UNIVERSIDAD LOYOLA
Instituto de Desarrollo
Fundación ETEA

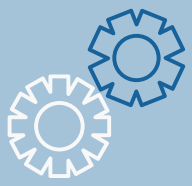
LOYOLA BEHAVIORAL LAB

Impact Evaluation

"Málaga Puerto Verde"

Causal impact evaluation

To estimate the causal effect of the intervention or treatment

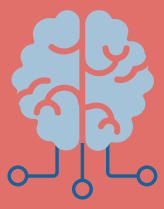


Challenges

Missing data

Memory recall

Data collection by recalling experiences



Ability to recall past events

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Effectiveness of the "Málaga Puerto Verde"

Impact Evaluation "Málaga Puerto Verde"

Málaga´s Puerto Verde initiative is a project aimed at developing a sustainable and environmentally friendly port in the city of Málaga, Spain. The project is part of a broader effort to promote sustainable tourism and economic development in the region as well as social responsibility. Overall, the Málaga Puerto Verde initiative has the potential to provide significant social benefits for local communities, improving their quality of life, fostering social cohesion, and promoting a sense of shared responsibility for the sustainable development of the region.

The goal of an impact assessment is to provide decision-makers with information on the impact of the outcome variable, this is the variable of interest that you want to measure the effect of the treatment on. In the case of Malaga, the purpose of the impact assessment is to know the extent to which the project has influenced the lives of the residents of Malaga's port.

Causal impact evaluation

The difference-in-differences (DID) method is a statistical technique that compares changes in outcomes over time between two groups: a treatment group that receives an intervention or treatment, and a control group that is similar to the treatment group in all relevant characteristics except for the treatment.

The purpose of the DID method is to estimate the causal effect of the intervention or treatment by controlling for other factors that may be affecting the outcome. This is achieved by comparing the changes in outcomes over time in the treatment group to those in the control group.

To implement the DID method, researchers typically collect data on both the treatment and control groups before and after the intervention. They then calculate the difference in outcomes between the pre- and post-intervention periods for each group and subtract the difference in outcomes in the control group from the difference in outcomes in the treatment group. This difference in differences provides an estimate of the causal effect of the intervention or treatment, net of other factors that may be influencing the outcome.

Difference pre-post for the treatment group (T):

$$Dif_1 = y^T_{post} - y^T_{pre}$$

Difference pre-post for the control group (C):

$$Dif_2 = y^C_{post} - y^C_{pre}$$

DiD estimator:

$$DiD = Dif_1 - Dif_2$$

Estimating a DID in Málaga: Challenges

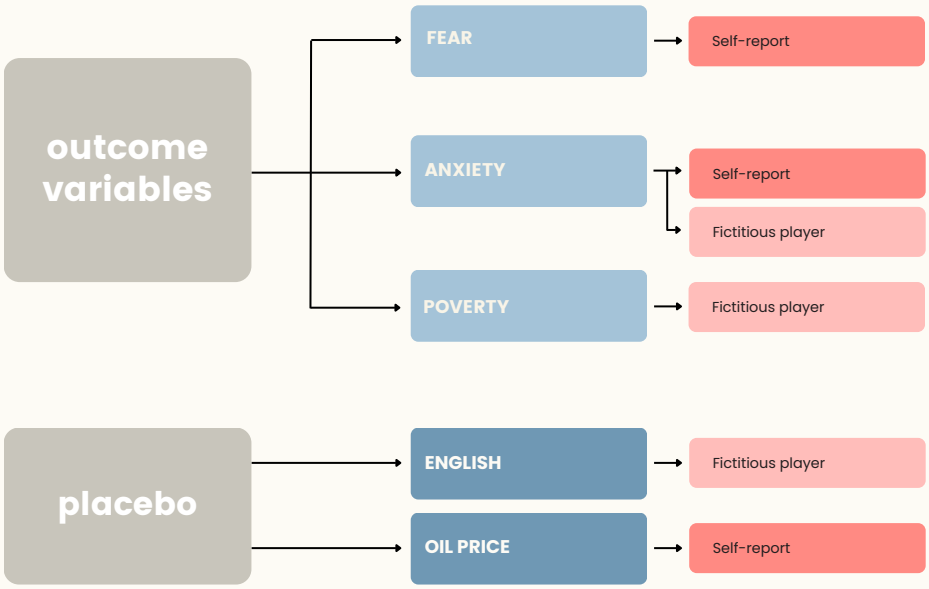
The control group we determined were the residents of nearby beaches in Málaga (Playa del Palo y Playa de la Misericordia) that by not being in the Port were excluded of Málaga´s Puerto Verde initiative. In theory, this control group should be identical to the treatment group in terms of demographics, socio-economic characteristics, and other relevant factors that may affect the outcomes of interest.

Next, we needed to collect data for pre- and post-intervention periods for both the treatment and control groups and calculate the difference in differences between the two groups. Here is where trouble presents itself. Because the impact evaluation we wanted to do was being done after the project, we had post-data but not pre-data. We can´t go back in time and collect data we should have, but what we can do is ask the people who were there at the time what they remember about life back then.

Memory recall

Collecting data through memory recall involves asking individuals to remember past events, experiences, or behaviors and report them to the researcher. This method can be useful in situations where other sources of data are not available or when the data collected from those sources may be unreliable or incomplete, which was our case.

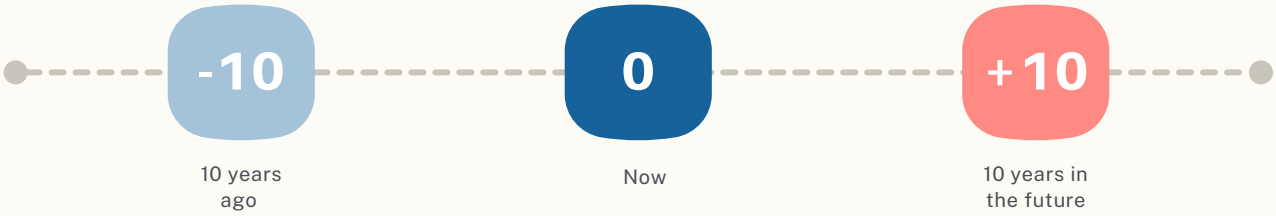
To collect data through memory recall we used a survey to ask individuals about their past experiences or behaviors related to the outcome variables: fear for safety, anxiety, and poverty. We asked individuals to recall their experiences regarding changes in economic opportunities, quality of life and safety outcomes before and after the implementation of the initiative.



Timing

The same questions were asked regarding 10 years ago (-10), now (0) and 10 years in the future (+10), with the first set referring to the past, the second set focusing on the present, and the third set capturing expectations for the future.

The order in which the questions were asked was random for the "now" and "10 years ago" items, while the "10 years in the future" questions were always asked last. This approach was taken to mitigate the framing effect, which can occur when the order in which questions are asked – or information is presented – can influence participants' responses.



Fictious player

Because of the sensitive nature of the questions being asked in the survey we anticipated that individuals were likely to be less honest with their answers, particularly regarding the anxiety and depression questions (i.e., do you suffer from anxiety). This bias occurs when individuals may feel pressure to provide socially acceptable answers rather than truthful responses.

Because of this we designed a “fictious player” question by asking individuals to report on the prevalence of a behavior or condition among their peers, rather than themselves, it can reduce the impact of social desirability bias and provide more accurate information (i.e. how many people out 10 suffer from anxiety in your neighborhood?)

Our suspicions were confirmed when comparing DiD for both self-reported and fictious-player, while the impact was very similar the data collected was different, people reported lower levels of anxiety when asked directly than when asked about their neighbors. This finding suggests that individuals may be more likely to underreport their own anxiety levels due to social desirability bias or stigma surrounding mental health issues. The use of the fictitious player question provided a more accurate picture of the prevalence of anxiety in the community.

Placebo measurements

To ensure that estimated effects are honest and not the result of confounding variables we also computed the DiD of two placebo variables that had no correlation with the project and thus should have no impact: the oil price in € and the number of English speakers in the neighborhood.

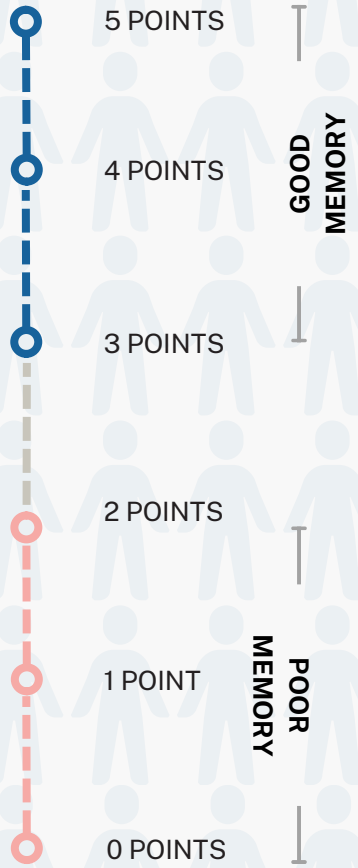
The placebo variables in fact show no impact, this helps validate the results of the analysis by demonstrating that any observed effects are likely due to the variable being studied, rather than other factors.

Ability to recall past events

One potential limitation of collecting data through memory recall is that it relies on individuals' ability and willingness to accurately remember and report their past experiences. Memory recall can be affected by various factors, such as the passage of time, emotional state, and cognitive biases, which can lead to inaccuracies or distortions in the data.

To mitigate this limitation, we used a “memory” test. The test consisted of five yes-or-no questions related to past events (music, politics, or sports related question) with a true value. Participants get a final score (over 5) based on their correct answers.

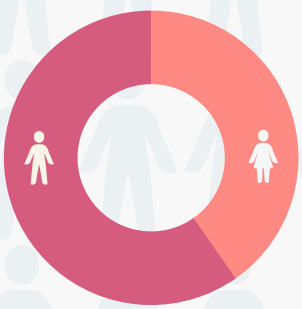
Participants who scored above three were classified as having good memory, while those who scored below three were classified as having poor memory. This was done to improve the accuracy and reliability of the data collected through memory recall to cross-check and validate the individual’s ability to remember (good memory or poor memory).



Sample

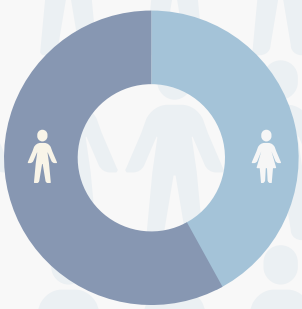
The collection of data involved 311 samples, consisting of 162 treatment and 149 control groups. The control group consists of 59.7 men and 40.3% women with a mean age of 53, while the treatment group consists of 58% men and 42% women with a mean age of 52. It is important for the control and treatment groups to be similar in their characteristics, such as age and gender, to minimize the potential effects of these variables on the outcomes of the study, both groups are almost identical.

CONTROL



Age (mean): 53

TREATMENT

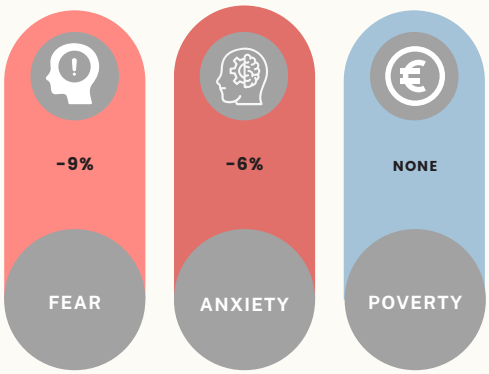


Age (mean): 52

DiD main results

The results of the difference in differences analysis suggest that the Málaga Puerto Verde initiative had a statistically significant impact on fear for safety and anxiety, but no impact on poverty. Specifically, the initiative led to a 9% reduction in fear for safety and a 6% reduction in anxiety.

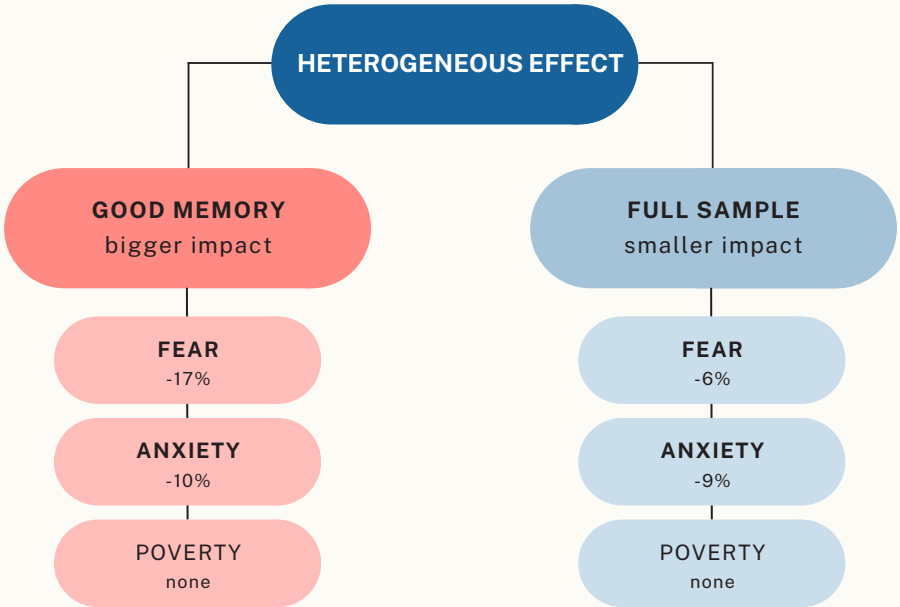
These findings are important because they suggest that the initiative was successful in improving the subjective well-being of residents in the area by reducing feelings of fear and anxiety related to safety concerns.



It's also worth noting that the robustness of the mechanism was confirmed through the use of placebo variables, which adds to the validity and reliability of the results.

As noted before a potential limitation of our analysis is that the whole DiD relies on subjects' ability to recall past events. In order to check whether our results are reliable we created a new sample – the good sample – formed only of good memory individuals. With this sample we redid de differences in differences analysis and found out that Málaga´s Puerto Verde initiative had a greater impact on fear for safety and anxiety.

This suggests that the initial analysis may have underestimated the true impact of the project. The new difference in differences showed that Málaga´s Puerto Verde initiative had an impact of -17% on fear for safety, -10% on anxiety, and still no effect on poverty.



Conclusions

"Málaga Puerto Verde" initiative has had a positive impact on reducing anxiety and fear for safety in the community, while not having a significant impact on reducing poverty. The use of the DiD method and placebo variables helped to ensure the validity and reliability of the results. Additionally, the inclusion of a memory score test and fictitious player questions helped to mitigate potential limitations in data collection methods.

Overall, the study provides valuable insights into the effectiveness of the "Málaga Puerto Verde" initiative and highlights the importance of using rigorous evaluation methods to ensure accurate and reliable results.