STATE OF THE COMMUNITY REPORT

CITY OF BAYTOWN, TX
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Introduction

In the analysis of Baytown, Texas, current and emerging conditions have been considered in regard to population, economy, and land suitability. Data was collected for all three subjects, respectively and in subsequence has been aggregated in order to produce, for the city of Baytown, as accurate and scientifically sound a narrative as possible. That being said, it should be noted by the citizens of Baytown that the following report on the state of its community is imperfect due to limitations on available data and that these limitations will be discussed as they arise in the following document for the sake of clarity and in avoidance of misleading readers in any way.

This is not to say that limitations ubiquitously presented themselves throughout the process of data collection; however, it is to say that limitations did sporadically affect the ability of the planners to rely solely on statistics for the city of Baytown, itself.

For instance, because of the paucity of data specific to the Baytown economy, the authors have relied on the Houston-Sugarland-Baytown Metropolitan Statistical Area as the most appropriate substitution for comparison to the economy of the state of Texas. Economic results will be further skewed in that the said MSA changed in definition between 2000 and 2010.

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In 2000, the MSA was defined as the Houston-Galveston-Brazoria Metropolitan Statistical Area and consisted of Brazoria, Galveston, Chambers, Fort Bend, Harris, Liberty, Montgomery, and Waller counties. In 2010, however, both Austin and San Jacinto counties were added to the prior.

Baytown, itself, is located 30 miles southeast of the city of Houston, the great majority situated in Harris County with its western city limit trickling into Chambers County. Please examine the map below.

Figure 1: Map of Houston-Sugarland-Baytown MSA, 2010
In projecting and forecasting the population of Baytown, the authors have begun with a population estimate that describes present and past circumstances. In planning for the future of Baytown, planners rely on both. We, the authors, have begun with not only a thorough estimate of the Baytown population’s present trends in growth and decline, but also a discerning of how the city’s past became its present.
Population Growth Rate

Rate of growth for Baytown's population was found using a Population Growth Rate Indicator. Growth, in the opinion of the authors, is most certainly favorable to the community of Baytown in that social, political, and economic growth accompanies it, in turn increasing Baytown's potential to compete with neighboring communities.

Between 2000 and 2010, the population of Baytown has increased by 8.1% to a total of 71,802 citizens. At first glance, the overall increase appears substantial. However, the state of Texas has grown 20.6% in the same time interval. Therefore, in regard to migration as well as natural increases in population, Baytown lags behind the state, somewhat dramatically; Explanations may be discerned within the following ethnic breakdown of population.

Methodology

We used the shift-share method to do population projection. We calculated the smaller area's share of total population in the base year and in the launch year; these two population shares and the projected population for the larger comparison region (Houston MSA) for the target provide the means for applying the shift-share method. We found that White, not Hispanic population decreased both in Baytown and Texas, but Baytown decreased more dramatically. Hispanic population increased both in Baytown and Texas, but Baytown increased more dramatically. 2000 US Census didn't collect separate numbers of other non Hispanic race groups, so for Black, Asian and other race groups, we did projection for both Hispanic and non Hispanic.
Population Proportion

**Population by Age (2010)**

<table>
<thead>
<tr>
<th>Years</th>
<th>Baytown</th>
<th>Texas</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-64</td>
<td>41294</td>
<td>14921961</td>
</tr>
<tr>
<td>65+</td>
<td>7225</td>
<td>2601886</td>
</tr>
<tr>
<td></td>
<td><strong>17.5%</strong></td>
<td><strong>17.4%</strong></td>
</tr>
</tbody>
</table>

The State of the Community Report monitors our community’s Old-Age Dependency Ratio. This indicator is the ratio of people age 65 or older (retirement age) to the number of people age 20-64 (working age). A high dependency ratio can compromise the ability of pension systems and the Social Security system to provide for the older non-working population. A higher ratio also may indicate strain on a community to meet demands for public resources, such as health care. Positively, both Baytown and Texas tracks lower on this measure than the national average which is 21.8%.

**Proportion of Householder by Age (2010)**

As shown in the figure above, White (non Hispanic) householders remain the largest proportion of householders in Baytown, and are also older on average than all other ethnic groups. [Because both the proportion and absolute number of Asian and Other ethnic households are very small, they are not present in graphical representation.]

**Proportion of Householder by Race (2010)**

Compare to Texas, the proportion of White (non Hispanic) householder is smaller in Baytown, while the proportion of Black (non Hispanic) and Hispanic householder is larger. As to Baytown itself, we found that although White (non Hispanic) householders remains the largest proportion, they tend to be older than Black (non Hispanic) and Hispanic householders.

Since the proportion of Asian and other non Hispanic householder in Baytown is very small compared to the races discussed above, this discussion has eliminated Asian and Other races for convenience.

**Household type (2010)**

Compared with the state of Texas, more White (non-Hispanic), Black (non-Hispanic), and Asian (non-Hispanic) citizens rent houses in Baytown (proportionally), while the proportion of Hispanic homeowners in Baytown is greater than statistics reported by the state of Texas.
Hispanic Population

Accordingly, we have begun with discussion of the Hispanic population (31,156 citizens according to the 2010 U.S. Census). The Hispanic population is young, burgeoning, and well rooted. The population growth in itself presents a strength in the opinion of the authors as well as an opportunity to the future Baytown culture and economy.

Baytown is a manufacturing and port city and is dependent upon a ‘blue collar’ labor force that is not necessarily in need of furthering formal education in order to perform the jobs. This not to say that ‘blue collar’ workers do not need an education in skill sets; however, it is to say that education within manufacturing and other manual labor professions are skills best learned ‘on the job’.

Most glaring among weaknesses within the Hispanic population is its ‘Percentage of Households Living Below the Poverty Line’ (73.42%).

Though the proportion of Hispanic home owners in Baytown is greater than that of the state of Texas, it may be noted that a great disparity exists. Hispanics outnumber the White (non-Hispanic) populous, yet they own drastically fewer homes (a weakness). The 2010 U.S. Census reported a ‘Mean Household Size’ of 3.71. This number is soaring when compared to the ‘Mean Household Size’ of all other ethnicities, presenting another weakness in regard to the Hispanic population of Baytown.

White (non-Hispanic) Population

The White (non-Hispanic) citizens are leaving Baytown at an extremely alarming rate. Over 10,000 White (non-Hispanic) individuals have left Baytown in the last ten years. It is of the opinion of the authors that when any ethnicity decreases in number from one Census to the next, a future threat to the economy may be discerned, in that with the exodus of White (non-Hispanic) citizens are the wealthiest ethnic subgroup.

Ironically, one strength may be denoted within the prior weakness in consideration of ‘Old Age Dependency Ratio’. A high dependency ratio compromises the ability of pension systems and the Social Security system to provide for an older non-working population and may also indicate a strain on a community to meet demands for public resources (e.g. health care).

Positively for Baytown’s aging White (non-Hispanic) population, their dependency ratio is lower than the national average suggesting less future strain on the COMMUNITY. And though this population is wealthy in comparison to others (this has been measured by ‘Median Household Income’), it does not necessarily present a strength to Baytown considering all other ethnicities reported are significantly poorer, making for economic disparities.
Population Projection

Based on the population estimate, projections were then made, the 'if' and 'then' statement; the many possibilities ranging from probable futuristic circumstances to quite improbable ones.

Social Indicators

- Number of Households by Race/Ethnicity
- Mean Household Size
- Median Household Income
- Population by Gender

In the projection stage, a great number of social indicators both qualitative and quantitative are accounted for (e.g. 'Number of Households by Race/Ethnicity', 'Mean Household Size', 'Median Household Income' 'Population by Gender', etc.), whether likely or unlikely to affect the subAffordaject population. One must and does draw the line somewhere, however, in regard to just how many social indicators are taken into consideration.

In analyzing these indicators, demographers make numbers of different projections based on a variety of mathematically applied methods. For example, a planner might be asked to make projections on population 'if' the climate does this, and 'then' that over the next fifty years.

The method utilized for the following Baytown Projections is the Ratio-Share Technique, a method based on constant share that is based on comparison of a 'study area' to a 'parent area', one that possesses stable historic trends (see Appendix).

African American (non-Hispanic) Population

Third in the ranking of ethnic groups by population is the African American (non-Hispanic) cohort, representing. Slight increases in numbers suggest natural growth and normality over the last ten years.

One weakness noted, however, in regard to 'Number of Households' is the preponderance of renters to owners. A significant majority of African American (non-Hispanic) citizens rent rather than own homes. This is a weakness considering that within the White (non-Hispanic) population, there are twice as many owners as renters.

Asian (non-Hispanic)

Baytown’s small Asian (non-Hispanic) population is also growing at a rate regarded by the authors as natural.

Two weaknesses may be denoted, however. Firstly, the high mean household size of 3.01 rivals that of the Hispanic cohort; and secondly, the Asian (non-Hispanic) citizens, like the Black (non-Hispanic) cohort rent more homes than they own.

Other (non-Hispanic)

Other (non-Hispanic) includes the following ethnic groups of Baytown: 'American Indian and Alaska Native', 'Native Hawaiian and Other Pacific Islander', 'Some Other Race', and 'Two or More Races'. When aggregated, the Other (non-Hispanic) ethnic cohort represents but a small fraction of the total (1.5%) and is growing in number naturally.

One weakness to consider among Other (non-Hispanic) is the 'Percentage of Households Living Below the Poverty Line' which consists of 17.5% of their total households.
In the following section we are examining the economic elements of Baytown with three main methods:

- Location quotient to determine the which of the top five industries based employment levels is supporting the local economy,

- Shift-share which separates industries into state-share, industry mix, and local factors in order to compare with the State of Texas economic makeup and find local competitive advantages, and;

- Linear trend extrapolation by using historical data to project the rate of future economic growth.

Lastly, the section is summed up with a SWOT analysis that summarizes the strengths, weaknesses, opportunities, and threats of the Baytown economy.
Top Five Industries

This section will concentrate on Baytown's top five industries of 2010. Ranked by number of employees, the top five industries are:

- Office and Administrative Support Occupations (43-000), Location Quotient: 0.96
- Sales and Related Occupations (41-000), Location Quotient: 0.97
- Food Preparation and Service Related Occupations (35-000), Location Quotient: 0.94
- Production Occupations (51-000), Location Quotient: 1.13
- Transportation and Material Moving Occupations (53-000), Location Quotient: 1.03

Methods used to Determine Basic and Non-Basic sectors

Location Quotient

The largest three employers (i.e., 'Office and Administrative Support Occupations', 'Sales and Related Occupations', and 'Food Preparation and Service Related Occupations') are all part of the Non-Basic Economic Sector. In other words, though two of the three are meeting local demands, they are all local industries with no potential of export and therefore regarded simply as local industries.

That being said, however, 'Office and Administrative Support Occupations' and 'Food Preparation and Service Related Occupations' have Location Quotients of 0.96 and 0.94, respectively, and therefore are quite near a score of 1.0 which would label them as part of Baytown's economic base. [M1]

Numbers four and five (by number of employees) are part of the Basic Economic Sector. 'Production Occupations' score of 1.13 make this industry a formidable local economic base as well as being potentially exportable in the future (an industry with a Location Quotient score of 1.25 or higher possesses potential for export to other markets).

Transportation and Material Moving Occupations', bearing a Location Quotient of 1.03, has solidified its status as an integral part of the Basic Economic Sector as well. The name of this industry implies a connection to the Port of Baytown, materials moving in and out.

It is no surprise that a port city’s economic base is sustained by the port itself and its goings on. Baytown can depend on the economic stability a port brings as long as the port is functional. Though the materials being transported may change with economy and time, the transporting process will remain the same.
Linear Trend Extrapolation

Linear Trend Extrapolation has been employed by the authors in order to forecast Baytown’s economy over the next two decades. Predictions are made based on historical trends within the economy.

At the current growth rate, most notable in its burgeoning are ‘Sales and Related Occupations’ as well as ‘Food Preparation and Service Related Occupations’. Both are growing at a pace that would surpass ‘Office and Administrative Support Occupations’. ‘Transportation and Material Moving Occupations’ will most probably remain the stalwart it is within the Basic-Sector, its score remaining steady over the two decades considered.

Industries are not going to grow at the exact same rate, decade after decade, without one or more outside and unexpected variables factoring in. These may include migration or a halt in it, natural disasters, or man-made disasters just to name a few.

Linear Trend projections are handy to those in need of quick data. However, this extrapolation method has its inadequacies. In that it fails to consider causal factors, other formulas have been used by the authors in the effort to provide a more accurate economic forecast.

Shift Share Analysis

In the case of this State of the Community Report, Shift-Share Analysis has been employed (see Appendix). Breaking down total change in local economy is necessary in understanding its dynamics. The Shift Share approach divides total change into three parts. The State Share of any single Baytown industry contributes to overall change in this case, of employment in the greater state of Texas.

As mentioned prior, the economic base of Baytown is well-rooted. Therefore, this industrial base will either impede or aid other industries, depending on a novel industry’s potential to flourish amongst established ones. Baytown industries with strong Shift Share scores can also go so far as to affect the state or national economy.

Assumptions and Limitations

Because of the paucity of data specific to the Baytown economy, the authors have relied on the Houston-Sugar Land-Baytown Metropolitan Statistical Area as the most appropriate substitution for comparison to the economy of the state of Texas. Economic results will be further skewed in that the said MSA changed in definition between 2000 and 2010. In 2000, the MSA was defined as the Houston-Galveston-Brazoria Metropolitan Statistical Area and consisted of Brazoria, Galveston, Chambers, Fort Bend, Harris, Liberty, Montgomery, and Waller counties. In 2010, however, both Austin and San Jacinto counties were added to the prior. In that the economy of Houston is very similar to that of Baytown, Houston MSA statistics, though limited in their precision, have proven to the authors to be useful in painting the portrait of Baytown’s current economic condition.
S.W.O.T. Analysis

With the prior formulae, we, the authors, have been able to discern economic strengths of Baytown. The city’s industries, in general, are growing in a way that supports the labor force. That is, the increase in ‘blue-collar’ jobs is commonsensically ideal for its primarily ‘blue-collar’ employable population.

The location of Baytown along the shore of Galveston Bay presents an opportunity in itself with consideration of Baytown’s port. Moreover, the near proximity to the mouths of the Buffalo Bayou and San Jacinto River, respectively, conveniently add to the city’s economic viability. Potential investment opportunities also present themselves in regard to Baytown’s industrial infrastructure, already in place and prepared to support new economic growth.

Baytown, being a satellite of Houston, can only benefit from its ranking of second in regard to Gross Domestic Product among all American cities. Therefore, this has also been determined by the authors to be both a strength and opportunity.

The ‘Production Occupations’ sector (or manufacturing sector) employs a versatile labor force that possess skill sets that can transition between industries when and if economic change takes place. This presents yet another strength.

Conversely, weaknesses and threats can also be associated with ‘Production Occupations’. The state of Texas as well as the nation is in the process of transitioning into a service based economy, in essence, meaning that the great majority of the American and Texan economies are moving away from manufacturing. Therefore, this increase in the manufacturing sector contradicts the direction of Baytown’s ‘parent’ economies and may be regarded as a weakness.

Additionally, Baytown’s overdependence on the oil industry presents a bona fide threat. Any significant decline in that said industry could be devastating to the economic stability of the city. Baytown’s geographical location on the northern coast of the Gulf of Mexico presents an environmental threat in that the city is extremely vulnerable to frequent and naturally disastrous hurricanes.

Potential man-made disasters present threats as well. Baytown’s energy based economy and port present the possibility of oil spills, and explosions. Though unlikely, caution must be heeded.

At a Glance

**Strength & Opportunity**
- Employable Population
- Opportunity for industrial growth
- Location
- Existing infrastructure
- Skill-set

**Weakness**
- Service - based economy
- Over-dependence on a specific Industry

**Threat**
- Environmental Threat
- Natural Disaster
Affordability Index

Affordability Index is a measure of the affordability of a COMMUNITY based on housing and transportation cost. The index is determined on the basis of development pattern, transportation behavior and household cost of transportation. Households living close to work or other services usually have lower transportation cost which determine the affordability of neighborhoods.

Housing Cost % Income

Housing cost factored as % of income. Research shows that a home is considered affordable if the cost consumes no more than 30% of the household income.

Housing and Transportation Cost % Income

A more complicated measure of affordability which depends on the combined cost of housing and transportation- if less than 45% of the household income, is considered affordable.

Figure A shows the affordability of Baytown based on housing. Housing costs in Baytown are relatively inexpensive, making up less than 30% of household income. Figure B shows the affordability based on housing and transportation costs. The community spends greater than 45% of household income when the cost of transportation is included. Communities which incorporate multiple transportation alternatives do not show these discrepancies indicated in Baytown. There is a great opportunity to incorporate multiple modes of transportation for the citizens, with the potential to increase community wealth.

Fig A: Affordability of Baytown in terms of Housing Cost-percentage Income

Fig B: Affordability of Baytown in terms of Housing and Transportation Cost-percentage Income
Land Use

Generic Raster Map from Land Suitability analysis shows the most suitable parcel of Land for development in the City of Baytown, Texas.
Land Use

Analyzing the suitability of land in a scientifically sound way is essential in successfully implementing a comprehensive plan and creating a vision for any growing community. In summary, our analysis provides an independent assessment of the physical attributes that characterize the Baytown geographical area. This is done so that we can use the facts presented to us in order to find what locations are best suited for certain types of land uses. In the end, we compared our analysis with the current land use and future land use maps from the current comprehensive plans so that we can better understand where we are at and when we should go regarding land uses.

In this particular land suitability analysis, seven geographic attributes:
- 'Slope',
- 'Floodplain',
- 'Distance to Highways',
- 'Distance to Railways',
- 'Hydrology',
- 'Geology', and
- 'Land Cover' have all been located, quantified, and layered (see Appendix).

The Generic Map of Baytown shows the most suitable land uses in different parcels from land suitability analysis with equal weighting of different land-use type.

Five types of land uses were considered in the comprehensive analysis: 'Industrial', 'Commercial', 'Multi-Family', 'Single Family', and 'Farm Lands'. It should be noted that due to lacking and sometimes incorrect data, 'Farm Lands', has been eliminated from the following analysis. This limitation, however, is negligible when considering 'Farming, Fishing, and Forestry Occupations' have all but disappeared in regard to Baytown's economy. See Appendix for further explanation.
Land Uses

Industrial Land Use

Industrial uses require the most compact of soils (i.e. clay-like), for their edifices are large, their transporting equipment is large, and sites are constantly active.

The manufacturing aspect of industry makes necessary close proximity to railroads or ports for the transporting of products.

Industry is expensive and too important an investment for any community to build in the wrong location. For example, it would prove catastrophic to a city’s economy to somehow incidentally locate an industrial complex within a hundred year flood plain... it’s only a matter of time before that complex is inundated, completely crippling its ability to manufacture.

Industry pollutes, more so than any other type of land use, and therefore should never be located close to drinking water sources, above an aquifer, etc.

Commonsensically, industry must be planned with distance between Single-Family and Multi-Family land uses. Most common is to buffer an industrial area with commercial land uses and Land Cover in order to make it discrete for the city’s residents.

The natural slope of terrain must also be considered when locating industry. Farming is difficult on a high gradient, let alone constructing an industrial complex. Therefore, industry is best located on the flattest terrain possible. However, in the case of Baytown, slope is a non-factor considering its location along the flat Gulf Coastal Plain.

Commercial Land Use, Multi-Family Land Use, Single-Family Land Use

Much of the highly suitable land for 'Commercial', 'Multi-Family', and 'Single-Family' land uses respectively are located in or around the older central business district (CBD), which poses a problem of redeveloping brownfields for new growth.

All of the evidence gleaned by the said planners indicates that Baytown will need to implement development policies and zoning ordinances that support infill and redevelopment. This will allow the city to accommodate new population and economic growth with higher densities.

The future land use map for 2025 from the Baytown Comprehensive Plan places a significant amount of industrial development in poorly suitable areas south of the old CBD (refer to Generic LSA map). This ignores the environmental issues of developing the coastal wetlands that buffer the storm surge and mitigates flooding. Therefore, it is the opinion of the authors that this land would be best suited for alternative land uses (i.e. 'Commercial', 'Multi-Family', and 'Single-Family' uses) that do not place the same environmental strain on the land that 'Industrial' land use demands.

By comparing Baytown existing and future (2025) land use maps, we can see that the city is planning for infill development and creating denser development, thus supporting the authors' own strategy for a comprehensive plan, much different than that prepared by Baytown planners in 2006.
S.W.O.T. Analysis

Baytown's sizeable Extra Territorial Jurisdiction as well as the many blocks within the city limit suitable for multiple land uses present a wonderful opportunity to build, strengthening the city's ability to be dynamic in future zoning. In other words, strategic future planning can go far in correcting dubious past development. That being said, however, the fact that past development has occurred atop wetlands is extremely concerning and when combined with the fact that past planning and implementation upon unsuitable soil types presents quite the challenge for present and future Baytown planners and is most certainly deemed by the authors of this report to be a weakness.

Baytown possesses no definitive Commercial Business District (CBD), and relative to this fact, a void exists between old and new Baytown. This presents not only a developmental weakness but a cultural one as well.

Sprawl has also made itself manifest, which is a

According to NOAA, Baytown is affected by tropical storms and hurricanes on average, every 2.64 years. Research by the Texas Sustainable Coastal Initiative has provided planners with hypothetical models of just what kind of risk Baytown citizens face in the event of hurricanes. During a Category 1 tropical storm, only the coast itself would reside in the Hurricane Risk Zone. The risk, of course, increases as the size of the storm increases. A Category 4 hurricane places almost the entire city of Baytown at risk whereas a Category 5 hurricane threatens the entirety of Baytown's Extra Territorial Jurisdiction. According to Munich RE, due to climate change, there is an increased quantity and intensity of meteorological events throughout the world. This poses a threat to the city of Baytown as it will increase the probability that the city will be affected by devastating meteorological and hydrological events.
It is imperative when using the Ratio-Square Technique that the 'study area' is integral to the metabolism of the 'parent area'. The goal of this technique is to predict changes in indicators from the 'parent area' to then project similar changes in the 'study area'. This method can be used efficaciously in projections of population, fertility, or even auto ownership as long as conditions are friendly to its technique. In the case of Baytown, Texas, history has been stable and Houston is undoubtedly the influencing 'parent area'.

The Location Quotient Formula has been employed to find the proportion of Houston-Sugar Land-Baytown's economy to that of the greater economy of Texas. The Location Quotient indicates whether a particular industry is basic or Non-basic, a potential exporter or support industry, as discussed in the report.

Shift Share Analysis: The State Industry Shift accounts for the expected but convoluted shift of the state (in this case, state of Texas') Industry Mix that can slow or speed the growth of any particular local industry depending on its vulnerability to its equivalent on the state level. In other words, the economy of Baytown can improve if its own local industries are growing faster than the state average. That being said, however, cities cannot switch industries at will, so the status of the local business base is subject to which industries are growing on a state level and which are not.

Location Advantages, or local factors, determine how a particular Baytown industry is faring with its national or state agglomeration of like industry. ‘Transportation and Material Moving Occupations’, for example, accounts for a fair share of its proportion to the total proportion of the state of Texas.

The quantification of land suitability is based on a five-point scale with one marking land that is less suitable for development and five equaling land that is most suitable. Each parcel of land assessed is provided a 'minimum' and 'maximum' score.

With the seven variables considered, Geographic Information Systems (GIS) software has been employed by the said planners to create choropleth maps (both 'vector' and 'raster') that is useful in locating a proper geographical location for a given land use.

Each of the four remaining land uses was individually analyzed by assigning varying weights to the attributes (i.e. evenly weighted land attributes were multiplied by the attribute classification weight). Due to overlapping land uses, we, the authors have provided a Generic Land Suitability Analysis map in order to show a clearer picture of where development should occur within the city limit of Baytown and moreover, within Baytown's Extra Territorial Jurisdiction.
REFERENCES


[M1] I thought it was best to be above 1.25