and **PASSION**. The remaining questions concern one of 11 categorized, each summarized by a **METRIC** (see graphic at left). Finally we also consider 9 **DEMOGRAPHIC** questions.

We'll find in our analysis that there is not a single driver of attachment. Almost all of the variables (demographics & metrics) relate to attachment to some degree. We'll show that a model can be built describing 87% of the variation in mean community attachment which uses 19 of the 21 variables.

COMMUNITY ATTACHMENT:

LOYALTY + PASSION

driven by the metric variables:

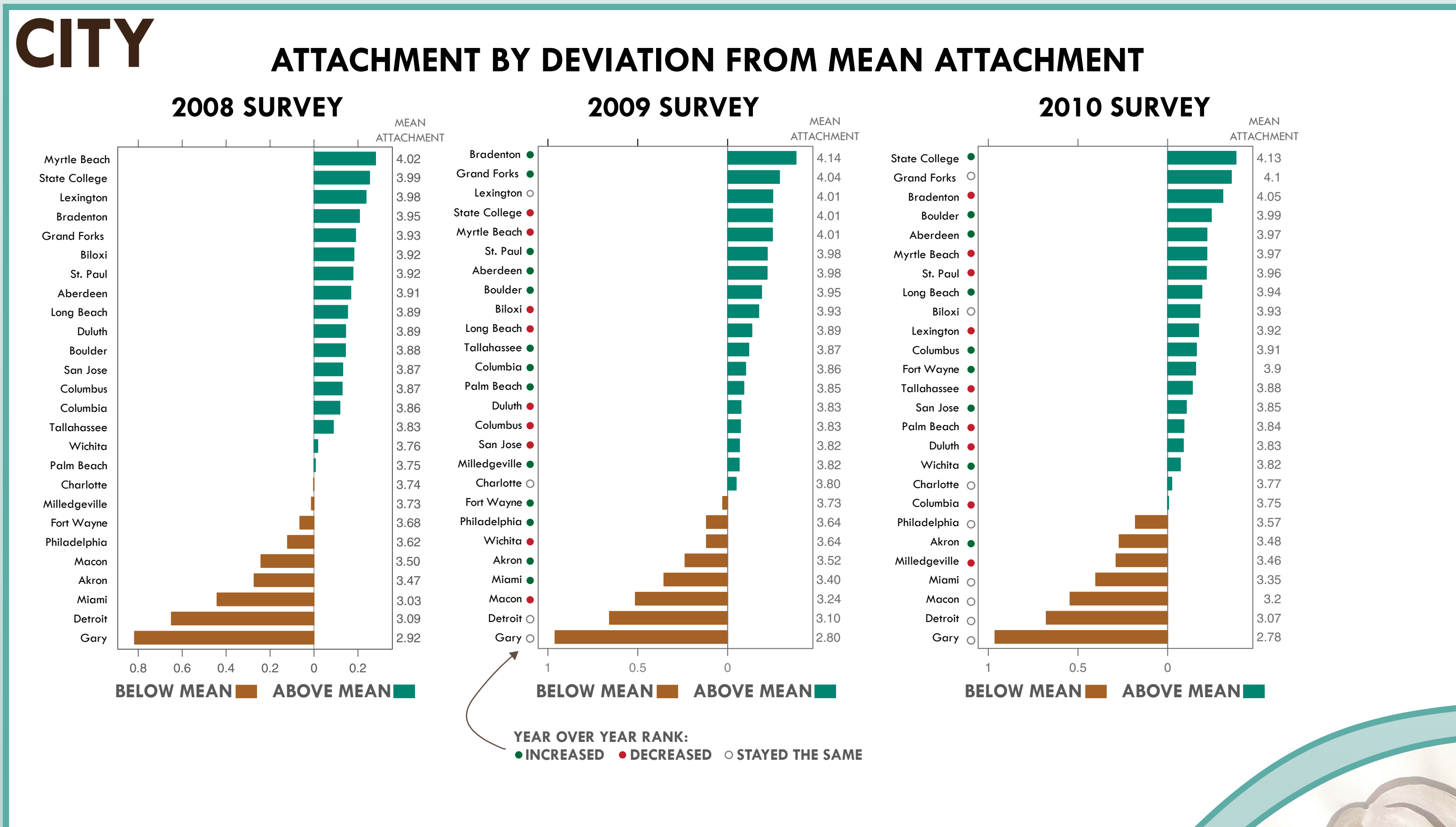
**SOCIAL OFFERINGS • AESTHETICS • EDUCATION • SAFETY
OPENNESS • BASIC SERVICES • ECONOMY • SOCIAL CAPITAL
LEADERSHIP • EMOTIONAL WELLNESS • CIVIC INVOLVEMENT**

together with demographics:

**INCOME • CHILDREN <18 • MARITAL STATUS
HOUSEHOLD SIZE • AGE • EDUCATION • GENDER
HOMEOWNERSHIP • YEARS IN THE COMMUNITY**

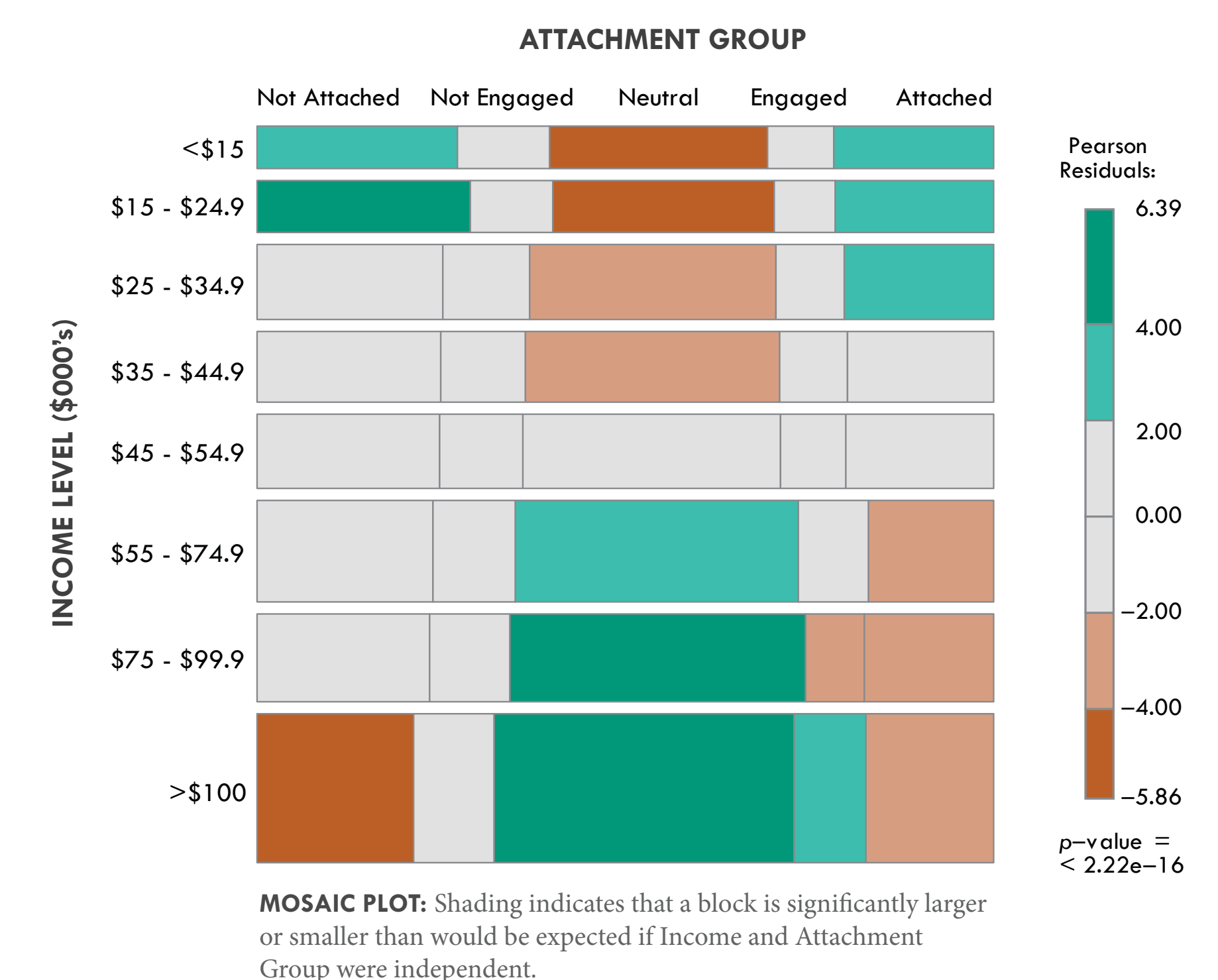
DEMOGRAPHICS

Who is Attached? Where are they and what are they like?



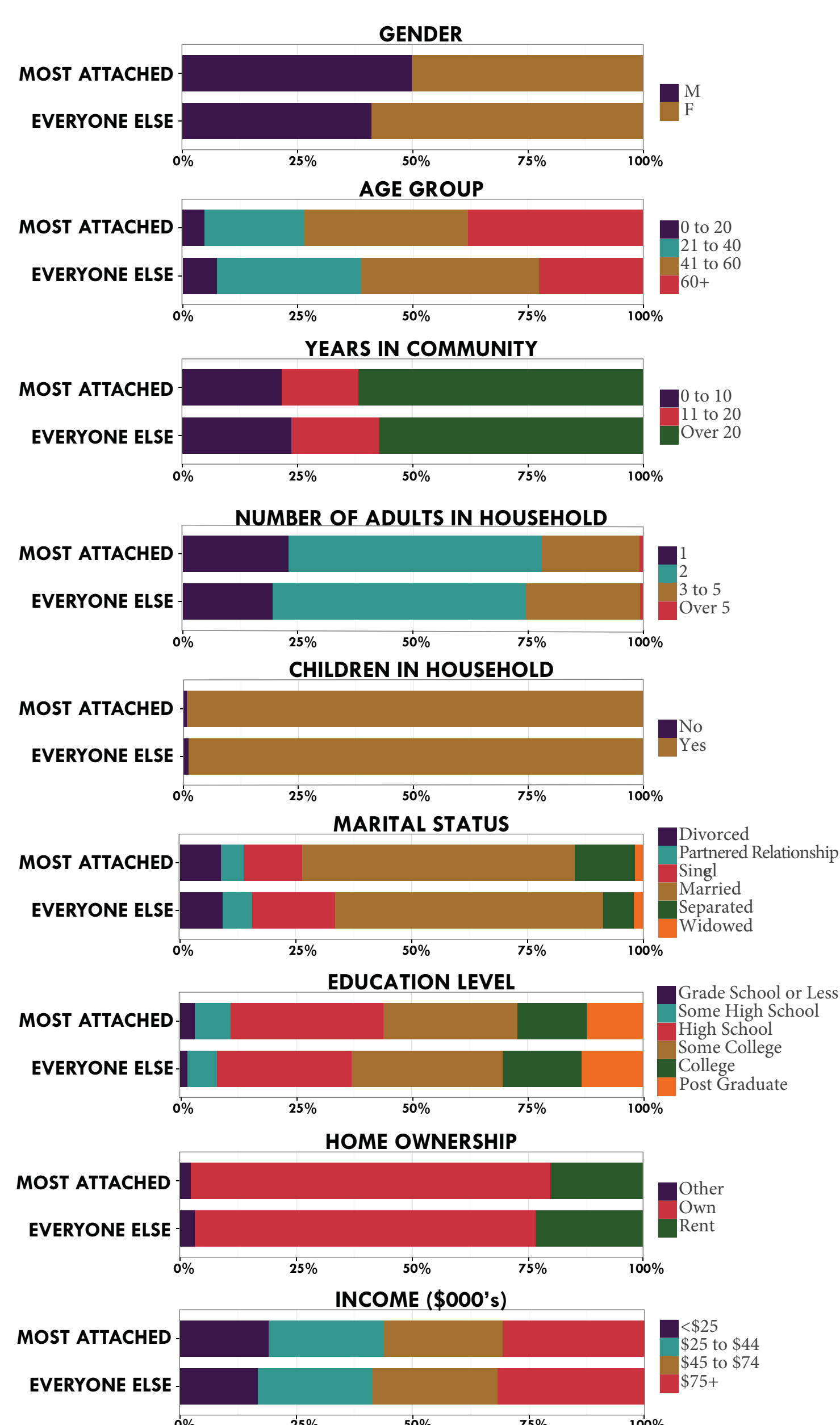
INCOME

Mean attachment does not vary across income groups, yet when we plot attachment group against income level we see that **lower income residents are more polarized**, significantly more attached or less attached, while **higher income residents are more likely to be neutral**.



MOST ATTACHED

Demographics of 75th Percentile Attachment



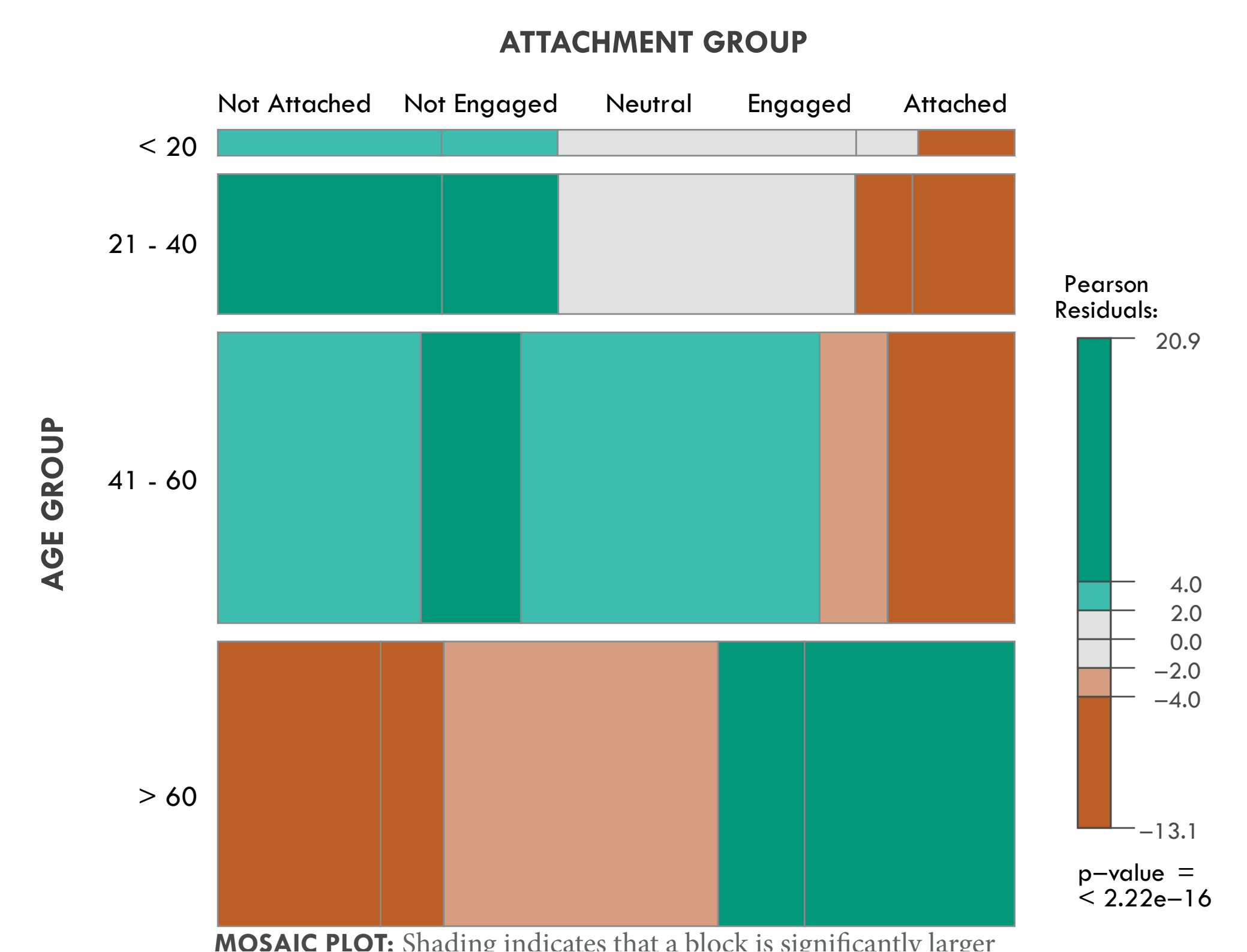
THE MOST ATTACHED PERSON

Although a person's attachment cannot be completely described by demographic variables, if we could create the "most attached" person they would likely be:

- Female
- At least one dependent under 18 in the household
- Marital status: separated
- Education level: some college
- 60 + Years Old
- Has lived in their city 20+ years
- Only adult in the household
- Homeowner
- Earns less than \$25,000 per year

AGE GROUP

Attachment also varies by age. Again, while a scatter plot of age vs. attachment would not show an interesting trend, we can see from the mosaic plot that **younger residents tend to be less attached and older residents tend to be more attached**.

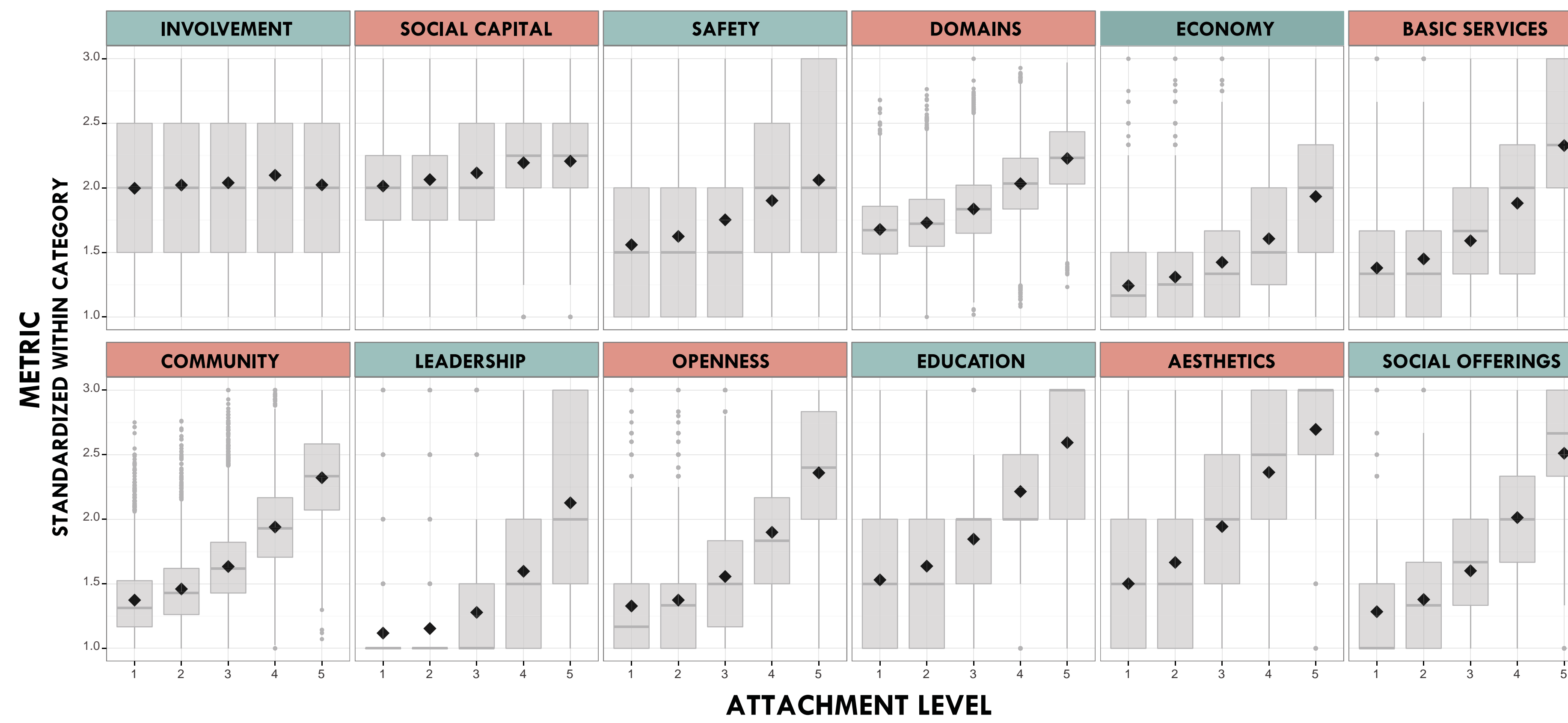


THE METRICS

Which aspects of a community are most influential to attachment?

We can see that involvement and social capital are nearly constant across attachment levels while the means of social offerings, openness and aesthetics vary greatly across attachment levels.

This indicates that some metrics are more important than others in explaining attachment. The graph also indicates that involvement and social capital may not be useful variables in modeling attachment.



ATTACHMENT LEVEL KEY:

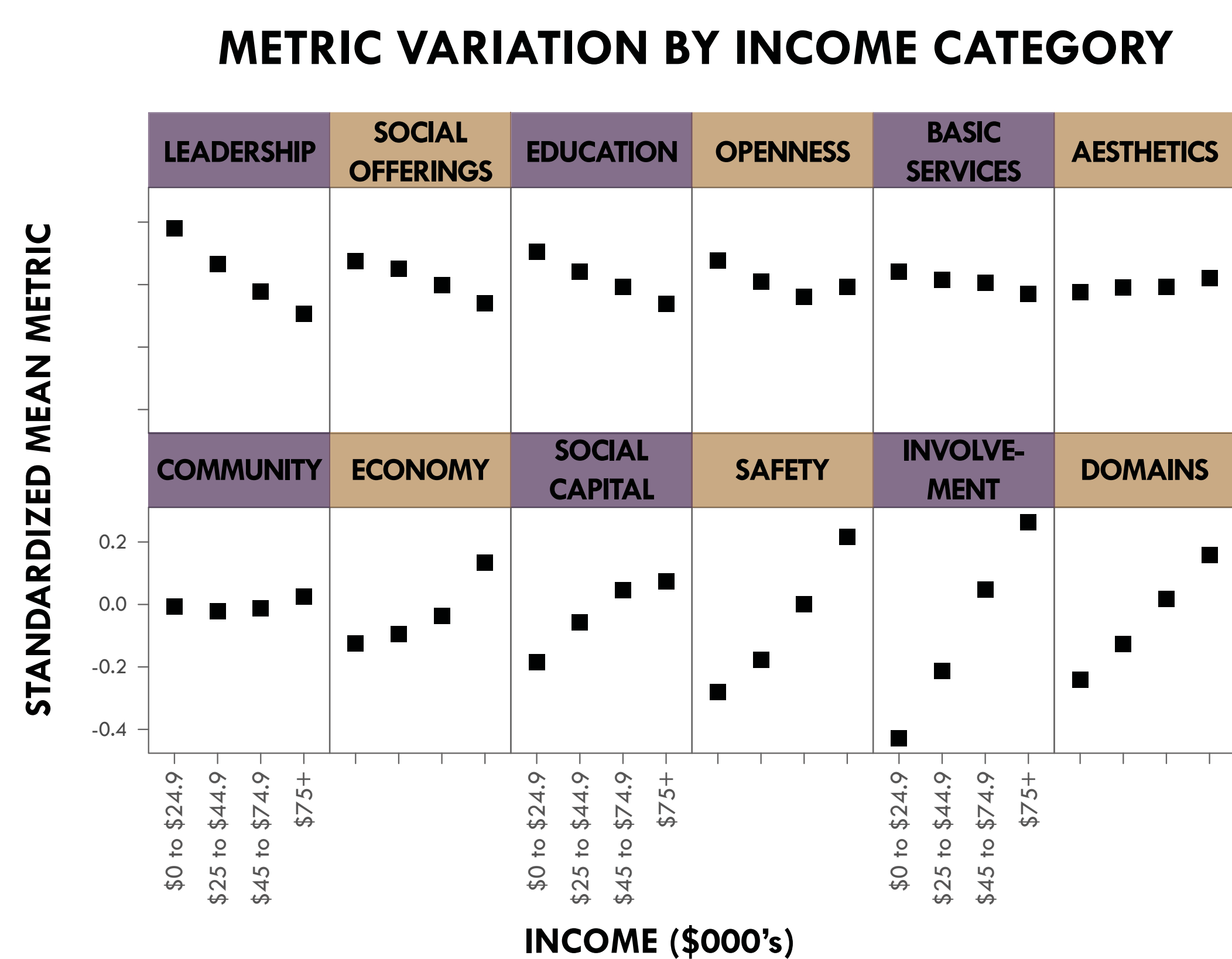
Level	Interval	%
1	[1,2)	8%
2	[2,3)	14%
3	[3,4)	30%
4	[4,5)	39%
5	5 only	9%

INTERACTIONS

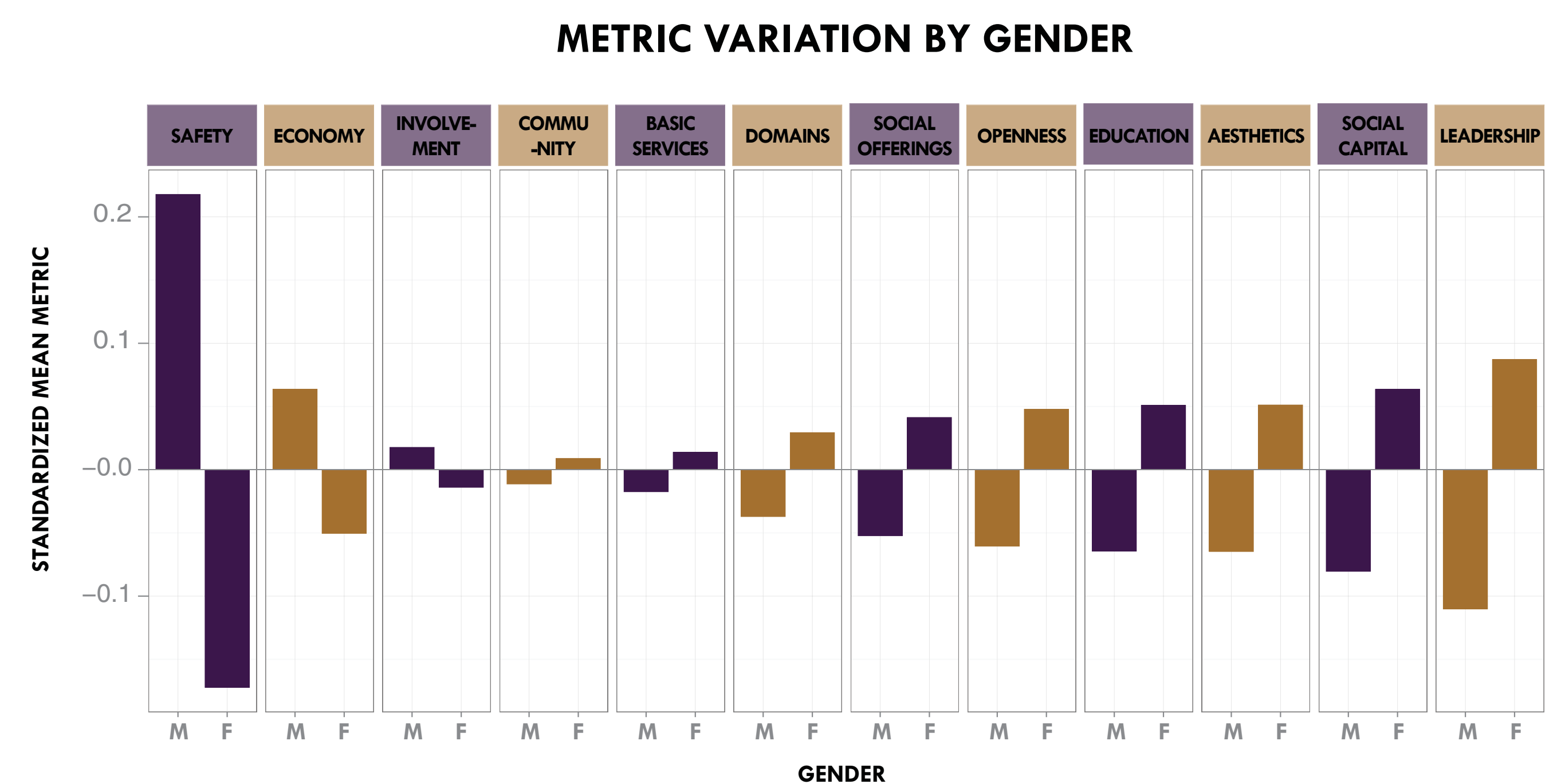
Some metrics vary significantly by demographic groups.

There is some interaction between demographics and metrics. For example, the graph to the right shows how some metrics vary by income category.

While this variation is very interesting, it turns out that the metrics that vary most by income are the ones that vary least by attachment level (as seen in the graph above).



This graph shows that there are some metrics that vary by gender, the most significant are leadership and safety. Aside from income and gender, note of the other demographics showed interesting variation within each metric category.



A MODEL FOR ATTACHMENT

Pulling it all together

MODEL

We create a model of Mean Attachment by City which uses 19 of the 21 variables as follows:

1. Use Sliced Inverse Regression to reduce the dimension from 19 variables to 2 variables: a linear combination of the Demographics and a linear combination of the Metrics,
2. Fit a linear model to explain attachment using the 2 “new” variables.

RESULTS

The linear model is highly significant with a p -value close to zero and $R^2 = 0.87$.

$$\text{Attachment} = \text{Intercept} + \text{Demographics} + \text{Metrics} + \text{Error}$$

$$Y = -1.94 + 0.15 \text{ Demographics} + 1.30 \text{ Metrics} + \text{Error}$$

We have created a model for mean attachment at the city level that uses 19 variables without over fitting or complicated variable selection procedures. We are able to explain the relationship between attachment and all of the metric and demographic variables in a easy to understand yet very accurate model.

