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Migration and the Quality of American Cities

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Abstract

Across the United States, cities are expanding. It is the role of the city leaders to promote policies that benefit both current and incoming residents. While these policies have intended results, the realized benefits and damages are challenging to define because they are the result of individual choices and the unique characteristics of the city. As a result, policymakers need to consider a complex web of factors such as employment, taxation, housing, mobility, and environmental quality. This thesis seeks to analyze these overlapping factors to discuss how policymakers can increase well-being while mitigating potential harms.

Chapter 1: The Twofold Issue of Expansion

For many cities in the United States, population growth seems almost inevitable. There can be large intended or unintended incentives for individuals to migrate due to a city's location, job prospects, tax benefits, or housing availability. In the context of this migration, the role of a city's policymakers is to enhance the welling being of both the current and future residents. To accomplish this goal, city officials need to make crucial decisions in a variety of policy areas. However, when attempting to enhance well-being in one respect, there can be negative impacts on others. As a result, policymakers must choose between a series of policy tradeoffs in an attempt to increase the well-being of residents and mitigate the harms of expansion.

If expansion is well managed, the population growth can create jobs, increase city revenue, or enhance a city's culture. However, when expansion is mismanaged, this same population growth could lead to an increase in pollution, the gentrification of neighborhoods, and resentment toward newcomers. In reality, a city will experience both the positive and negative effects of expansion. The degree will depend on the actions of city policymakers and the unique characteristics of the city. Some of the main concerns city officials must consider are listed below.

Affordable Housing: Factors such as the availability of land, local zoning codes, or property values may limit either the cost or the availability of housing options for individuals. Extreme mismanagement could raise the cost of living to a point where current residents are edged out, resulting in the inequitable gentrification of the area. Before this point of gentrification, a saturated housing market could discourage first-time

homeowners from migrating to the city (Mulder 2006). Beyond homeownership, rising costs of rent can make it harder for both current and new residents to live in the area.

Environmental quality: Air pollutants such as ground-level ozone and particulate matter are affected by different aspects of growth, such as an increase in vehicle usage. Rapid growth without proper water treatment and sewage infrastructure could lead to water quality issues. Furthermore, unchecked expansion into open land could reduce the amount of open land or green space in an area. These environmental issues interact with one another, and their effects may become magnified due to climate change. As a result, understanding the changing biotic and abiotic factors is crucial for protecting the local environments.

Congestion: From 1982 to 2020, the number of delay hours per commuter in urban areas increased from 20 hours per year to 54 hours per year. In 2019, this delay resulted in 3.5 billion gallons of fuel being wasted, costing consumers $190 billion that year. This cost of congestion can increase along with the size of the city, making it a crucial topic that policymakers must address while their city expands. The characteristics of a city's roadways must fit the driving tendency of the individuals who move there. For example, a city layout that has adequate roadways in the downtown area but few highways in and out of the city limits could expect increased traffic if individuals need to commute from the suburbs.

Race to the bottom: A final more concerning trend is a race to the bottom among cities. A "race to the bottom" is a collective set of actions by a city to attract jobs or political credit for city leaders by sacrificing key standards of living or potential sources of tax revenue (Chen 2020). A common race to the bottom behavior is the use of tax

incentives for private companies to move to an area. In 2015, $45 billion in tax cuts were given to private companies as incentives (Simon 2017). For example, Amazon openly publicized its search for the location a second headquarters. Two hundred and thirty-eight cities submitted proposals, which often included lucrative tax breaks for the company. New York City initially won the bid and was expected to give the company over 2.6 billion dollars in tax benefits. The city could expect only around 25,000 new jobs from this deal over ten years. There were also major concerns over the local cost of housing increasing due to wealthy Amazon employees moving to the area. Amazon ended up reneging on the offer after a public outcry. (Passy 2019; Plitt 2019; Cohn 2019). In the end, the perceived economic gains for a city may not offset the decline in infrastructure or other amenities due to the increased pressure on the city. Furthermore, there is no guarantee that the newly created jobs will benefit those within the city rather than outside migrants.

To illustrate the tricky balance between balancing different aspects of individual well-being, consider the example of Boulder, Colorado. Between the 2010 and 2020 censuses, the city grew by over 11 percent. Other neighboring cities experienced growth upwards of 30 percent (Fryar 2021). What are the effects on wellbeing? In many respects, Boulder sets the example for responsible growth management. The city's comprehensive growth plan preserves open land by restricting which areas can be annexed (The City of Boulder n.d.). Alongside this plan, the Boulder "Blue Line" prevents the extension of water utilities to structures above 5,750 feet. This, in essence, stops new construction on the foothills, leaving Boulder's pristine mountains undeveloped (Snider 2009). Combined with a vibrant culture, it is no wonder U.S. News and World Report ranked Boulder as

the best place to live in America (U.S. News & World Report 2021). Despite this ranking, Boulder is not an example of a perfect city expansion. The high demand has raised the median cost of a single-family home to over a million dollars (Zillow Inc. 2022). Even single-bedroom apartments can cost over one thousand dollars per month. As a result, there have been concerns about increased homelessness, less job availability, and the high costs of living. Boulder serves as an important example of why it is nearly impossible for policymakers to balance all the factors that make up someone's well-being. In this case, affordability is sacrificed for the sake of environmental and cultural preservation. In other cities, the standards of living may be sacrificed to increase employment or affordability.

To properly understand how expansion may affect one's city, city leaders need to think about the issue in two respects. There are direct challenges to expansion. These effects are numerous and tend to overlap. While a policy could solve one negative effect of expansion, it could cause another. Thus, policymakers must consider key tradeoffs between different aspects of wellbeing. Alongside the issue of expansion, policymakers must aim to understand the motives of individuals. When someone is considering moving to a new city, there are certain expectations that they put on themselves and the new city. These expectations may or may not be realized based on different feedbacks, and can also be influenced by policy. It is the role of the policymaker, and the goal of this thesis is to break down the motives of the individuals and characteristics of their city to optimize growth for both parties.

The Challenge of City Expansion

The expansion of a city will result in either good or bad consequences depending on both active measures by policymakers and both exogenous factors and feedbacks beyond their control. If these measures are effective in promoting growth, cities could increase their operating budget from taxes on high-income individuals or a larger tax pool. Cities can also promote sustainability and affordability, making the downtown areas accessible for everyone. In contrast, if cities expand poorly, there can be numerous harms. Housing prices could increase, edging out the current residents of an area. If a city's current infrastructure is unable to handle a larger population, there could be increased congestion from poor road networks, a higher risk of electrical failures, or potential water contamination from an overworked sewage system.

The potential benefits and harms are not separate possibilities. Hence, a complex web of factors surrounds city expansion. The goal of the policymaker is to promote policy that creates meaningful benefits while minimizing the harms. There are a few main considerations to accomplish this problem:

Adverse demand effects during expansion: One of the main goals behind city expansion is to increase the quality of life for the individual. Typically, that means funding projects that offer some public benefit. However, once this benefit is realized, more individuals may move to the area to receive the same benefit. This increase in population can counteract the original benefit, returning the city to its pre-expansion state. These adverse demand effects may not completely counteract the policy but need to be considered as a potential muddler of benefits.

Political Pressure: As elected officials, policymakers want to appear successful to their constituents to gain their vote in future elections. There may be scenarios where

policymakers may not act in the individuals' best interests and instead choose an option that will win them political favorability. Alternatively, city leaders may have to push proposals that are politically difficult but will create net benefits for the city.

The Overlapping factors: The last and one of the hardest challenges for policymakers is reconciling with the many overlapping factors of expansion. Based on the pre-expansion conditions of the city, the motives of individuals, and feedbacks beyond anyone's control, the benefits, and harms of certain policies may not clearly be defined. As a result, it is the responsibility of the policymakers to identify the potential spillover effects of a policy and adapt appropriately.

The Challenge of Understanding the Individual

Understanding why individuals choose to move is crucial for city planners so they can ensure their proposed policies match the motives of the individual. The actions of individuals are based on their identities, demands, and expectations. Their identities can include their gender, race, religion, profession, age, etc. Demands are the comforts an individual expects in their life. For many people, numerous demands exist both on the system in which they live and upon themselves. Demands can be grouped into eight value categories: wealth, power, wellbeing, skill, enlightenment, affection, and rectitude (Lasswell 1970). Individuals may value one of these categories more than others and act in a way that satisfies their specific demands. For example, if an individual values affection above all else. Their demand may be to live close to their family.

Finally, expectations are the assumptions the individual has for the system. For example, many people expect to be paid a living wage or the expectation to eat three meals a day. Individuals act because their expectations of the action, which are often

shaped by their identity, would satisfy their demands. An action may worsen one of these values. However, it is up to the individual to do the internal cost-benefit analysis to decide whether the action of moving is worthwhile. For example, a person could move to a new area if their expectation of lower property prices would satisfy their demand for less expensive housing that fits their identity characteristic of being a low-income individual.

Policymakers also need to consider that individual motives for migration are often based on the perceived benefits of the new location. When the migration decisions of like-minded individuals are aggregated together, the marginal costs start to outweigh the marginal benefits. Based on the underlying conditions of the community, the individual's perceived benefits may not be realized. For a simple example, someone may want to move to a less dense city because they value their well-being and think the environmental quality will be better in the new location. If one thousand other people also move for similar reasoning, the environmental quality of the new community may decrease as a result of the larger population. While it may be challenging for policymakers to fully understand why individual moves, past data sheds light on some of the most common reasoning. The 2012-2013 Annual Social and Economic Supplement (ASES) of the Current Population Survey (CPS) gives an in-depth look at the 35.9 million people who moved over the year (Ihrke 2014). From this survey, one can understand which types of individuals are more likely to move and their reasoning. As shown in **Figure 1**, according to one's age, individuals between the ages of 20 and 24 are the most likely to move,

followed by those between the ages of 25 to 29. Families with younger children also have a higher rate of moving, hence the high rates in ages one through ten.

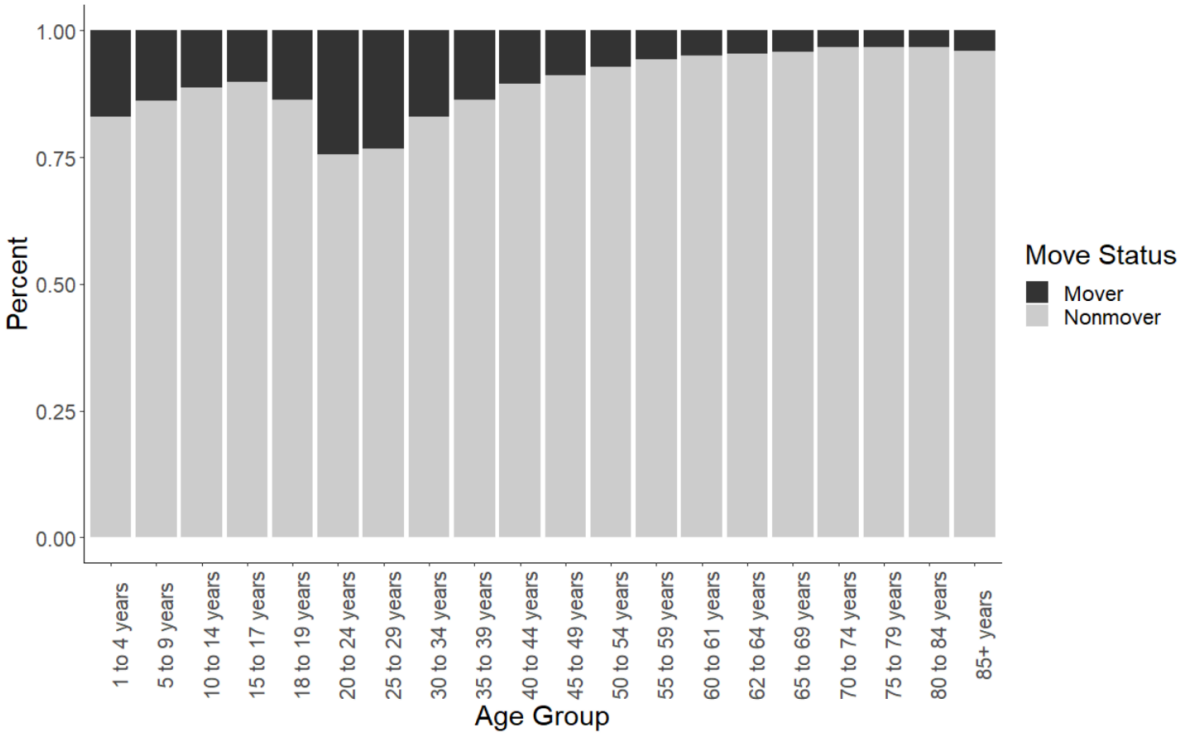

Figure 1: Percent of People who moves from 2012-2013 according to age group (US Census Bureau 2014)

Considering those who did move between 2012 and 2013, a majority of individuals migrated to a location close to their original location. The total number of people, by age group, and how far they migrated is shown in **Figure 2**.

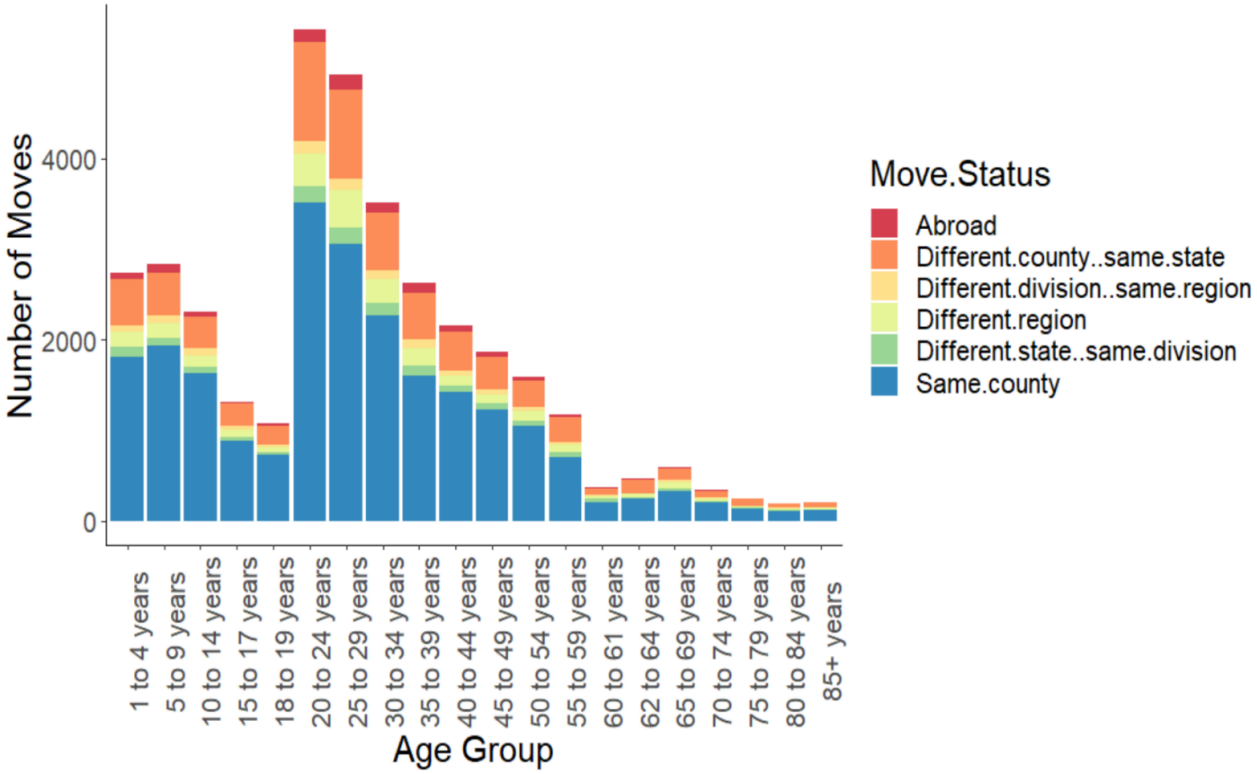

Figure 2: Distance people who moved from 2012-2013 according to their age group (US Census Bureau 2014)

The overall trend is similar among age groups. Most people moved within the same county. The next most popular option is within an individual's current state. Interestingly, the third-largest group is people who moved to an entirely new region in the United States.

Finally, when looking at the individual's reasoning for moving, the data were filtered to only include people who moved out of their current county. This was to remove people who moved small distances and thus do not affect the population of their greater area. The data were then grouped into five main categories called relationship, housing, employment, personal, and transit. These categories align with the census grouping however differ in the inclusion of the transit category (Ihrke 2014). The

possible responses per category are shown in **Table 1**. The total number of people who migrated out of their county for each of these categories is shown in **Table 2.**

Table 1: Possible survey responses grouped by category

Relationship	Housing	Employment	Personal	Transit
Change in marital status	Wanted cheaper housing	To look for work or lost job	Retired	To be closer to work/easier commute
Other family reason	Wanted better neighborhood /less crime	New job or job transfer	Change of climate	
	Wanted new or better home/ apartment	Other job related reason	Health reasons	
	Wanted own home, not rent		Natural disaster	
	To establish own household		To attend or leave college	
	Foreclosure/eviction		Other reasons	
	Other housing reason			

Across almost every demographic category, the most common reason for moving is housing, followed by employment. This trend does not hold in some circumstances, such as when a person is already a homeowner or has a Ph.D. Policymakers should use this information to align policies with individual motives. Specifically, if they are trying to recruit a specific demographic, their policies need to match the individual's reasoning. For example, a college town should not try to recruit a Ph. D.s by promising subsidized housing. City leaders also need to consider individuals with multiple reasons for moving. Even though an individual could have made the original decision based to move based on a new job, the area in which their job was located may be too expensive. As a result, they may move to a neighboring area with a lower cost of living. Even though their original motive was for employment, their final rationale was housing-based. Similarly, an individual could decide they want to move to a general area but hone in on the specific location based on job prospects. For multiple demographic categories, housing and employment only differ by a few percentage points. For these groups, these issues should be considered alongside one another and prioritized equally. Understanding the rationale for why an individual may move to another area is crucial for city officials. If a policy proposal encourages expansion, the policy needs to match the motives of the individuals.

Otherwise, the individuals' expectations for moving may not be realized. For example, city officials could try to create new jobs to encourage migration. However, if individuals' expectation is affordable housing, those who do move may have employment but few options for housing.

To analyze the different ways city leaders can affect change. This thesis addresses four main components of individual wellbeing: employment, housing, mobility, and the environment. Each component has select policy proposals intended to enhance wellbeing. Naturally, there will be other negative consequences to these policies in another respect of well-being. These consequences are often dependent on the unique characteristics of a city and must be considered as part of the policy-making process. When looked at through a holistic lens, policymakers should strive to enact a series of places that work in tandem to enhance the well-being of all residents and mitigate any potential damages from expansion

Table 2: *Number of individuals who moved based on demographic categories across 5 reasonings*

Group	Total	Relationship	Housing	Employment	Personal	Transit
SEX						
Male	5763	22.85%	37.90%	28.72%	3.92%	6.61%
Female	5967	25.05%	38.60%	26.21%	4.11%	6.03%
AGE						
20 to 24 years	1762	14.98%	44.10%	29.68%	4.48%	6.75%
25 to 29 years	1698	20.02%	37.16%	31.63%	3.95%	7.24%
30 to 44 years	2711	20.84%	37.18%	33.49%	1.55%	6.93%
45 to 64 years	1904	29.41%	36.71%	21.74%	5.78%	6.36%
65 to 74 years	376	41.49%	35.37%	5.85%	15.96%	1.33%
75+ years	274	55.11%	26.28%	2.19%	14.96%	1.46%
RACE AND HISPANIC ORIGIN						
White alone	9079	24.73%	37.00%	28.79%	4.30%	5.19%
Black or African American alone	1598	20.40%	47.12%	17.83%	2.82%	11.83%
Asian alone	541	21.44%	34.75%	33.83%	1.66%	8.32%
All remaining single races and all race combinations	510	24.51%	36.67%	27.06%	4.71%	7.06%
White alone, not Hispanic or Latino	7604	24.45%	37.22%	28.09%	4.62%	5.63%
Hispanic or Latino	1696	25.59%	36.32%	31.07%	2.95%	4.07%
White alone or in combination with one or more other races	9354	24.75%	37.06%	28.75%	4.21%	5.23%
Black or African American alone or in combination with one or more other races	1772	20.15%	47.86%	17.78%	2.88%	11.34%
Asian alone or in combination with one or more other races	639	21.91%	34.27%	34.12%	1.56%	8.14%
RELATIONSHIP TO HOUSEHOLDER						
Householder, spouse present	1669	22.83%	34.27%	33.19%	4.07%	5.63%
Other family householder	860	27.79%	46.28%	16.51%	1.98%	7.44%
Spouse of householder	1705	24.46%	34.02%	32.38%	3.87%	5.28%
Child of householder	3073	23.79%	38.40%	29.65%	2.80%	5.37%
Other relative of householder	827	38.45%	34.34%	18.86%	3.02%	5.32%
Nonrelative of householder	1496	23.60%	43.52%	21.32%	5.15%	6.42%
Nonfamily householder	2098	17.68%	39.18%	27.88%	6.29%	8.96%
Secondary individual in group quarters	3	100.00%	0.00%	0.00%	0.00%	0.00%
EDUCATIONAL ATTAINMENT						
Not a high school graduate	633	30.65%	38.70%	21.33%	5.06%	4.27%
High school graduate	1971	29.63%	40.64%	19.23%	4.87%	5.63%
Some college or AA degree	1911	28.73%	39.72%	21.04%	4.66%	5.86%
Bachelor's degree	1640	19.94%	32.38%	34.88%	4.15%	8.66%
Prof. or graduate degree	811	14.80%	25.52%	48.95%	4.56%	6.17%
MARITAL STATUS						
Married, spouse present	3557	24.01%	34.35%	32.64%	3.74%	5.26%
Married, spouse absent	213	16.90%	31.92%	30.05%	12.68%	8.45%
Widowed	261	45.21%	32.95%	7.66%	12.26%	1.92%
Divorced	1085	31.61%	36.59%	17.60%	4.79%	9.40%
Separated	290	38.62%	36.21%	14.14%	1.72%	9.31%
Never married	4047	18.93%	42.80%	27.23%	4.47%	6.57%
NATIVITY						
Native	10585	24.67%	38.68%	26.37%	4.09%	6.20%
Foreign born	1148	17.51%	34.49%	37.28%	3.22%	7.49%
Naturalized U.S. citizen	399	23.06%	38.35%	23.31%	5.26%	10.03%
Not a U.S. citizen	745	14.50%	32.35%	44.83%	2.15%	6.17%
TENURE						
In an owner occupied housing unit	3901	27.84%	39.58%	22.64%	6.69%	3.26%
In a renter occupied housing unit	7595	21.78%	37.64%	29.99%	2.65%	7.94%
In a no cash renter occupied housing unit	233	30.47%	36.48%	25.32%	3.00%	4.72%
POVERTY STATUS						
Below 100% of poverty	2448	25.25%	46.81%	19.65%	3.64%	4.66%
100% to 149% of poverty	1213	28.44%	36.60%	21.93%	6.68%	6.35%
150% of poverty and above	8071	22.90%	35.92%	30.67%	3.70%	6.81%

Chapter 2: Employment and Taxation

Economic policy is often the focal point of any city's expansion plan. Policymakers often look to job creation as a core, bottom-line metric for political success. An increase in job creation can create new sources of revenue for the city and be an effective political talking point. Despite what may seem like a hyper fixation on job growth as an expansion priority, policymakers need to consider that an individual's wellbeing is dependent on additional economic factors such as tax rates, costs of living, or the opportunity costs of living in a given area. These economic factors can influence an individual's choices. When adopting a diverse perspective on economic policy, policymakers should always consider the distribution of benefits. An effective policy ought to benefit both the current residents and the newcomers. Furthermore, these benefits should be equitable along with other demographic characteristics such as race, ethnicity, and socioeconomic status.

Alongside job creation, tax incentives are a popular mechanism for promoting growth. When proposing tax incentives, policymakers can either target businesses or individuals. By lowering the individual effective tax rate, policymakers create a clear economic incentive for an individual to move to their city. Lowering the tax rate for businesses assumes that said businesses will then expand and create new jobs in the city. These jobs will be the incentive for the individual. For both these economic incentives, the key metric of success is whether the increase in the tax pool by the expansion will offset the foregone taxes given to either the individual or business.

Policymakers should also consider how issues surrounding taxation and job creation are connected. As a city expands, the increased population can require more

funding to maintain the city's facilities and services. Adding jobs can increase the amount of sales taxes a city collects. This would not necessarily affect the individual since the taxes are a result of more local businesses paying taxes. Without adequate job creation, city officials may have to raise income or property taxes to account for the growth.

Taxation

The consequences of individual tax changes are dependent on whether the policy is raising or lowering the effective tax rate. Decreasing tax rates can give individuals an incentive to move to the city; conversely, increasing tax rates will give an incentive to migrate from the city. If the population increases, a lack of available housing could increase the price of living. More people driving may lead to greater congestion and worse air quality from car exhaust. Finally, if the city's budget is reduced in the name of fewer taxes, there will be less money for infrastructure maintenance, public programs, or public education.

Policymakers have a few tax categories they can influence to encourage or discourage migration. Only seventeen states allow local governments to impose local income taxes. In these states, cities have the flexibility to create tax brackets, impose a percentage fee, or implement a head tax. In many cities, the income tax only amounts to a few dollars per month (The City of Saint Louis 2021). Thirty-eight states allow local governments to set their own sales tax rates. Higher local sales taxes will raise the cost-of-living, discouraging individuals from moving to the city. Additionally, higher sales taxes can incentivize individuals to shop outside the city for larger purchases to avoid the extra fees (Cammenga 2021). Property taxes are unique in that they are typically levied

by local governments. Since property can be expensive, a small percentage change may have huge implications on the amount individuals have to pay and the city's budget.

For most cities, property taxes are the largest source of revenue, followed by sales and income tax when applicable (Pew Charitable Trusts 2021). Knowing this relationship, policymakers should consider how a change in each of these taxes could affect the cost-benefit analysis individuals undertake when considering migration. A small increase in local income taxes may not affect an individual's decision to move. Sales taxes may increase the cost of living, resulting in a more noticeable difference for individuals. Finally, individuals may react to higher property taxes and feel compelled to move. When comparing these three options, policymakers should consider how marginal changes in each of these tax rates will affect the city budgets. A larger and more noticeable change in income tax would be necessary to make a difference in city budgets. Marginal changes in sales tax rates will have larger effects on city budgets and be more noticeable to individuals. Finally, property taxes will have the largest marginal effect on cities operating budgets but are the most noticeable to individuals.

Job Creation

A complex interaction occurs when, instead of giving tax cuts to an individual, policymakers give tax cuts to large corporations. These policies have the benefit of creating stronger individualized incentives for specific businesses rather than broader tax policies that can severely reduce a city's budget. The hoped-for benefit of corporate tax subsidies is that by giving a company tax break, they will create jobs and invest in the local area. This reasoning assumes that the economic benefits outweigh the cost due to the subsidy and the damages associated with population growth. Like individual tax cuts,

corporate tax cuts could provide employment and, thus, may increase the total tax revenue. However, this increase in population entails the aforementioned transportation, infrastructure, and environmental quality considerations of individual tax policies.

The supposed benefit from corporate tax breaks assumes there will be substantial economic growth due to outside investments and job creation, and any of this new growth will directly benefit community members. A study that analyzed the effects of 543 individual subsidy agreements found that these agreements can generate new jobs. However, the existence of employment spillovers depends on the unique factors of the community and possible synergies among industries (Slattery and Zidar 2020). Since the spillover effects of these tax policies are difficult to quantity, policymakers should look at comparable communities that have passed similar policies to judge the potential efficacy of the tax cuts.

For example, in 2008, Albany gave the manufacturing consortium Sematech a $300 million-dollar subsidy. The cost per job was extremely high since, at first, the deal only added 450 new jobs (Good Jobs First Subsidy Tracker n.d.). Despite this high initial cost, there has been continued growth as a result of the subsidy. The company relocated 100 new jobs to the area in 2010 (Times Union 2010). There has also been spillover in the surrounding area. The consortium announced a $500 million partnership with the state and IBM potential, creating thousands of jobs in the upstate area (Sunny Polytechnic Institute 2014). These policies may not always have the same success. Taiwan electronics manufacturer, Foxconn, was initially given a $4 billion-dollar subsidy to build a state-of-the-art factory in Wisconsin, creating 13,000 new jobs. The deal faced pushback over concerns over water rights and the use of eminent domain laws to make space for the

factory. The deal had to be renegotiated and reduced the number of jobs to less than 1,500. Though the subsidy was also reduced to $80 million, the state had already spent $200 million on road improvements as well as local incentives and grants (CNBC 2021).

This effectiveness of job creation is dependent on whether the types of jobs being created match the capabilities of those unemployed. If the new jobs do not align with the community, then those jobs may go to new migrants rather than the currently unemployed residents. To do this analysis, policymakers should consider if the new jobs fit the current industry cluster of the area. Clusters are a network of industry-linked companies in an area (Porter 1998). While some companies may be in direct competition, others may rely on one another for business. For example, the California Wine Cluster includes vineyards, cork makers, fertilizer manufacturers, and wine tourism companies (Porter 1998). In terms of job creation, understanding the concept of clusters is important for policymakers to judge whether the jobs will benefit the community members. Even if community members do not have direct experience with the job, they should be capable of the role if it fits the cluster. Consider a scenario where a small California town gives a large tax subsidy to a cloud computing tech firm in exchange for creating one thousand new jobs. The community has high levels of unemployment but ample experience in different aspects of the wine cluster. Most likely, the technology company is not going to hire the current community members with little no experience in the industry. Instead, they will recruit from other areas of the country. In this case, new jobs are created but do not benefit the current residents. Conversely, if the company was a large agriculture tech company, community members may be better able to fill those roles because they have general experience with the industry.

Even if the jobs created match the capability of the current residents, there is still no guarantee the jobs will change overall unemployment rates. Outside individuals may migrate to the city to find work. This increased demand could offset the benefits of job creation, either muddling or completely negating the intended effect. For these policies to directly benefit the current citizens, government officials also should consider the feasibility of requiring or highly promoting the jobs to the current community members rather than outside migrants.

In terms of the costs of these policies, city officials should think about both the social costs and the foregone tax revenue. The social costs can be a direct result of the policy or a secondary consequence of it. For example, job creation, leading to an increase in the population, could raise the cost of living, increase congestion, or reduce the amount of available green space. These can all have secondary effects. If wealthier individuals move into historically working-class neighborhoods, the surrounding commercial real estate may be developed to fit their needs and budgets. This could edge out the current residents, gentrifying the area. An increase in congestion could impact the local air quality. Finally, the loss of green space could lead to local heat islands. Assigning a value to each of these social costs can be difficult for policymakers. An increase in congestion can be quantified by looking at gas usage and opportunity cost. However, a final number may not fully encompass the frustration individuals feel while stuck in traffic nor predict whether the additional traffic is a large enough factor to consider moving. As a result, city leaders should, again, look towards similar cities that have gone through with incentive plans and analyze their subsequent effects for both their quantities and qualitative qualities. In doing so, city leaders can act in a way that balances the risk of

different harms and potential damages. City leaders should be wary of the potential distribution effects of these policies. When aggregated, job growth may seem beneficial to everyone. However, the jobs may only go to people with certain traits. Even worse, the negative effects of these policies, such as gentrification, could only affect a single demographic group.

The main direct cost of these policies is forgone taxation. This can be assessed by calculating the amount of foregone taxes per job created, creating a good baseline for comparison to the potential tax benefits. However, city leaders should also consider the types of jobs being created and whether the value they create matches the needs of the city. An analysis of different tax subsidies highlights how the need for jobs often affects the willingness to pay for job creation. **Figure 3** shows a negative correlation between the wages of an area and the volume of subsidies a city offers for each job promised.

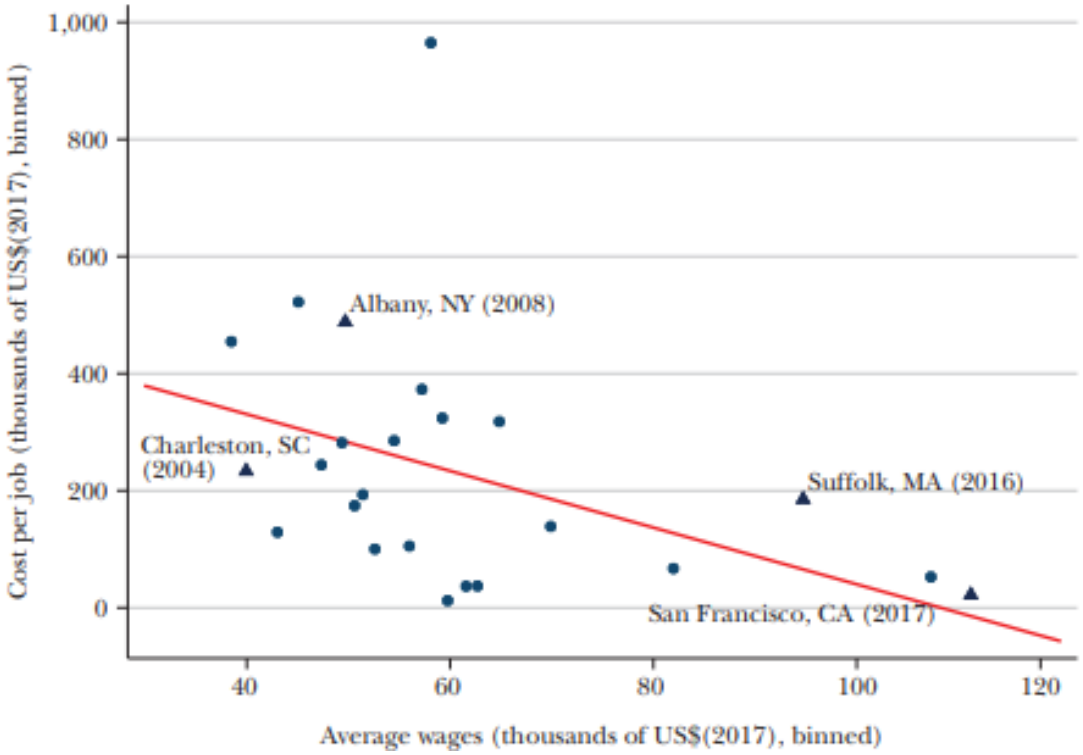

Figure 3: Average wages and the cost per job of different corporate subsidies (Slattery and Zidar 2020)

While the creation of new jobs is seen as beneficial, cities should not pay premiums because they are desperate for job creation. The higher premiums associated with job creation may seem appropriate, but when combined with the social costs, there can be a significant reduction in the efficacy of these tax breaks (Slattery and Zidar 2020).

It is also crucial to consider the influence of outside political factors concerning the timing of subsidy deals. **Table 3** highlights how election cycles affect spending. Considering 336 subsidy deals, a state's incentive spending increased by 11 percent during election years and by over 20 percent when the state's governor is running as an

incumbent. For city leaders, there could be political pressure from the state to move forward with subsidy deals. Even if parts of the subsidy are financed by the state, the social costs of development may be harmful to a city's expansion (Slattery and Zidar 2020).

Table 3: Multiple regression iterations showing a relationship between political factors and incentive spending (Slattery and Zidar 2020)

	Per capita incentives increase by 20 percent					
Governor can run as incumbent	0.05				−0.02	−0.02
	(0.06)				(0.06)	(0.06)
Election year		0.11*			−0.08	−0.07
		(0.06)			(0.10)	(0.10)
GDP per capita ($1,000) in $t-1$			0.00			0.02*
			(0.01)			(0.01)
Percent of population employed in $t-1$				−0.05		−0.09**
				(0.03)		(0.04)
Governor can run as incumbent × election year					0.27**	0.25**
					(0.11)	(0.11)
Observations	336	336	336	336	336	336
R^2	0.17	0.18	0.17	0.18	0.20	0.21

As a whole, policymakers need to exercise caution when promoting new jobs through tax incentives. There is a direct tradeoff between the increase in taxes from new job growth and the size of the incentive, yet there are also numerous hidden costs and benefits to these proposals. The analysis should consider either only the direct, quantifiable effects or all the potential non-quantifiable effects. Partial analysis of the unquantifiable effects fails to encapsulate all the considerations of the proposal. A common political talking point surrounding these policies is that the higher direct costs of the incentive policy are worthwhile given the potential of compounding economic growth. These narratives overestimate the benefits without fully considering the social costs of the policy. Policymakers should only consider these policy proposals as feasible

if the direct benefit of job creation is worth the forgone taxes or if the less quantifiable effects can be estimated and the beneficial economic spillover effects outweigh the social costs.

Chapter 3: Improving Housing Affordability

Homeownership can be considered a cornerstone of the "American Dream" as it allows for individuals to accumulate wealth. Yet, in many cities, renting, let alone homeownership is becoming less financially feasible. While experts recommend a person should not spend more than 2.6 times their annual income on their house, the average income to housing ratio is 5.4. Among major metro areas, 90% have a ratio that is greater than 2.6. This is mainly due to the average housing prices increasing 7.6 times faster than the average income in the United States since 1965 (Delgado 2021). Rising costs for landlords have also led to a slow rise in average rent costs. This rise is made worse by stagnating wages, forcing people to either pay above the recommended 30% of their monthly income or search elsewhere for affordable housing.

Homeownership serves as both a major source of economic prosperity and a major barrier for individuals. As cities become more popular for migrants, the demand for housing can increase even further. Rising property values can be a positive sign for homeowners but can make a city less accessible for middle and low-income individuals. Many policies may indirectly decrease property values; however, policies that aim to artificially lower property values can be damaging and politically unfavorable. As a result, the main focus should be on increasing affordable housing options and lowering the overall effective housing costs. The former may increase supply, and the latter may decrease demand.

Economics dictate that price and availability are inversely related. If the price is low or the availability is high, there is a larger incentive for individuals to move to the area. Because an individual's willingness to pay also affects their decision to migrate,

homeowners may be less likely to move due to higher transaction costs (Mulder, n.d.). As populations grow, city officials can expect an increase in housing costs along with congestion, environmental degradation, and a potential strain on the city's infrastructure (Mulder, n.d.). As the supply of housing increases, the cost of housing should decrease as long as the demand stays the same. Policymakers can take two approaches to increase the supply: they can fund new housing construction, or they can promote policies that reduce regulations and thus make it easier for private contractors to build new homes.

There are numerous challenges to creating an effective housing policy that expands supply to promote affordability. First, the amount of land is typically restricted. Although some small to mid-sized cities may be able to annex new areas, this is not universally true. Thus, it becomes necessary to increase the housing supply within the city. The potential policy solutions fall into two categories, policies that protect existing affordable housing and policies that increase the total volume of the housing. For the policymaker, it is important to consider both types of policy to create affordable housing opportunities and avoid perverse demand effects (Local Housing Solutions n.d.).

Increasing the Supply of Housing

A city may have available public housing. These are housing units funded through different federal grants and specifically support low-income individuals. However, current programs can fall short in addressing individuals whose income is above the threshold to qualify for public housing but is not enough to afford the market cost of the rent. Here, city officials can have a unique role in promoting the construction and preservation of affordable housing. Policies that directly promote the construction of new homes provide policymakers more control over the price of the new housing units. These

policies can be especially advantageous by designating new housing units for lower-income individuals. A potential policy solution is to buy existing pieces of property to convert into housing (Berg 2021). For example, the city of Gary, Indiana purchased an old elementary school for $160,000; the housing authority plans to convert the building into new housing units (Carlson 2020). Depending on the source of funding, these programs can be a burden on the taxpayers and a political challenge. However, policymakers can use these creative solutions that work within city budget constraints.

Alternatively, a relaxation in housing regulations can lower the financial or legal barriers for private contractors and individuals to build new housing units. Financial barriers include both taxes and transaction costs on new houses. The transaction costs for new homes can include environmental impact fees, environmental assessment reports, etc. While some fees may serve valuable purposes in offsetting the harms of construction, they also make it harder for some private companies or individuals to build new homes. While property taxes are important for city budgets, they also serve as a financial barrier to building new homes. In many US cities, homeowners are taxed on both the value of their land and the structures on it. As a result, individuals will be required to pay more for higher-value buildings. In urban areas where lots are smaller, the taxes on structures can discourage individuals from renovating or expanding their homes. Private developers may find it cheaper to build single-family homes rather than larger apartment complexes (Herriges 2019). An alternative is a land-value tax, for which the property owner is taxed more for the value of the land but less on the structures. Since land-value tax models mitigate some of the costs of building higher-density housing structures, this tax can be a potential solution for adjusting for growth while mitigating the risk of urban sprawl (Dye

and England 2010). While policymakers may not want to shift completely to a land-value tax model, giving tax incentives for higher-density buildings can encourage construction and increase the housing supply.

Zoning laws can regulate the uses for an area of land and set additional requirements for construction. Though zoning laws serve an important purpose in controlling local development, overregulation can reduce a city's capacity to keep up with the market demand for housing. A core aspect of many zoning policies is regulating the use of a parcel of land. The broadest zoning definition is whether the land is for residential, commercial, or industrial purposes. These definitions are beneficial with, for example, preventing a sewage treatment plant from being constructed in a residential area. However, in many U.S. cities, there is greater specificity to the land use laws that restrict certain types of structures. Many cities have zoning laws that limit residential construction to a single, detached family home. This prevents both developers from creating multi-unit complexes on a single piece of land and prevents individuals from building accessory dwellings to either occupy themselves or rent out. Other restrictions that require minimum lot sizes for residential areas hinder compact development. Smaller requirements on available parking or maximum build heights can also unintentionally decrease housing options by making it harder to develop an area while abiding by the local zoning laws (Schuetz 2019).

It is also important to consider some of the consequences of these policies. Loosening regulations could result in a race to the bottom. This could entail environmental damage, greater congestion, or weak infrastructure. Additionally, although these policies have the potential to reduce the price of housing in the short term, no

guarantee exists that a potential increase in population will not return the housing market to its previous unaffordable state. As a result, different policies are needed to ensure that some new housing remains affordable.

Protecting Existing Affordable Housing

To protect existing affordable housing projects, policymakers must consider both financial and political approaches. Financial approaches can include tax incentives or other monetary rewards to developers or landlords who provide housing at an affordable rate—even if that rate is below the market value. To make these projects affordable, a city can create an affordable housing trust fund. This would be a city-specific fund (although some states have them as well) that is managed by either current government officials or outside NGOs. They are typically funded through various taxes and fees. Cities should consider whether these funding sources are single-use, such as an initial allocation or a reoccurring investment that can be estimated. The money in these affordable housing trusts can then be given out via grants, low interest, or forgivable loans (Local Housing Solutions n.d.). One possible source of funding that connects housing to employment opportunities is linkage fees that can be imposed on commercial or industrial buildings. These fees assume that job creation from new commercial buildings requires an increase in housing options (Local Housing Solutions n.d.).

Similar to buying and converting older properties, city leaders can also purchase existing housing units to preserve their affordability. For example, Missoula's housing authority purchased an existing 96-unit apartment complex. With this purchase, city officials were able to keep the cost of rent 14 to 20 percent below the market rate and reserve the units for individuals earning 60 percent or less of the area's median income

(Kidston 2018). Though expensive, cities with the resources should consider these creative solutions as a way to protect affordability.

Other policies can use non-financial mechanisms to control the affordability of housing. In these cases, the burden of the cost typically falls on the landowners rather than the city. For example, city officials can impose rent controls that restrict how much a landlord can alter a tenant's rent each year. These non-financial political mechanisms may be politically easier since they do not require any spending, and they can protect tenants from egregious rent hikes (Chandler 2019). However, these types of policies have numerous legal considerations. There can be exploitable loopholes in these policies. Additionally, if renting property becomes unfeasible due to the inability to change rent prices, landlords may stop renting or sell their property. As a result, there will be fewer houses available for rent, making it harder for incoming migrants to live in the area (Lapinski 2019).

Policies that protect affordable housing and promote the construction of new housing must be considered together by policymakers. If a policy only promotes the free market construction of new housing, the price may never decline if the demand for the housing stays high. As properties are redeveloped to increase standards of living, it could lead to the inequitable gentrification of an area. Conversely, if there is no new construction and only the protection of existing properties, the volume of affordable housing will not change, leading to a shortage in housing. By considering both mechanisms, policymakers may be able to increase the volume of housing while keeping affordable options affordable.

Suburbanization

A final aspect of housing surrounds the issue of suburbanization. Since suburban housing can have cheaper costs relative to size, individuals can gain an economic advantage by living in the suburbs. Individuals may also value the open space of the suburbs. In exchange for these benefits, individuals may sacrifice walkability and have to travel farther for basic necessities.

For a city leader, creating suburban housing options beneficial in creating new housing and job opportunities for current and new residents. But, when suburbanization is unchecked, there may be negative consequences. Policymakers may fail to account for to social costs of the reduction of open space. Only comparing home values to the use-values of the open land does not account for any intangible benefits such as air purification, recreation uses, or urban heat mitigation. Unexpected congestion costs could also arise from an increase in people who commute into the city. Finally, there could be greater public infrastructure costs due to the de-densification of the area (Brueckner 2000). As a result, denser urban planning can be cheaper due to greater economies of scale, better placement of capital facilities, and less duplication in service delivery (Goodman 2019).

Given that one of the main draws of the suburbs is better housing options, there are two avenues policymakers can pursue to affect suburbanization. First, they can alter the price of suburban living through either subsidies or taxes. Taxing suburban housing could disincentive people from moving. However, any policies that increase the price of housing will typically contribute to overall unaffordability and ought to be avoided. An alternative is to promote policy that makes urban housing options more affordable. Some people may still go to the suburbs for non-cost-related reasons, but by ensuring high-

quality housing options, people will not be forced into the suburbs due to budget constraints.

Chapter 3: Congestion and Transportation

Compared to other aspects of wellbeing, congestion is by definition a problem. Policymakers should define congestion as any additional time it takes to get from one area to another due to traffic conditions. Increases in congestion are also closely related to population expansion, making it a top priority for policymakers as the size of their city grows. The issue falls at the center of job creation and housing availability and has historically been thought of as a quantitative problem, whereas city officials should balance the aggregated number of housing units with the number of jobs in an area. However, these analyses fall short of addressing individual differences in skill levels, wages, or lines of work. Thus, a more qualitative "fit" approach is needed (Benner and Karner 2016). This is especially true for lower-wage workers who have less flexibility with housing decisions. As a city expands, the congestion outcomes will not only be relative to the location and jobs and housing but also the living preferences and budget constraints of individuals. The choice to commute to work, take public transportation, and carpool affects a city's transportation needs and thus, requires specific policies to reduce congestion. These policies can either create new transportation infrastructure or adapt current infrastructure to their population.

The costs of congestion can be high. In Baton Rouge, Louisiana, the congestion alone wasted 6,621,000 gallons of fuel. The wasted fuel has serious environmental implications and can contribute to local air pollution and global climate change. There is also a high cost for the city; Baton Rouge's congestion cost the city $215 million in 2005 (Texas A&M Transportation Institute 2021). This cost is mostly levied on the consumer who has to purchase gas more often and has a higher value of time wasted.

When addressing congestion and transportation policy, a common challenge for policymakers is to avoid adding demand associated with expanded infrastructure. This demand is referred to as "induced travel." When the cost of traveling between two points is reduced due to a faster option, the demand for traveling increases resulting in more cars on the road and the same amount of congestion before any construction (Mann 2014). While these perverse feedbacks do not fully invalidate policies that expand roadways, policymakers should not think of construction projects as traffic decongestants (Mann 2014). Meaningful congestion policy can lead to other positive environmental and social benefits.

To estimate the effect of population growth on congestion, three different specifications of a two-way fixed effect regression were run on midsized cities between 250,000 and 500,000 people using data from Texas A&M Transportation Institute's Urban Mobility Report. By fixing for the city and the year, the model aims to control for individual differences between cities and isolate the independent variable as the main factor affecting congestion. The first specification looks at the effect population has on total congestion (in hours). The second specification substitutes population with the number of auto commuters. A final specification included the number of miles in daily freeway and arterial road travel. All three specifications of the model are shown below, and the results of the regressions are shown in **Table 4**

$$\boldsymbol{Total.Delay = \beta 1 * Population + Fixed.Effects} \qquad (\mathbf{1})$$

$$Total.Delay = \beta 1 * Auto.Commuters + Fixed\ Effects \quad (2)$$

$$Total.Delay = \beta 1 * Population + Freeway.Miles.Traveled + Arterial.RoadTravel + Fixed.Effects \quad (3)$$

Table 4: Regression results of different independent variables on the total congestion in midsized cities

	(1)		(2)		(3)	
Independent Variable	Coefficent	SE	Coefficent	SE	Coefficent	SE
Population	0.0156*	0.0016			0.0123*	0.0015
Auto Commuters			0.4201*	0.031		
Freeway Miles of Travel					0.00769*	0.00061
Arterial Street Travel					0.00373*	0.00082
r-squared	0.08019		0.13942		0.37457	

As cities expand, there may be a slight increase in congestion due to the larger population. For every additional person, the city can expect 0.0156 additional hours of congestion. This number is larger (0.42 hours) when looking at the number of vehicles on the road instead of the overall population. This result is suggestive of the fact that an increase in auto commuters will have a larger effect on congestion compared to a general increase in the overall population. Even though both results of statistically significant, the tangible impacts are relatively small once divided among the population. For example, if the number of auto commuters in a city grew from 9,000 to 10,000, the city could estimate an additional 420 hours of total congestion. That number may seem large but equates to less than 3 minutes per person. Finally, city leaders should also consider that

the effect of expansion on the congregation may not have a linear trend and thus could increase un-proportionally concerning growth.

Given that congestion can have environmental and economic consequences, what can policymakers do to address this problem? The third specification sheds light on how different road types affect congestion. Compared to arterial roads, an increase in freeway miles traveled has a larger impact on congestion. This result suggests that greater freeway usage may have a larger impact than arterial road usage.

The creation of freeways may be politically challenging for city officials because it could require the use of eminent domain laws to create an efficient route to and from the city. Furthermore, areas that are located next to the newly constructed freeway could be susceptible to localized spikes in air quality during rush hour (Watanabe et al. 2019). Finally, a greater travel demand may cause adverse feedbacks that reduce the impact of the freeway construction. Understanding that the location of housing and jobs needs to fit policies that aim to alleviate congestion, freeway construction could be effective in situations where there are large populations living in the suburbs while the jobs are centered in the city. This road structure could create easier routes of access to work and make living in the suburbs while working in the city a more viable option for people.

If a large portion of a city's workforce and housing are in closer proximity, the creation of higher-speed arterial roads could be a cheaper alternative to freeways. Arterial roads can avoid some of the political, economic, and environmental challenges posed by freeways. However, if an arterial road is the only feasible option between two points, it may become incredibly congested. For example, arterial roads that lead from city centers to major league sporting complexes tend to become extremely congested on a day where

theory is a game. Thus, arterial roads must be arranged in a way where there are multiple routes from place to place, spreading out the traffic.

Changing the demand for transportation

Policymakers can attempt to reduce congestion by adjusting the demand for roadways during peak hours, counteracting the effects of induced travel. Congestion pricing uses tolls to limit the number of cars during peak hours. The revenue from the tolls can also be put toward other public projects (Mann 2014). Adjusting the demand for parking may also serve as a potential solution for congestion. When parking is cheap or free, motorists often fill the parking spaces for longer periods, leading to additional congestion from people searching for open spots. Adding hourly meters, compared to a limited free period, can reduce this congestion in urban areas went eh cost of parking is set to match the demand. These policies may be politically unfavorable but, in reality, can save motorists money by reducing the number of parking citations. (San Francisco Examiner 2012). Parking meters can also help local businesses by freeing up parking spaces in front of their stores for customers (Mann 2014).

One concerning consideration with these policies is that individuals have different budget constraints. Depending on how much the price changes during peak demand, wealthier individuals may have better access to travel. Thus, policymakers should also consider other policy proposals that reduce the burden of congestion prices on lower-income individuals to avoid any inequitable benefits (Gold 2021).

Public Transportation

Like other congestion policies, investing in public transportation may increase the travel demand, counteracting some of the intended effects. However, building out public

transportation networks can offer additional economic and environmental advantages. For example, a bus can cost between $500,000 and $800,000, with diesel buses costing less than electric ones. Electric busses have cheaper fuel costs of $10,500 annually in electricity versus $27,000 a year in natural gas (Groom 2015). One study found that the lifetime cost of a diesel bus is $1.35 million, while an electric bus is $1.18 million (Aber 2016). In comparison, the cost of adding a freeway lane in an urban area is between $4 million and $7 million per mile, depending on the city (U.S. Department of Transportation Federal Highway Administration 2019). The impact of expanding public transportation is dependent on the characteristics of the city. If a city has the existing infrastructure, such as dedicated bus lanes, public transportation expansion may be cheaper than road construction. Finally, city officials can adopt additional policies that make public transportation more efficient. For example, signal priority systems can be used to give on-the-road transit vehicles priority at traffic lights expediating travel times (Federal Transit Administration 2015)

There also can be environmental benefits to public transportation. One study found that public transit releases 50 percent less carbon dioxide emission compared to single-occupancy vehicles. The breakdown of specific modes of transportation is shown in **Table 5:**

Table 5: Reduction in CO_2 emission by public transit options compared to Single Occupancy Vehicles ("Public Transportation's Role in Responding to Climate Change" 2010)

Mode of Transportation	**Pounds CO_2 per Passenger Mile**	**Reduction Compared to SOV**
Single Occupancy Vehicles (SOV)	0.96	--
Bus Transit	0.64	33%
Heavy Rail Transit	0.22	76%
Light Rail Transit	0.36	62%
Commuter Rail	0.33	65%

Along with a reduction in greenhouse gasses, increasing the amount of available public transit could also reduce nitrogen oxide or VOC emissions, improving local air quality. This is suggestive of the fact that investments in public transportation may have environmental benefits regardless of the impact on congestion.

Though some forms of public transit may be cheaper than road construction, subways, light rails, or commuter trains have high capital expenditures. Thus, policymakers must consider a variety of funding options to support these projects. One potential way to fund resource-intense public transit construction is using public-private partnerships. Compared to government programs, private companies be more efficient and profitable. Along with this efficiency comes a risk that these companies will cut corners to increase profits at the expense of riders. As a result, carefully crafted

partnerships between public and private groups are necessary to ensure profitability, reliability, and equitability in public transportation.

The main difference between public and private sector projects comes down to the distribution of the construction and maintenance costs. With publicly funded projects, the majority of the costs for the infrastructure., but once the construction is complete, the usage fees are set to account for maintenance. As a result, government-funded projects tend to have a higher upfront cost that is levied on taxpayers but lower usage fees. Private firms differ in that they will set tolls to account for the maintenance and the initial investment. This can result in higher usage fees and cheaper upfront costs. Public-private partnerships can be effective in reducing both upfront and usage costs. Local governments have to make some concession, be that monetary or land-based, to the private firm however gain more input over usage fees. Two partnerships that policymakers can use are a value capture approach or a build-operate-transfer contract.

Transit value capture approaches leverage the high value of the area surrounding a transit station to raise funds for the project. For many cities, the infrastructure surrounding transit stations is seen as a central location for pedestrians to pass through. Additionally, since the costs of building public transit stations are high, it is hard to convince private firms to support these projects without providing economic incentives. The transit value capture model specifies that the rights to develop the surrounding areas can be given to private companies in exchange for funding. By building shopping centers, apartment complexes, and parks surrounding the transit center, developers can create a mixed-use, walkable hub. The return on investment from the surrounding land can offset the cost of development and make the entire project profitable for private developers. The

success of transit value capture programs depends on the infrastructure. The “transit hub” should be a pedestrian-friendly area resembling a luxury city center—filled with cafes, boutiques, and greenery—rather than chain restaurants and parking spaces. Additionally, building new housing options around creates value because the property is located in a high-end central area with easy travel access (Cervero 2010).

Alternatively, a build-operate-transfer (BOT) model could allow private developers to profit off a public transportation project before returning the infrastructure to the government. In these cases, the infrastructure is built and then operated by a private company for a set amount of time. During this time, the company has some autonomy over the use costs of the transit system and can operate it in a way that will be profitable. After the contract expires, the transit system is transferred over to the public sector. There are a few considerations with a BOT methodology. Even though a private company may be more efficient than a public entity, government oversight is necessary to prevent developers from cutting corners in the name of pure profit. If done correctly, individuals may not even notice a private company controlling the public transit system (Cervero 2010).

For both types of partnerships, policymakers should consider the effect of the existing infrastructure. A BOT agreement is to be only profitable if the private developer has full control of the prices. Thus, this method is most practical for larger projects that create entirely new transit routes. The transit value capture model can be more versatile because only the surrounding area is conceded to the developer. This can be useful for raising funds to enhance or expand a transportation system.

Chapter 4: The Environment

A common narrative is that there is a tradeoff between development and environmental quality. This narrative excludes environmental development as a key part of the expansion process. As a city expands, there can be harmful environmental effects. These effects can be either the direct result of population growth or of policy that encourages or discourages it.

Policymakers need to consider that many environmental damages may not have a linear effect. The dose-response effect is used in pharmacology to explain how a response changes with increasing dosage (Farinde 2021). A similar curve may also exist with environmental damages. Shown in **Figure 4**, this degradation-damage curve highlights the non-proportionality between environmental and individual damages. At first, environmental damages may not be notable to nor damaging to individuals. This relationship is depicted by the leftmost orange arrow. At a certain point, there is a drastic spike in individual damage, shown by the middle green arrow. Finally, the individual damages are so severe that further environmental degradation will, once again, have a very limited marginal effect, as shown by the rightmost arrow.

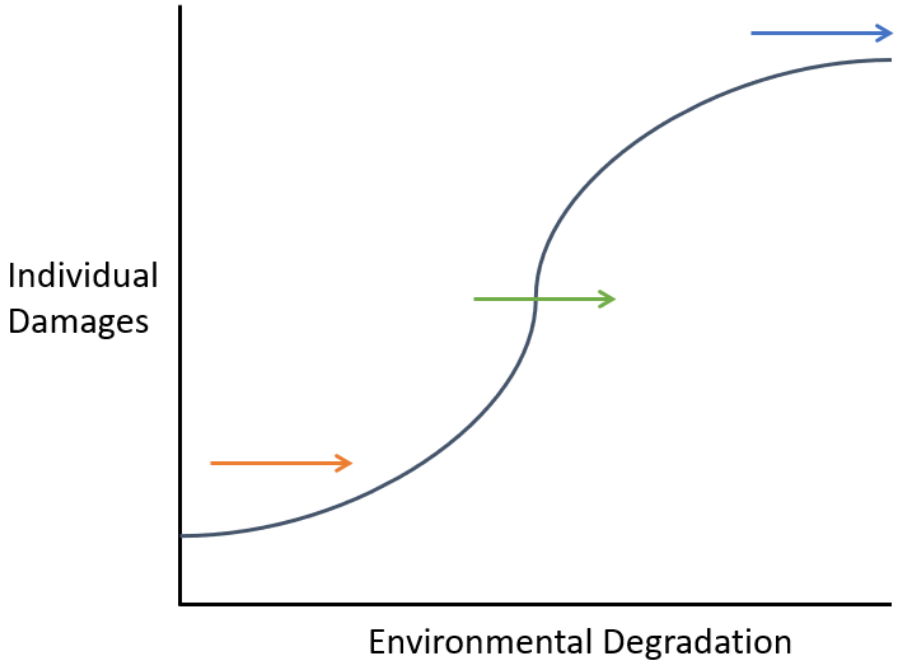

Figure 4: Dose-Response-like curve explaining the change in marginal damages for additional environmental degradation.

This relationship is important when trying to balance the environmental well-being of individuals and development. For example, paving over a single acre of green space to build a new roadway may have minimal environmental effects on the surrounding area. In this case, the benefit of the new road may be worth the environmental damage from construction. If policymakers assume a linear relationship between environmental degradation, they may keep degrading the area in the name of growth. However, in the case of green space, the marginal increase in local heat islands or air pollution will slowly increase. Here, the benefit of the new construction may not outweigh the additional environmental costs. Finally, there will reach a point where the environment is so damaged that any additional destruction will, once again, have little

marginal effects. Ideally, policymakers should balance the tradeoff to avoid reaching this point.

Overall, environmental considerations can be compartmentalized into the ambient environmental conditions and the built environment. Ambient environmental conditions present a unique set of challenges because city officials can pass policies to affect quality but not directly affect their availability. Comparatively, policymakers can affect both the quality and availability of the built environment. Depending on the characteristics of a city, policymakers must work within their capability to maintain environmental quality while undergoing expansion.

Ambient Environmental Conditions

Numerous aspects of expansion can negatively affect the environmental conditions of a city. An increase in passenger vehicles may result in a greater volume of particulate matter and carbon monoxide emissions (Union of Concerned Scientists 2014). Nitrogen oxides levels may also increase, resulting in more ground-level ozone (smog). If more people develop the land, there could be an increase in localized heat islands. A lack of permeable ground could also lead to a decrease in the local watershed levels. Everyone is impacted by the environmental conditions of the area (air, water temperature) and, thus, shares the responsibility to maintain the quality.

This responsibility is challenged by the possibility of freeriding. Because the environmental conditions of a city and the built environment are public goods, there is no deterrent from free riding. Using the example of air quality, the overall benefits of reducing air quality may heavily outweigh the costs. However, the individual is not required to directly contribute to receive the benefits from the reduction. It is not

inherently in the individual's interest to pay for better air quality if they know others will. When considering a group of individuals, there may not be any tangible change due to individual inaction. As a result, alternative funding sources and policies will be required for cities to maintain the quality of the public environmental goods as the population expands.

Considering this issue of freeriding, the policy needs to encourage, if not require, individual responsibility. If the goal is to save water, then asking people to take shorter showers hinges on people's good nature. Thus, another incentive is required. Cities could offer financial benefits to reinforce environmentally positive behaviors. One potential policy tool is to change utility rates to an inverted block price (IBP) model. This pricing model specifies the marginal cost of usage increases the more of the utility is consumed. For example, a person's first 500 kilowatt-hours of electricity may only cost ten cents. However, the next five hundred will cost fifteen cents. This is more equitable because those who consume more resources will have to pay higher premiums.

Alternatively, instead of imposing costs, cities can offer financial benefits for addressing environmental quality. Local and state governments can place economic incentives on environmentally friendly decisions—often surrounding resource usage. This could be a tax deduction for buying an electric car or a conservation rebate for using high-efficiency home appliances. City officials need to match the financial incentives with the expected environmental harms of expansion. A rebate on electric cars would be best suited if city officials are concerned about air quality from increased congestion. Likewise, an area of high drought would be more inclined to promote water-saving

appliances. By matching the harms to incentives, city officials can specifically target behaviors that lead to poor environmental quality.

The Built Environment

The other main environmental considerations are changes in the built environment. The built environment includes amenities that most individuals expect a city will provide, like proper sewage treatment or access to green space. When undergoing expansion, the policy must be put in place to maintain the city's existing environmental infrastructure.

Green Space

An extremely valuable aspect of the built environment is the amount of available green space. As a city expands, green space may become threatened because more infrastructure will be needed to support the larger population. This could include new roads, parking lots, or housing developments. These new structures may be built on top of existing green space due to lower costs. Furthermore, it could be politically easier to build on open land compared to using eminent domain laws.

There are numerous benefits to green space. The porous soil allows for water to drain into the ground while plant roots hold the soil in place. This serves as a safeguard against flooding and improves water quality (Forest Research n.d.). Vegetation also serves as a natural air purification system for cities. Reducing airborne particulate matter can have many positive health effects, such as reducing the long-term impacts on preexisting conditions such as asthma or heart disease (New York State Department of Health 2018).

Building and maintaining green space may also have positive effects on the ambient environmental conditions. In terms of air quality, trees in Beijing were responsible for removing 772 metric tons of PM10. Green space can also reduce the ambient heat of the surrounding area. While conventional building materials tend to absorb the sun's energy and warm the surrounding area, resulting in urban heat islands, areas of high vegetation create cooling effects (Earth Observatory 2015). This is due to both shading and evapotranspiration (EPA 2014a). For green space areas larger than ten hectares, there is an up to a two-degree Celsius reduction in temperature that extends 350 meters past the boundary of the green space (Aram et al. 2019).

Compared to large cities, like Beijing or Los Angeles, smaller, expanding cities have a unique advantage in that they may already have available green space. As a result, policies surrounding green space should aim to both establish new areas of green space and protect existing ones. Establishing new green space could have a higher opportunity and direct costs and thus require increased taxation to support. Comparatively, protecting green space reduces the land that is available for development. This could reduce the volume of housing units in an area or require more transportation routes to avoid cutting through the green space. Finally, many individuals value living near open green spaces like parks. This could raise the price of living in an area, potentially leading to inequitable gentrification.

Green space can be hard to evaluate because there are many intangible costs and benefits. However, having an accurate valuation of an area of land can justify its protection or creation. There are a few methods policymakers can use to evaluate green space. Hedonistic pricing models specify that individuals will pay more money for goods

that have better characteristics. In the context of green space, policymakers can look for the difference in the surrounding real estate prices. Between identical homes, it is common for a house to sell for more due to its location near a park. Assuming the other characteristics of the property are similar, policymakers can attribute this extra value is due to the proximity to green space. This approach can be used across multiple homes to find how much individuals value the space. Since this valuation is often dependent on housing prices, hedonistic pricing modes leave out people who value local green space but cannot live near it due to other constraints (Ecosystem Valuation n.d.). Posed as hypotheticals, a contingent pricing model asks individuals their willingness to pay to protect an area of green space. Their responses are aggregated to assign a value to the area (Carson 2001). Both these evaluation tools fall short because they rely on a human's valuation of the land. In reality, green space provides many non-monetary, ecological benefits, and it is necessary to work with specialists to define these impacts. For the policymaker, using different methods to assign a value to green space is important to protect it. In many cases, the opportunity costs may not outweigh the benefits of green space. By assigning the space both tangible and nontangible costs, it can be easier to protect.

Along with protecting existing green space, policymakers can also attempt to create new areas. On a larger scale, it can be challenging and expensive to secure large amounts of land for park projects. By thinking creatively about underdeveloped land areas in a city, policymakers could cut development costs while trying to maximize the well-being of individuals. For densely packed cities, smaller parkettes or "pocket parks" can be constructed on a single lot and provide many local benefits. Due to their size,

parkettes can be built can replace small vacant lots and provide numerous benefits to the community. Along with the general benefits of green space, pocket parks can be built in areas that have historically lacked green space. In these areas, these parks can promote additional physical activity in the surrounding community (Cohen et al. 2014).

Policymakers can also look to brownfields as a potential area for redevelopment. A brownfield is an EPA designation for an area of land that may be contaminated with a hazardous substance (EPA 2014b). Compared to superfund sites, brownfields are only suspected to be contaminated based on their historical use. Thus, the viability of brownfield conversion is dependent on the cleanup costs. Some common past uses for the land and potential contaminants are shown in **Table 6:**

Table 6: Potential contaminants and past uses for brownfield sites

Contaminant	Substance Type	Examples of Past Uses
1. Lead (Pb)	Metals	Mining, fuel, paint, inks, piping, batteries, ammunition
2. Petroleum	Oil, hydrocarbon compounds	Drill and refining, fuel, chemical and plastic production
3. Asbestos	Fiber in rock	Mining and processing, piping, insulation, fire proofing, brakes
4. Polycyclic aromatic hydrocarbons (PAHs)	Hydrocarbon compounds, combustion byproduct	Coal tar, creosote, soot, fire, industry/ manufacturing byproduct
5. Other metals	Metals	Metal fabrication, plating, mining, industry/ manufacturing
6. Volatile organic compounds (VOCs)	Manmade chemicals	Industry and commercial product solvents, degreasers, paint strippers, dry cleaning
7. Polychlorinated Biphenyls (PCBs)	Manmade chemicals	Heat and electrical transfer fluids, lubricants, paint and caulk, manufacturing, power plant
8. Arsenic (As)	Metals	Pesticides, agriculture, manufacturing, wood preservative

An initial assessment costs between $50,000 and $100,000. From there, cities can use physical, chemical, or biological approaches to clean the sites. While some of these costs may be funded by taxpayers, cities can also utilize EPA grants to help finance these cleanup processes. Once cleaned, the site can be converted into not only green space but

also residential, commercial, industrial, or mixed-use spaces. Since brownfields are publicly owned, there is no cost to purchase the land. Additionally, brownfields can be undesirable to current residents making cleanup projects politically easier for city leaders.

Outside the direct benefits of green space, the process of converting brownfields creates value for a city. Cleaning up brownfields can increase surrounding property by 5% to 15% (Haninger, Ma, and Timmins 2017). Based on this increase, city officials could also expect an increase in property taxes collected (Sullivan 2017). Additionally, the process of cleaning up and revitalizing the area can create new jobs. The EPA estimates that $20.43 was leveraged for $1 of EPA brownfield funds spent (EPA 2014b). Thus, revitalizing these areas can prove beneficial for policymakers hoping to increase access to green space.

Public Utility Infrastructure

Public infrastructure and utility policy can be both a mechanism to control growth and a potential area of concern for policymakers. In terms of growth management, since individuals require core services such as water and electricity to live or operate in an area, a policy that limits the extension of these resources essentially limits the extension of new construction. For example, Boulder's Comprehensive Plan sections off areas where water services are not provided and, as a result, protect the surrounding rural area from sprawl (The City of Boulder n.d.). Limiting the availability of utility services may be able to control growth but will also be politically unfavorable to those who wish to move to the outskirts of an area.

Along with availability, policymakers also need to consider the reliability of public utility infrastructure during expansion. When assessing risks, city leaders should

consider both the likelihood of adverse conditions and the risk these conditions may pose. For example, heavy rainfall can overwhelm a city's wastewater infrastructure. When rain collects on non-permeable manmade surfaces, the pools of water may have to travel farther to reach a storm drain. Alongside the risk of localized flooding, the water can become contaminated with debris that is picked up along the way. When the water is eventually discharged, there is also a risk of erosion on the banks of the waterways. While rainstorms are not dependent on population growth, the potential stormwater influx may outpace the capacity of the treatment plants. In many cities, the sewage and stormwater systems are combined. Thus, if the system is unable to handle large influxes of stormwater, there can be sewage leaks. (Denchak 2019).

The likelihood of these damages is dependent on both the geographical location and the current infrastructure. In an extremely arid area, like the Southwest United States, there is a very low risk of heavy rainfalls. Comparatively, heavy rain is a typical reality in the Pacific Northwest. As a result of the location's weather conditions, the infrastructure is adapted appropriately. Since infrastructure in the Pacific Northwest can better handle excessive rainfall, the likelihood of serious damage is lower compared to more arid climates.

It is important to understand the balance between damages and likelihood while a city expands. In the case of stormwater, new construction can reduce the number of permeable surfaces and increase the likelihood that heavy rain events will overwhelm the current infrastructure. Furthermore, an increase in population means the damages will be felt by more individuals. Since city officials may need to expand utility infrastructure to account for growth, they should consider alternative sustainable strategies. Roadside

planting, green roofs, or absorbent gardens can capture stormwater and divert its natural storage in the ground. These green infrastructure projects have other advantages, such as air filtration and heat absorption (Denchak 2019).

Chapter 5: How a City Should Expand

If a city wants to expand, how? There is no one-stop solution for how a city should properly expand. The uniqueness of cities requires different policy approaches. However, by considering all overlapping factors as part of the policymaker process policy, city leaders can try to enhance the well-being of individuals while their city expands. The first question is whether city leaders want to encourage migration; they have a few policy avenues. Lowering taxes or increasing housing affordability can create an incentive for migration. Another expansion policy creates an incentive by improving other city amenities, such as environmental quality or mobility. With population, there could be an increase in the city's budget from a larger tax pool. Due to higher demands, there could be less job ability or affordable housing options. Environmental conditions may also deteriorate, and congestion could increase due to population growth. Understanding these potential negative impacts, how should policymakers try to enhance well-being while accounting for the potential negative consequences?

As a starting point, **Table 7** shows some of the questions policymakers should consider during the policy-making process. These questions assess the unique factors of their city so the policy can be tailored to enhance wellbeing where possible. Alongside these questions, policymakers also should think of the distributive impacts. Without understanding how specific groups of people utilize city resources, there is a chance the policy can have inequitable effects along with demographic characteristics.

Table 7: Key questions policymakers should ask to better understand the unique characteristics of their city

Aspect of the City	Key Questions/Considerations
Employment	-What is the city's job cluster? -What adjacent industries do the current residents have the capabilities to work in? -What are current unemployment levels?
Housing	-Where do people live compared to where they work? -What proportion of people own rather than rent? -How does the price of housing change relative to location? -What aspects of housing do individuals value (price, location, size, etc.)
Taxes	-What is the tax rate for individuals? -What is the tax rate for corporations? -How have corporations been subsidized in the past?
Environment	-Is there water scarcity? -Is air pollution an issue? -How much available green space is there? -How often do people visit public parks? -How environmentally altruistic are people? -What is the distribution of green space throughout the city?
Congestion	-To what extent do people need to drive to get places? -Is there accessible public transportation in and out of the city? -Is there accessible public transportation throughout the city? -How often do people use public transportation? -What times are main freeways congested?

There is no simple solution for how a city should for untangling the complex web of factors that define the quality of an area. However, there are a few overlying strategies that city leaders should consider while expanding.

There can be an initial hesitancy against creative or novel strategies since they are untested on a larger scale. However, novel or creative policies can be molded to the unique characteristics of the city. Especially when cost is a factor, finding unique solutions can help solve an issue while staying within the city's budget. For example, the revitalization of unwanted land or buildings can cut construction costs for affordable housing or green space. Outside construction, unique public-private partnerships can help city leaders overcome the challenges of financing projects.

It is also crucial policymakers analyze how different policies can solve more than one issue. For example, increasing public transportation could have a positive effect on the environment and reduce congestion. Targeting these policies may be a more efficient way to increase well-being in multiple categories. Similarly, some policies may have numerous harms. For example, using eminent domain to build a freeway through a neighborhood could reduce congestion but can also reduce housing availability and increase local air pollution. Policymakers should try to target policies that have numerous benefits. That being said, it is important to consider which benefits are a direct result of the policy or an expected side effect. Assuming spillover benefits is helpful, but policymakers need to also consider the spillover harms to avoid unexpected damages.

The final key consideration for the policy process is the difference between infrastructure and legal barriers. Infrastructure can be expensive and unfavorable to

taxpayers. For certain areas, like roads or parks, government-funded construction may be required to maintain quality. However, for situations where the main issue is a low supply, policymakers should also consider the legal and financial barriers in the private sector. While many regulations have an important purpose in maintaining quality for consumers, others can be expensive and burdensome for private entities. Thus, selectively loosening these barriers can influence private companies to increase the supply without city financing.

Bibliography

Aber, Judah. 2016. “Electric Bus Analysis for New York City Transit,” May, 37.

Benner, Chris, and Alex Karner. 2016. “Low-Wage Jobs-Housing Fit: Identifying Locations of Affordable Housing Shortages.” *Urban Geography* 37 (6): 883–903. https://doi.org/10.1080/02723638.2015.1112565.

Berg, Nate. 2021. “The Radical Way Cities Are Tackling Affordable Housing.” Fast Company. April 27, 2021. https://www.fastcompany.com/90618596/the-radical-way-cities-are-tackling-affordable-housing.

Brueckner, Jan K. 2000. “Urban Sprawl: Diagnosis and Remedies.” *International Regional Science Review* 23 (2): 160–71. https://doi.org/10.1177/016001700761012710.

Cammenga, Janelle. 2021. “State and Local Sales Tax Rates, 2021.” *Tax Foundation* (blog). January 6, 2021. https://taxfoundation.org/2021-sales-taxes/.

Carlson, Carole. 2020. “More Vacant Gary Schools Sold; City Biggest Buyer.” Chicagotribune.Com. December 14, 2020. https://www.chicagotribune.com/suburbs/post-tribune/ct-ptb-gary-schools-sold-st-1215-20201214-px3vzmrpwjbixjxmxrtl64hq7m-story.html.

Carson, R. T. 2001. “Resources and Environment: Contingent Valuation.” In *International Encyclopedia of the Social & Behavioral Sciences*, edited by Neil J. Smelser and Paul B. Baltes, 13272–75. Oxford: Pergamon. https://doi.org/10.1016/B0-08-043076-7/04196-6.

Cervero, Robert. 2010. “Transit Transformations: Private Financing and Sustainable Urbanism in Hong Kong and Tokyo.” In *Physical Infrastructure Development: Balancing the Growth, Equity, and Environmental Imperatives*, edited by William Ascher and Corinne Krupp, 1st ed., 165–85. Palgrave Macmillan, New York. https://doi.org/10.1057/9780230107670.

Chandler, Jenna. 2019. “Here’s How California’s New Rent Control Law Works.” Curbed LA. September 24, 2019. https://la.curbed.com/2019/9/24/20868937/california-rent-control-law-bill-governor.

Chen, James. 2020. “Race to the Bottom Definition.” Investopedia. December 30, 2020. https://www.investopedia.com/terms/r/race-bottom.asp.

CNBC. 2021. “Foxconn Mostly Abandons $10 Billion Wisconsin Project Touted by Trump.” CNBC. April 21, 2021. https://www.cnbc.com/2021/04/21/foxconn-mostly-abandons-10-billion-wisconsin-project-touted-by-trump.html.

Cohen, Deborah A., Terry Marsh, Stephanie Williamson, Bing Han, Kathryn Pitkin Derose, Daniella Golinelli, and Thomas L. McKenzie. 2014. “The Potential for Pocket Parks to Increase Physical Activity.” *American Journal of Health Promotion* 28 (3_suppl): S19–26. https://doi.org/10.4278/ajhp.130430-QUAN-213.

Cohn, Scott. 2019. “Amazon Reveals the Truth on Why It Nixed New York and Chose

Virginia for Its HQ2." CNBC. July 10, 2019. https://www.cnbc.com/2019/07/10/amazon-reveals-the-truth-on-why-it-nixed-ny-and-chose-virginia-for-hq2.html.

Delgado, Michelle. 2021. "U.S. House Prices Are Rising Exponentially Faster Than Income (2021 Data)." *Real Estate Witch* (blog). October 25, 2021. https://www.realestatewitch.com/house-price-to-income-ratio-2021/.

Denchak, Melissa. 2019. "Green Infrastructure: How to Manage Water in a Sustainable Way." NRDC. March 4, 2019. https://www.nrdc.org/stories/green-infrastructure-how-manage-water-sustainable-way.

Dye, Richard, and Richard England. 2010. "Assessing the Theory and Practice of Land Value Taxation." https://www.lincolninst.edu/publications/policy-focus-reports/assessing-theory-practice-land-value-taxation.

Earth Observatory. 2015. "Vegetation Limits City Warming Effects." Text.Article. NASA Earth Observatory. August 26, 2015. https://earthobservatory.nasa.gov/images/86440/vegetation-limits-city-warming-effects.

Ecosystem Valuation. n.d. "Hedonic Pricing Method." Accessed April 7, 2022. https://www.ecosystemvaluation.org/hedonic_pricing.htm.

EPA. 2014a. "Using Trees and Vegetation to Reduce Heat Islands." Overviews and Factsheets. June 17, 2014. https://www.epa.gov/heatislands/using-trees-and-vegetation-reduce-heat-islands.

EPA, OLEM. 2014b. "Overview of EPA's Brownfields Program." Overviews and Factsheets. January 8, 2014. https://www.epa.gov/brownfields/overview-epas-brownfields-program.

Farinde, Abimbola. 2021. "Dose-Response Relationships - Clinical Pharmacology." Merck Manuals Professional Edition. June 2021. https://www.merckmanuals.com/professional/clinical-pharmacology/pharmacodynamics/dose-response-relationships.

Federal Transit Administration. 2015. "Signal Priority | FTA." December 6, 2015. https://www.transit.dot.gov/research-innovation/signal-priority.

Forest Research. n.d. "Benefits of Greenspace." Forest Research. Accessed January 12, 2022. https://www.forestresearch.gov.uk/tools-and-resources/fthr/urban-regeneration-and-greenspace-partnership/greenspace-in-practice/benefits-of-greenspace/.

Fryar, John. 2021. "Census Shows Range of Growth in Boulder, Weld and Broomfield Counties." *Longmont Times-Call* (blog). August 13, 2021. https://www.timescall.com/2021/08/13/census-shows-range-of-growth-in-boulder-weld-and-broomfield-counties.

Gold, Michael. 2021. "Congestion Pricing Is Coming to New York. Everyone Has an Opinion." *The New York Times*, September 29, 2021, sec. New York. https://www.nytimes.com/2021/09/29/nyregion/nyc-congestion-pricing.html.

Good Jobs First Subsidy Tracker. n.d. "New York - State Grant - International Sematech |

Good Jobs First." Accessed April 24, 2022. https://subsidytracker.goodjobsfirst.org/subsidy-tracker/ny-international-sematech-0.

Goodman, Christopher B. 2019. "The Fiscal Impacts of Urban Sprawl: Evidence From U.S. County Areas." *Public Budgeting & Finance* 39 (4): 3–27. https://doi.org/10.1111/pbaf.12239.

Groom, Nichola. 2015. "California's Push for Cleaner Buses Could Edge out Natural Gas." *Reuters*, July 2, 2015, sec. Commodities News. https://www.reuters.com/article/us-california-naturalgas-buses-insight-idUSKCN0PC0AV20150702.

Haninger, Kevin, Lala Ma, and Christopher Timmins. 2017. "The Value of Brownfield Remediation." *Journal of the Association of Environmental and Resource Economists* 4 (1): 197–241. https://doi.org/10.1086/689743.

Herriges, Daniel. 2019. "Rewarding Neglect and Punishing Investment in Struggling Neighborhoods." Strong Towns. March 7, 2019. https://www.strongtowns.org/journal/2019/3/7/rewarding-neglect-and-punishing-investment-in-struggling-neighborhoods.

Ihrke, David. 2014. "Reason for Moving: 2012 to 2013," June, 15.

Kidston, Martin. 2018. "Missoula Housing Authority Buys Affordable Units to Prevent Fair-Market Price Increase." *Missoula Current* (blog). January 5, 2018. https://missoulacurrent.com/business/2018/01/missoula-housing-purchase/.

Lapinski, Zack. 2019. "Why Rent Control Doesn't Work." *Freakonomics* (blog). April 3, 2019. https://freakonomics.com/podcast/why-rent-control-doesnt-work/.

Lasswell, Harold D. 1970. "The Emerging Conception of the Policy Sciences." *Policy Sciences* 1 (1): 3–14. https://www.jstor.org/stable/4531369.

Local Housing Solutions. n.d. "Housing Trust Funds." Local Housing Solutions. Accessed April 5, 2022a. https://localhousingsolutions.org/housing-policy-library/housing-trust-funds/.

———. n.d. "Linkage Fees/Affordable Housing Impact Fees." Local Housing Solutions. Accessed April 24, 2022b. https://localhousingsolutions.org/housing-policy-library/linkage-fees-affordable-housing-impact-fees/.

———. n.d. "The Need for Balance: The Importance of Creating and Preserving Dedicated Affordable Homes as Well as Allowing for New Housing for All Income Levels." Local Housing Solutions. Accessed March 22, 2022c. https://localhousingsolutions.org/plan/the-need-for-balance-the-importance-of-creating-and-preserving-dedicated-affordable-homes-as-well-as-allowing-for-new-housing-for-all-income-levels/.

Mann, Adam. 2014. "What's Up With That: Building Bigger Roads Actually Makes Traffic Worse." *Wired*, June 17, 2014. https://www.wired.com/2014/06/wuwt-traffic-induced-demand/.

Mulder, Clara H. 2006. "Population and Housing: A Two-Sided Relationship."

Demographic Research 15 (November): 401–12. https://doi.org/10.4054/DemRes.2006.15.13.

Mulder, Clara H. n.d. “The Relationship between Population and Housing,” 12.

New York State Department of Health. 2018. “Fine Particles (PM 2.5) Questions and Answers.” February 2018. https://www.health.ny.gov/environmental/indoors/air/pmq_a.htm.

Passy, Jacob. 2019. “This Is What Amazon’s ‘HQ2’ Was Going to Cost New York Taxpayers.” MarketWatch. February 16, 2019. https://www.marketwatch.com/story/what-amazons-hq2-means-for-taxpayers-in-new-york-and-virginia-2018-11-14.

Pew Charitable Trusts. 2021. “How Local Governments Raise Their Tax Dollars.” July 7, 2021. https://pew.org/3kvI1CB.

Plitt, Amy. 2019. “Amazon HQ2 and NYC: A Timeline of the Botched Deal.” Curbed NY.

February 18, 2019. https://ny.curbed.com/2019/2/18/18226681/amazon-hq2-new-york-city-timeline.

Porter, Michael E. 1998. “Clusters and the New Economics of Competition.” *Harvard Business Review*, November 1, 1998. https://hbr.org/1998/11/clusters-and-the-new-economics-of-competition.

“Public Transportation’s Role in Responding to Climate Change.” 2010. January 2010. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/PublicTransportationsRoleInRespondingToClimateChange2010.pdf.

San Francisco Examiner. 2012. “SFpark Hourly Meters Actually Saves Motorists Money.”

The San Francisco Examiner. December 16, 2012. https://www.sfexaminer.com/news/sfpark-hourly-meters-actually-saves-motorists-money/.

Schuetz, Jenny. 2019. “Is Zoning a Useful Tool or a Regulatory Barrier?” *Brookings* (blog).

October 31, 2019. https://www.brookings.edu/research/is-zoning-a-useful-tool-or-a-regulatory-barrier/.

Simon, Ruth. 2017. “U.S. Cities Battle Each Other for Jobs With $45 Billion in Incentives.”

Wall Street Journal, March 16, 2017, sec. Page One. https://www.wsj.com/articles/u-s-cities-battle-each-other-for-jobs-with-45-billion-in-incentives-1489675343.

Slattery, Cailin, and Owen Zidar. 2020. “Evaluating State and Local Business Incentives.”

Journal of Economic Perspectives 34 (2): 90–118. https://doi.org/10.1257/jep.34.2.90.

Snider, Laura. 2009. “Boulder’s Blue Line Turns 50.” *Colorado Daily* (blog). July 31, 2009.

https://www.coloradodaily.com/ci_12964275/.

Sullivan, Karen A. 2017. “Brownfields Remediation: Impact on Local Residential Property

Tax Revenue." *Journal of Environmental Assessment Policy and Management* 19 (03): 1750013. https://doi.org/10.1142/S1464333217500132.

Sunny Polytechnic Institute. 2014. "Governor Cuomo Announces SEMATECH and IBM to Join $500 Million Partnership with State to Develop Next-Generation Power Electronics, Creating Thousands of Jobs in Rochester and Upstate." July 16, 2014. https://sunypoly.edu/news/governor-cuomo-announces-sematech-and-ibm-join-500-million-partnership-state-develop-next.html.

Texas A&M Transportation Institute. 2021. "Data and Trends – Urban Mobility Report — Mobility Division." 2021. https://mobility.tamu.edu/umr/data-and-trends/.

The City of Boulder. n.d. "Boulder Valley Comprehensive Plan | City of Boulder." Accessed April 24, 2022. https://bouldercolorado.gov/projects/boulder-valley-comprehensive-plan.

The City of Saint Louis. 2021. "U.S. Cities That Levy Income (Earnings) Taxes." 22. Stlouis-Mo.Gov. October 21, 2021. https://www.stlouis-mo.gov/government/departments/comptroller/initiatives/us-cities-that-levy-earnings-taxes.cfm.

Times Union. 2010. "Sematech Says Goodbye to Austin." Times Union. October 12, 2010. https://www.timesunion.com/business/article/Sematech-says-goodbye-to-Austin-701748.php.

Union of Concerned Scientists. 2014. "Vehicles, Air Pollution & Human Health." July 18, 2014. https://www.ucsusa.org/resources/vehicles-air-pollution-human-health.

U.S. Department of Transportation Federal Highway Administration. 2019. "Appendix A: Highway Investment Analysis Methodology - Policy | Federal Highway Administration." November 22, 2019. https://www.fhwa.dot.gov/policy/23cpr/appendixa.cfm#hers-improvement-costs.

U.S. News & World Report. 2021. "The 150 Best Places to Live in America, Ranked." 2021. https://realestate.usnews.com/places/rankings/best-places-to-live.

Watanabe, Kelly, Emma Choy, Sophie Boerboom, Emily Cohen, Emma Ranheim, Chase Mendell, and Brian Mora Solis. 2019. "Mark Keppel High School Air Quality Report | Roberts Environmental Center." September 2019. https://rec.cmc.edu/2020/02/21/mark-keppel-high-school-air-quality-report-2/.

Zillow Inc. 2022. "Boulder CO Home Prices & Home Values." Zillow. March 31, 2022. https://www.zillow.com/boulder-co/home-values/.