Green Tides

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Introduction

       Green Tides is a project about measuring sustainability for the city Imperial Beach in San Diego County. The goal is to understand what Imperial Beach is doing well and what areas they may be lacking in. Sustainability is about all citizens, and I believe we may find that Imperial Beach has some work to do to improve the way of living for half of its population.

SDGs

To measure sustainability, we will be looking at 4 of the 17 Sustainable Development Goals (SDG) created by the United Nations.

Goal 1 No Poverty

"End poverty in all its forms everywhere"

Goal 4 Quality Education

"Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all."

Goal 10 Reduced Inequalities

"Reduce Inequalities within and among countries"

Goal 16 Peace, Justice, and Strong Institutions

"Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels"

*All quotes are provided directly from the United Nations *The 17 Goals* website.[1]

Initial Research

       From my ethnography analysis (See Appendix A), it appears Imperial Beach is currently a city with 2 complete demographics. This can lead to the city focusing on improving areas near the beach and neglecting the people and land away from the beach.

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[1] United Nations. (n.d.). *The 17 Sustainable Development Goals*. UN Sustainable Development. Retrieved August 12, 2025, from https://sdgs.un.org/goals

Imperial Beach currently has one of the highest crime rates in San Diego County. This makes it hard for any city to flourish. I know not all crimes are on the same level and some research will need to be done to see why the crime rate is so high.

Besides poverty and no hunger, I believe quality education is the most important goal. No society can grow if their residents are uneducated. For Imperial Beach, I don't believe it will hinder city growth, but I do think it contributes to the disparity we see withing the city.

Poverty is an issue in a lot of places and Imperial Beach is no different. Looking at the differences in the 2 areas of the city we must assume poverty exists here as well. This will be a main focal point of Green Tides as well.

The main reason Green Tides chose Imperial Beach is due to its potential. A city that gets the number of tourists and foot traffic Imperial Beach gets; they should not have two different styles of living. Imperial Beach is a great city, but they have a lot to improve on to become sustainable.

Research Questions

The following questions align with the 4 SDG goals that we are focusing on. Based on the initial research and ethnography analysis we conducted, I believe these are four very strong questions that will help all Imperial Beach flourish.

- What poverty rate is Imperial Beach at and are they improving in recent years?
- Is it a lack of quality education that leads to income disparity?
- Why is Imperial Beach the highest crime rate in San Diego County?
- What inequalities does Imperial Beach have throughout its city?

Literature Review

This section will give a deeper background knowledge of Imperial Beach and how they measure currently with the 4 SDGs.

Background Knowledge

Providing some background knowledge on Imperial Beach is a website datausa.io. They provide a great amount of detail throughout the website and allow a reader to be able to understand the demographics and dynamics of a city in a quick manner. Below is summary from their *About* Section.

> In 2023, Imperial Beach, CA had a population of 25.9k people with a median age of 35.2 and a median household income of $79,071. Between 2022 and 2023 the population of Imperial Beach, CA declined from 26,157 to 25,897, a −0.994% decrease and its median household income grew from $75,731 to $79,071, a 4.41% increase.

> The 5 largest ethnic groups in Imperial Beach, CA are White (Non-Hispanic) (33.1%), Two Races Including Other (Hispanic) (18.1%), White (Hispanic) (15.9%), Other (Hispanic) (12.9%), and Asian (Non-Hispanic) (6.09%).

> None of the households in Imperial Beach, CA reported speaking a non-English language at home as their primary shared language. This does not consider the potential multi-lingual nature of households, but only the primary self-reported language spoken by all members of the household.

> 90.7% of the residents in Imperial Beach, CA are U.S. citizens.

> In 2023, the median property value in Imperial Beach, CA was $811,000, and the homeownership rate was 30.7%.

> Most people in Imperial Beach, CA drove alone to work, and the average commute time was 27.6 minutes. The average car ownership in Imperial Beach, CA was 2 cars per household.[2]

This does give a great amount of background knowledge on Imperial Beach as we are now aware of ethnic groups. They split the ethnic groups into multiple variants, while other sites that we use throughout the report tend to stick to Hispanic and White as the two main demographics. However, this can be seen with their summary as well. The property value median is relatively high and the two-car median tells one story. However, I believe this

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[2] Data USA. (n.d.). *Imperial Beach, CA (Census Place) profile*. Retrieved August 14, 2025, from Data USA website: datausa.io/profile/geo/imperial-beach-ca.

data may be skewed slightly and doesn't tell the full story of Imperial Beach that we will begin to dive into.

SDG 1 – No Poverty

SDG 1 is a straightforward goal; The UN 's main goal is to eradicate poverty by 2030[3]. This is a lofty goal and there are some smaller successful landmarks as well. Poverty is determined based on income, family size and children under 18 years old (Appendix B provides the poverty thresholds for 2024). For example, a family of 3 with 1 kid under 18 would have to have a total income below $25,249 to be considered in poverty. For those that live in California we realize how low this income is and how little it will go towards bills and expenses. When looking at city poverty rates in the United States it is relative to other cities within the US. The United States is a developed nation and does not face the extreme poverty issues that developing countries do.

Imperial Beach is known for its beaches and seems like it would be a wealthier population; however, poverty remains an issue. Below are 2023 Poverty rates:[45]

| Scope	Poverty Rate
Imperial Beach	15.3%
San Diego County	10.1%
National Average	11.1%

Poverty rates in Imperial Beach are relatively high when considering the rest of the county is about 5% lower. Now that we know what poverty rate they are at it is important to see which way Imperial Beach is trending.

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[3] United Nations Department of Economic and Social Affairs. (n.d.). *Goal 1 | End poverty in all its forms everywhere: Targets and Indicators*. Retrieved August 12, 2025, from https://sdgs.un.org/goals/goal1#targets_and_indicators

[4] **Census Reporter.** (n.d.). *San Diego County, CA – Profile data*. Retrieved August 12, 2025, from https://censusreporter.org/profiles/05000US06073-san-diego-county-ca/

[5] Shrider, E. A. (2024). *Poverty in the United States: 2023* (Current Population Reports, P60-283). U.S. Government Publishing Office. Retrieved August 12, 2025, from U.S. Census Bureau website
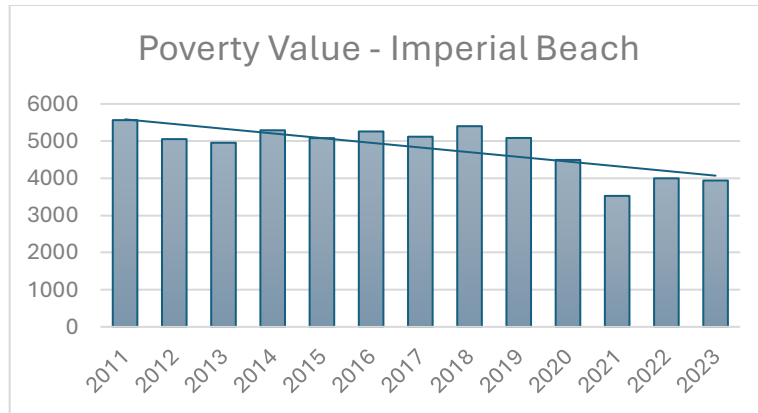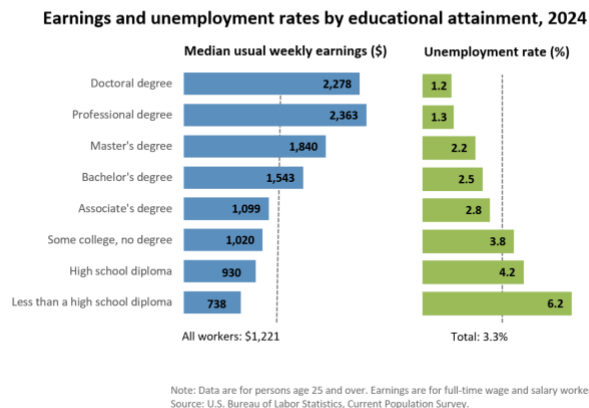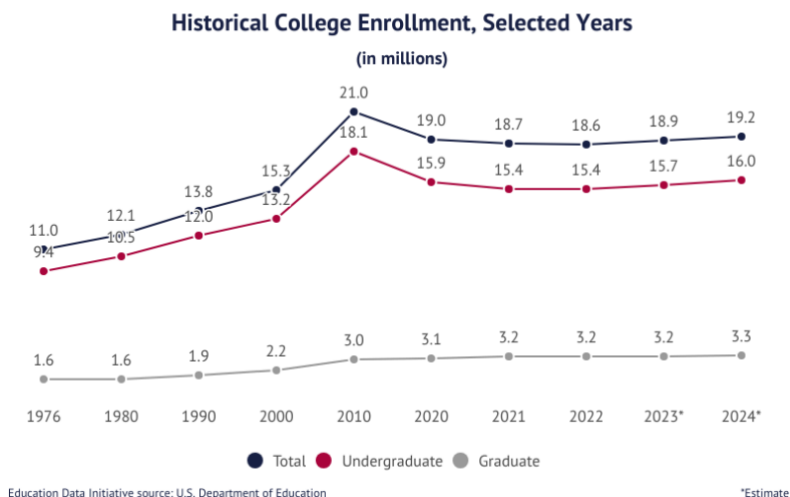
As we can see Imperial Beach is trending in the right direction since 2001 but have increased recently. This could be caused by the impact of Covid. 2021 was a year of government and state assistance bringing down poverty rates across the nation. If you remove 2021 as it should be considered a bit of an outlier, the trend is very consistent. Overall, Imperial Beach does have a poverty issue, but it seems to be slowly fading to the County average.

SDG 4 – Quality Education

Advancing the quality education metric for America is different than in developing countries. America's issue isn't with providing free education for all kids since school is available to everyone. America's current education issue is consistency and equity. Current issues involving equity are for under privileged kids having the same opportunity as their more privileged peers. Graduating high school and going on to college is important when looking at future income. Looking at the table below we can see how income and unemployment rates are directly impacted by level education completed.

Earnings and unemployment rates by educational attainment, 2024

Note: Data are for persons age 25 and over. Earnings are for full-time wage and salary workers.
Source: U.S. Bureau of Labor Statistics, Current Population Survey.

This should not be too surprising of a stat, most Americans are made aware of this. This aligns with the overall increase in college enrollment over the years.

Historical College Enrollment, Selected Years
(in millions)

Education Data Initiative source: U.S. Department of Education   *Estimate

When we look at Imperial Beach's current education state, we can see a very similar story to its poverty rate. Imperial Beach's high school and college graduation rates are both down compared to their county's numbers and the US's average. However, we can also see a split in demographics for those that are obtaining higher degrees. Socioeconomic status and race are both contributors to the disparity in education.

SDG 10 – Reduced Inequalities

SDG 10 covers a wide range of inequalities in the world, such as, social, political, income, and opportunities. Providing equal opportunities is key to serving the whole community. This disparity can be seen in the previously discussed quality education section, which leads to a wider pay gap later.

I believe this is the main issue for Imperial Beach and I have alluded to this statement throughout. Imperial Beach has two different communities within its city and the problem is only going to grow as the cycle continues. The demographics are made up of two large groups, White and Hispanic. The data shows a consistent gap between their White and Hispanic populations when looking at poverty/quality of living, education, income, and deeper issues like health insurance (as seen below). Another inequality issue facing Imperial Beach is, "91,000 immigrants live in

poverty"[6]. Although many immigrants in Imperial Beach are living great lives, language and legal barriers make it tougher overall.

HEALTH
Uninsured People (%)
Imperial Beach
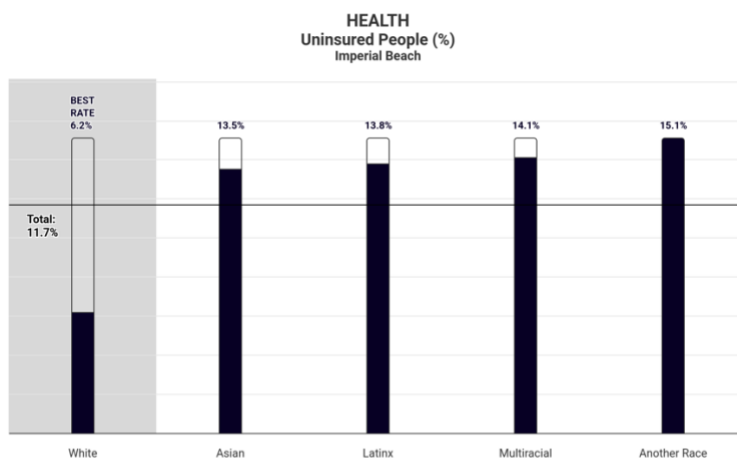
© Catalyst California; RACE COUNTS, racecounts.org, 2025
https://www.racecounts.org/city/imperial-beach/ (accessed August 14, 2025)
Data Source: American Community Survey 5-Year Estimates, Table S2701 (2018-2022)

SDG 16 – Peace, Justice, and Strong Institutions

SDG 16 is primarily focused on safety and crime rate. It is very difficult for a nation to thrive if it has a high crime rate or its citizens don't feel safe.

I originally chose Imperial Beach because I saw they had a very high crime rate compared to San Diego County; however, this is not the case. For Imperial Beach this is something they do well as their numbers are only slightly higher than the country average[7]. There is of course always room to improve, but overall Imperial Beach does have a good crime rate score. This report will not focus too much on SDG 16 since this is more of a highlight and not a metric that needs drastic improvement. However, we will show some data to back up and verify the claims.

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[6] San Diego Foundation. (2023, October 25). *New report shows 1 in 10 San Diegans live in poverty*. Retrieved August 14, 2025, from San Diego Foundation website

[7] https://www.sandag.org/-/media/SANDAG/Documents/PDF/data-and-research/criminal-justice-and-public-safety/criminal-justice-research-clearinghouse/cj-summary/cj-summary-crime-by-jurisdiction-2023-03-24.pdf#:~:text=event%20Imperial%20Beach%20violent%20crime,Imperial%20Beach%20property%20crime%20rate

Methodology

For Green Tides, we had about 5 weeks to complete this project while learning various tools, ArcGIS Mapping and Dashboards. I would have loved to conduct interviews or actually study societal behavior, however due to the time constraints and not living in San Diego County previous data collected was used for this project. Data has been collected from multiple sites throughout this project and documented properly using footnotes.

One of the methods used to collect data is from datausa.io. This website is great for understanding the cities demographics, but not so much for collecting and utilizing its data. For example, a data set utilized in the Green Tides project comes from their "Education Attainment" section. The site does not allow you to collect data for the entire population at once. I had to change the race filter to "White" then download the data and repeat these steps for "Black" and "Two Other Races". I then had to copy and paste the 3 excel sheets data into one. This process was tedious, and I had to add my own column to separate race for later use.

Findings & Discussion

Analyzing a few different data sources our initial hypothesis has been confirmed further. First let's look at median household income based on location in Imperial Beach.
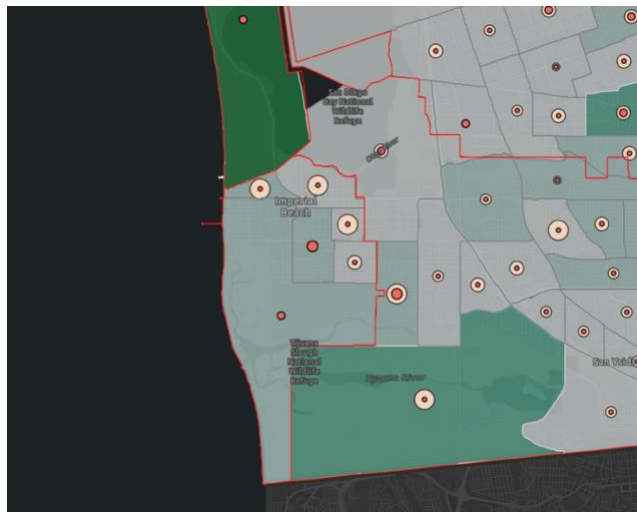

The above map confirms our ethnography analysis assumptions. The population living closer to the beach has a higher median income (denoted by the darker

green). We made this assumption based on the quality of buildings and neighborhoods in both areas.

Next, we can look at quality of education. The above map also highlights this with the colored dots. The darker red symbolizes college education while the lighter circle shows high school education. The higher median areas also show a large college graduation presence. Now we will look at how race may play a role in both income and education disparity.
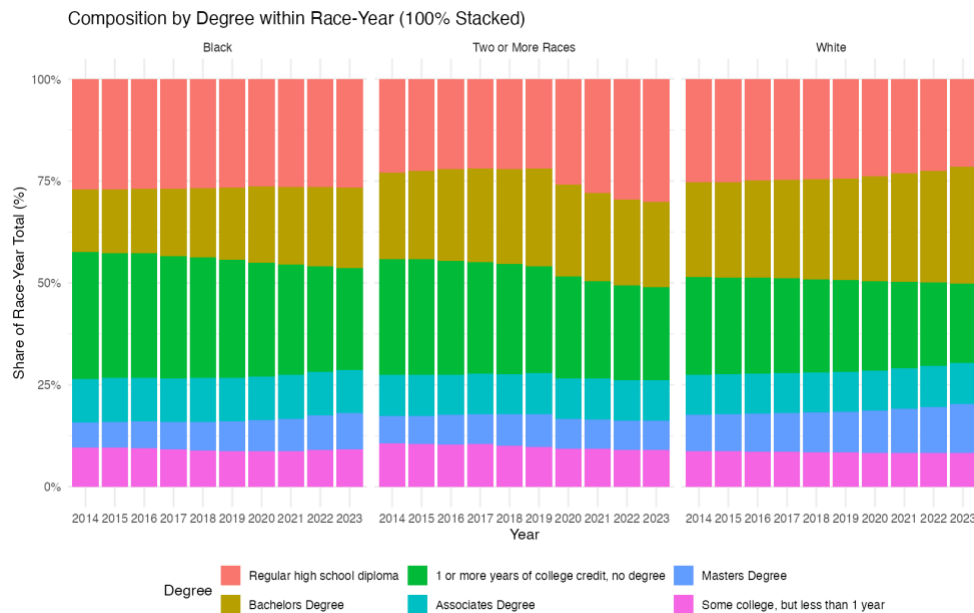

Average Income by Race, Imperial Beach
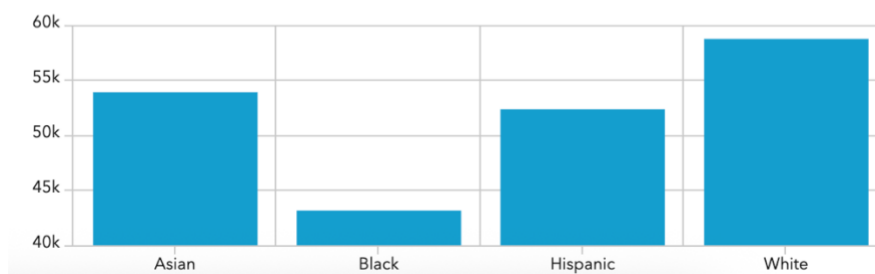
This above chart shows a drastic difference in average income with "White" being the leader and "Hispanic" and "Black" being a significant gap. The "Asian" bar is not that much lower, but the Asian population in Imperial Beach is significantly lower than the other three making their average income metric less important.

The last bar plot we will look at shows a proportional look at higher education obtained by the following races, "Black", "Two or More Races", and "White". I think it is safe to assume the two or more races will contain a lot of "Hispanic" population since the website did not provide a "Hispanic" option. The website also uses "White/Hispanic" and "White not Hispanic" as classifiers earlier.

The chart shows a few interesting facts. First, we can see the top red bar is regular high school diploma and white people are slightly lower than the other two races showing they tend to go to college more often. Next, are the gold bars and again white people tending to have a bigger proportion of people graduating with a bachelor's degree. Lastly, is the dark blue section at the bottom which once again shows the white proportion to be a bit larger than the other two. We can take away that Imperial Beach's social and economic disparities begin with educational equity.

Composition by Degree within Race-Year (100% Stacked)

Degree:
- Regular high school diploma
- Bachelors Degree
- 1 or more years of college credit, no degree
- Associates Degree
- Masters Degree
- Some college, but less than 1 year

Conclusion

Throughout the project Green Tides, I was looking into the City of Imperial Beach and measured certain sustainability metrics to analyze areas of improvement. We made assumptions at the beginning using our ethnography analysis, further explored those assumptions using previous works and online literature, and conducted our own research using online data to confirm the initial hypothesis. Imperial Beach's main issue comes from *SDG 10 – Reducing Inequalities*. It does connect to the other SDGs we talked about as well, since the inequalities range from poverty, education, healthcare, and median income. Being close to the border does cause more inequality issues as we mentioned with legal and language barriers. However, throughout the project we were able to compare Imperial Beach to the rest of San Diego County, which has the same challenges to overcome. Imperial Beach must begin to take a look at the eastern most part of the city and create projects and show effort to building up the rest of the city to accomplish sustainability goals by 2030.

Appendix

Appendix A – Ethnography Analysis

What is Ethnography Analysis?

Ethnography is the study of people in their natural settings. This allows the researcher to capture real world experiences and study societal behavior that wouldn't be as accurately depicted in an interview.

According to "Ethnography Research | Ethnography Research: Types Explained With Examples | Qualitative Research", a YouTube video by ShikkhaPath, there are four different types.
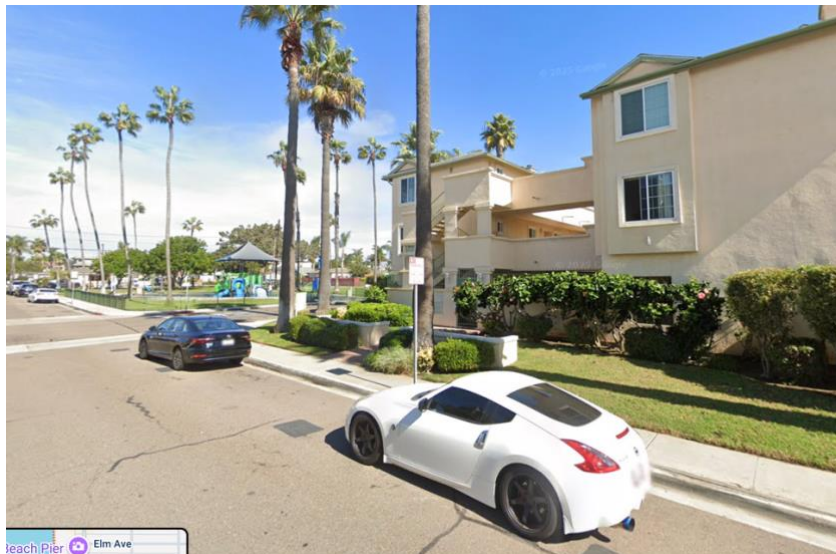
1. Realist Ethnography:
    a. "Observe and describe the culture or group from an outsiders' perspective" (ShikkhaPath 2024)
    b. "Accurate, unbiased account of groups' activities" (ShikkhaPath 2024)
    c. "Observe the daily routines of a classroom without injecting personal opinions" (ShikkhaPath 2024)
2. Critical Ethnography
    a. "Not only observing but also actively highlight issues of inequality, power and marginalization within the group" (ShikkhaPath 2024)
    b. "For example, a researcher might study how low income students experience educational inequalities and advocate for changes in school policies to better support them" (ShikkhaPath 2024)
3. Autoethnography
    a. "Reflects on their own life and culture to connect it with brother social and cultural phenomena" (ShikkhaPath 2024)
    b. "... own experience to explore more broader issues in social life" (ShikkhaPath 2024)
4. Interpretive Ethnography
    a. "Not just observing but interpreting actions, rituals and social behaviors" (ShikkhaPath 2024)

I felt that it is important to describe ethnography in detail and provide definitions and examples of each type of ethnography. This will allow the reader to refer to this section throughout the essay.

For this assignment we were asked to look at a city inside of San Diego County utilizing Google Maps and create an ethnography research project. I will be using a combination of Realist and Critical Ethnography. Looking through Google Maps we will be able to observe quite a few different social factors, (realist ethnography). We will then take this information and dive deeper using other research sources like the *United State Census Bureau* to find inequalities, (critical ethnography). Lastly, we will use all this information and connect it to a few of the 17 Sustainable Development Goals (SDG) created by the United Nations. We will focus on the three of the four main pillars of SDGs, expressed by Jeffey Sachs (President of the United Nations Sustainable Development Solutions Network), which are economic, social, environmental, and peace and cooperation.

Case Study Area

I looked at a few cities and decided on Imperial Beach as a great choice for this assignment. Looking at the city through Google Maps it is tough to get the entire picture of the city since it is so large. Imperial Beach has both sides of the inequality spectrum within its city limits. We can see this in the following screenshots. This is the difference of two apartment complexes in Imperial Beach.

I know this can be found in many cities across America, but it does show that Imperial Beach has a gap in housing for its residents. The Realist Ethnography allows us to see the disparity in housing and leads us to believe there is likely a wide range of household income as well. We will investigate datasets that will allow us to think critically about these metrics.

We will come back to Imperial Beach and explore the city a little more.

17 Sustainable Development Goals

As mentioned earlier the United Nations has created 17 SDGs that will help create a better world for every nation involved. It focuses on creating a sustainable universe for all. For example, Goal 2 is "Zero Hunger", this may seem like an obvious choice and is very important for humans as we should eat every day. However, the United Nations is taking it even further to ensure the process to produce the food is sustainable for the land. Below is a list of all 17:

1. No Poverty
2. Zero Hunger
3. Good Health and Well-Being
4. Quality Education
5. Gender Equality
6. Clean Water and Sanitation
7. Affordable and Clean Energy
8. Decent Work and Economic Growth
9. Industry, Innovation and Infrastructure
10. Reduced Inequalities
11. Sustainable Cities and Communities
12. Responsible Consumption and Production
13. Climate Action
14. Life Below Water
15. Life on Land
16. Peace, Justice and Strong Institutions
17. Partnerships for the Goals

Sticking with the 3 pillars mentioned above: economic, social, and environmental. We will choose at least one topic for each pillar to dive deeper on.

Social Sustainability

Imperial Beach looks like it has two main areas, near the beach and off the beach a little bit. Near the beach looks very inclusive and maintained as a lot of people come through and visit. Housing near the beach are typically higher end builds as seen below.

The other reason I chose this photo is the two flags that are being hung up. I don't want to assume nationality based on flags that are up, but I did find it interesting and if I was there visiting, I would investigate a little further to confirm nationality. This is important to help answer the question of housing differences with different races. I also think it is dangerous to make a generalization based on one picture; this is where big data sets will give us better insights.

Environmental Sustainability

This was a little tougher to see in Google Maps. I did see green barrels for either yard waste or compost. This may seem like a normal for most people, but not all cities offer this, and Imperial Beach does.

Another point of interest while searching around was seeing a street cleaner. I found it interesting that Google Maps was able to capture this.

Overall, I believe Imperial Beach does do a great job of maintaining a clean city. I will find it interesting to see if the data backs this up or not.

Economic Sustainability

One main drawback for Imperial Beach is that it has a lot of fast-food restaurants. This is due to the attraction of the local beach and the amount of people that come through. Again, we can't assume economic numbers based on a simple tour through the city, but this seems like it could be a drawback for its future economic state.

Conclusion

      I believe Imperial Beach has a lot of good qualities and this might make it harder to find things that they will need to improve on. However, looking at a few of the 17 SDGs I found peace to be the main one that they are lacking in. They have one of the highest crime rates in San Deigo County and with the income disparity we see from the photos, I think there is still a lot that Imperial Beach needs to improve on.

Appendix B – Poverty Thresholds Table

Poverty Thresholds for 2024 by Size of Family and Number of Related Children Under 18 Years
(In dollars)

Size of family unit	Related children under 18 years								
	None	One	Two	Three	Four	Five	Six	Seven	Eight or more
One person (unrelated individual):									
Under 65 years.................................	16,320								
65 years and over..............................	15,045								
Two people:									
Householder under 65 years.............	21,006	21,621							
Householder 65 years and over........	18,961	21,540							
Three people..	24,537	25,249	25,273						
Four people..	32,355	32,884	31,812	31,922					
Five people...	39,019	39,586	38,374	37,436	36,863				
Six people..	44,879	45,057	44,128	43,238	41,915	41,131			
Seven people...	51,638	51,961	50,849	50,075	48,631	46,948	45,100		
Eight people...	57,753	58,263	57,215	56,296	54,992	53,337	51,614	51,177	
Nine people or more..............................	69,473	69,810	68,882	68,102	66,822	65,062	63,469	63,075	60,645

Source: U.S. Census Bureau, 2025.

Appendix C – SWOT Analysis

STRENGTHS
- The beach brings in a lot of visitors
- 85% of adults have received a high school diploma or higher[1]
- Crime rates are similar to County and Nation Averages[3]

WEAKNESSES
- Imperial Beach's poverty rate is higher than SD County[2]
- Only 24% of adults have a bachelor's degree or higher[1]
- Social Inequality is visible through pay gap of low and high wage income earners

OPPORTUNITIES
- Increasing the higher education rate should impact the pay gap disparity
- The city has a tourist attraction, which needs to help generate income for the entire city
- Decreasing the crime rate to well below the national average through deliberate initiatives

THREATS
- The city is in a cycle of income disparity which can easily be increase without focused efforts
- Crime rates are near average, but this isn't necessarily a good number
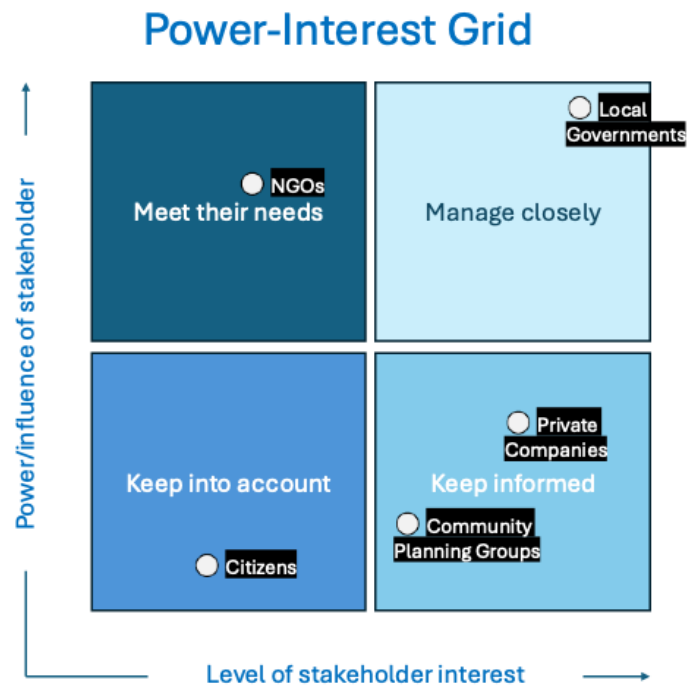- Job levels are driving the pay gab which is caused by education differences

1. Imperial Beach, CA - Profile data - Census Reporter http://censusreporter.org/profiles/16000US0636294-imperial-beach-ca/
2. Census Reporter. Imperial Beach, CA – Profile Data (ACS 2019-2023 5-year). U.S. Census Bureau, 2023.
3. Microsoft Word - CJ Summary - Crime Statistics_2021-4-13.docx
4. https://www.sandag.org/-/media/SANDAG/Documents/PDF/data-and-research/criminal-justice-and-public-safety/criminal-justice-research-clearinghouse/cj-summary/cj-summary-crime-by-jurisdiction-2023-03-24.pdf

Appendix D – Stakeholder Analysis

Appendix E – ArcGIS Dashboard