

A Bridge to Success

Spatial Analytics Case Competition

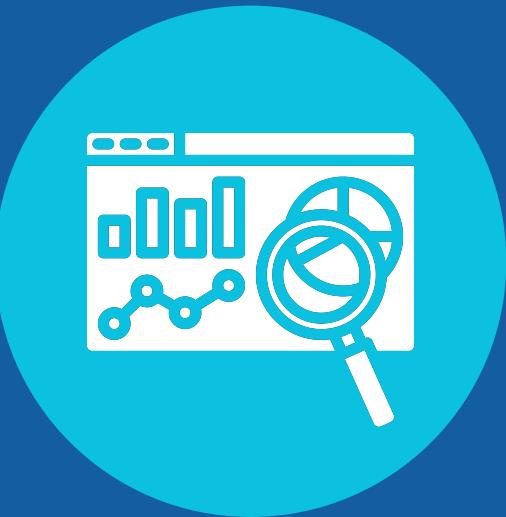
Presented by: #OPENTOWORK



“Revenue Robust, Cost Will Adjust”



Site Selection and Framework



01

Revenue-Driven
Market-Oriented
Search



02

Multimodal
Transportation
Network



03

Analytic Hierarchical
Process (AHP)

TOP 4 FACTORS

Following “Revenue Robust”, 11 relevant factors were weighted through pairwise-comparison matrix operation after extensive industry research.

01 Medical Presence

Implies the market potential. The presence is measured by the number of medical facilities as well as their sizes.

02 Population

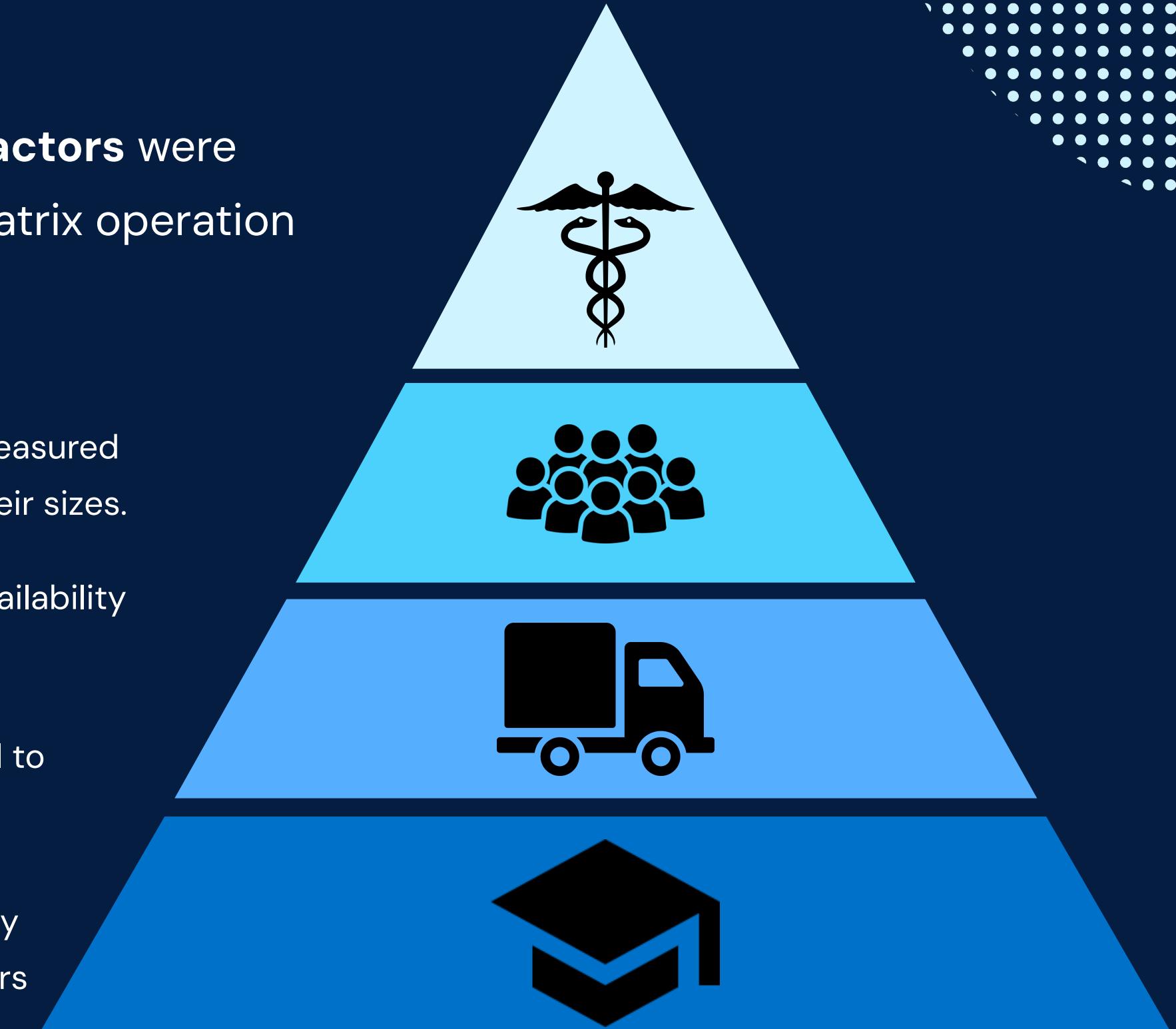
Decides the market potential as well as labor availability for warehousing operations

03 Transportation Infrastructure

Supports the prompt last-mile deliveries crucial to BPG’s business

04 Education

Projects the growth potential of medical industry in the region and the availability of skilled workers

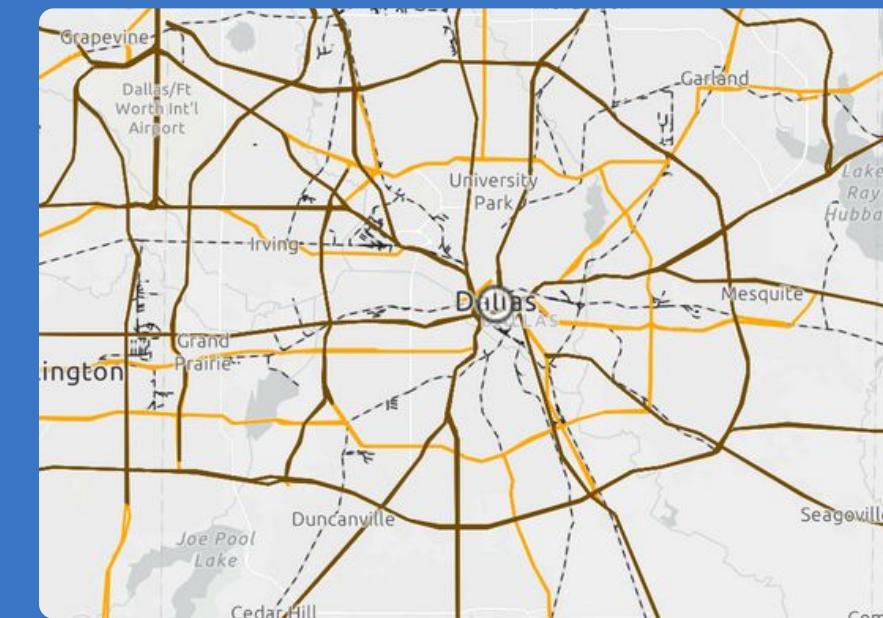


Targets within 2-5 Years

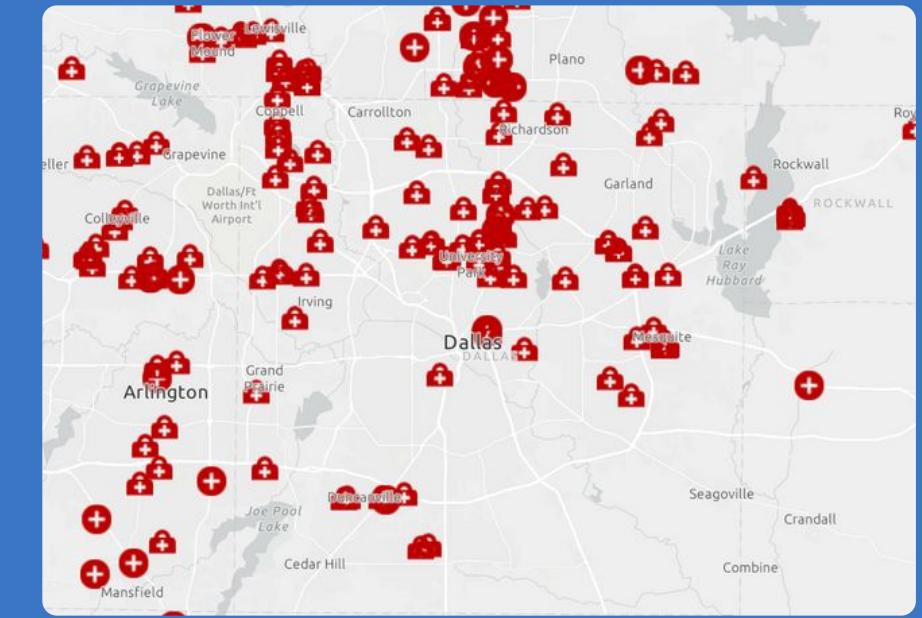
Dallas, TX

Opportunity Areas:

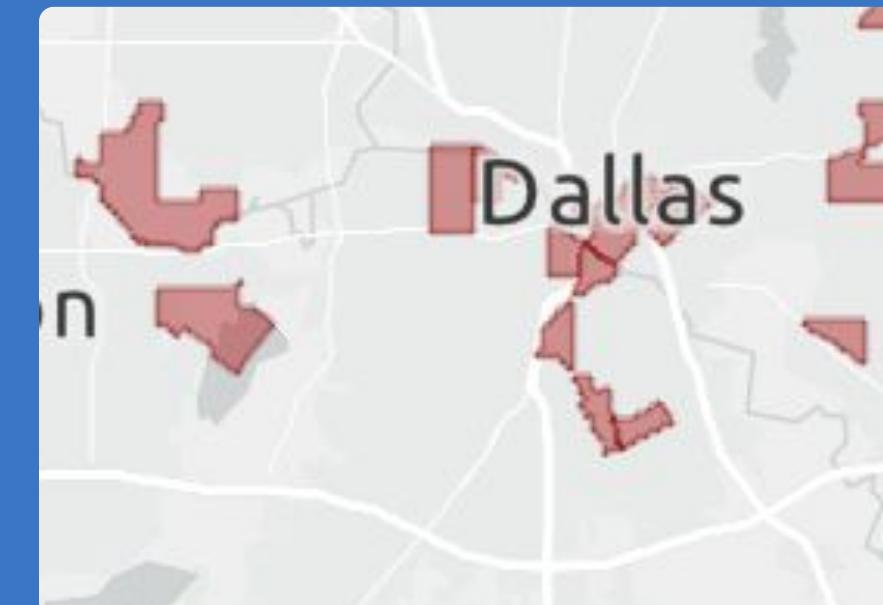
- **Medical Presence:**
 - 120+ hospitals and clinics in the area
- **Population:**
 - 1.6 million working-age population
- **Transportation Infrastructure:**
 - Vast and dense transportation network
- **Education:**
 - 30+ nearby 4-year universities
 - At least 82% HS level
- **Potential Risks:**
 - Climate(<100°F) + Natural Disasters



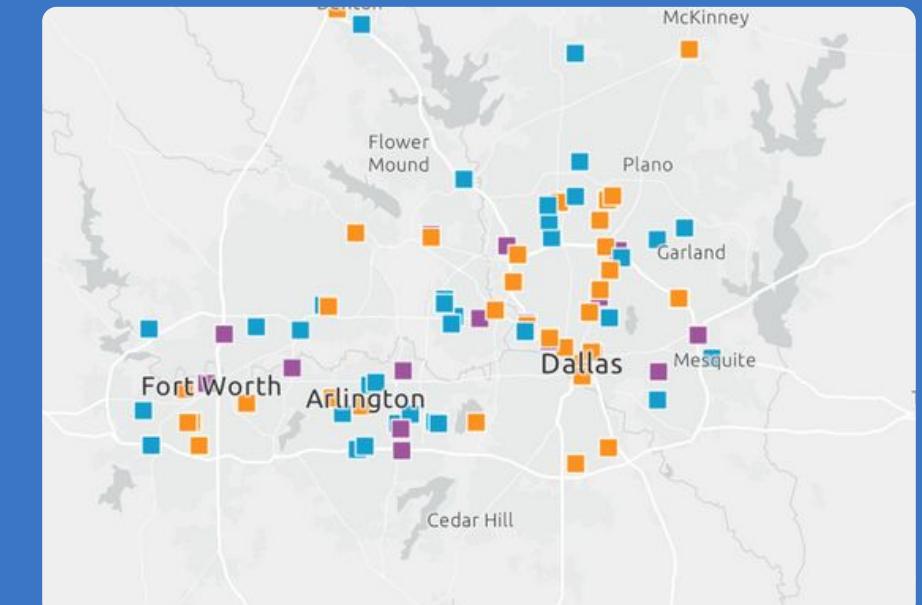
Transportation



Hospitals & Clinics



Opportunity Zones



Universities & Colleges

Sources: ESRI, American Hospital Directory, BLS

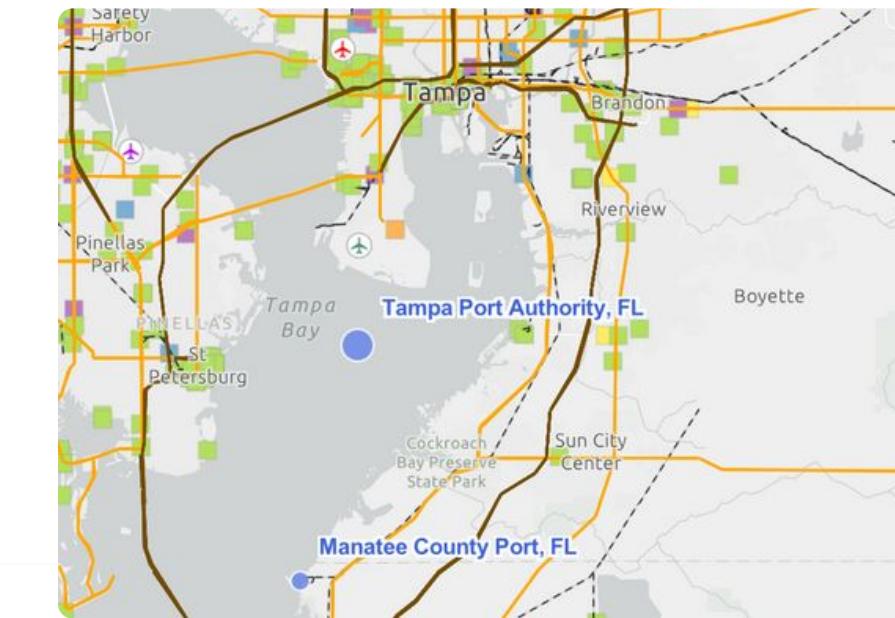
Tampa, FL

Opportunity Areas:

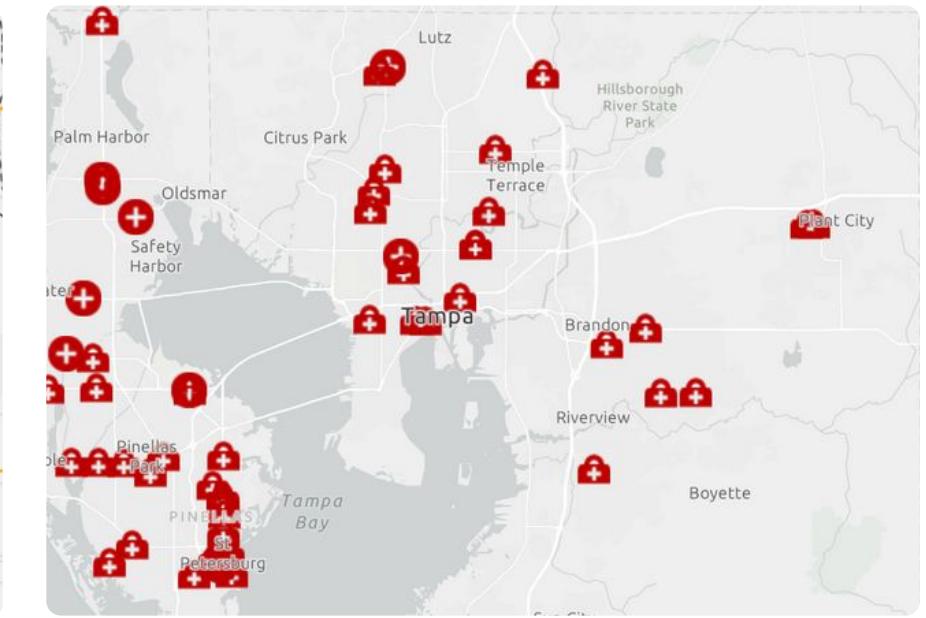
- **Medical Presence:**
 - 9 hospitals, 60+ clinics
- **Population:**
 - >900,000 working-age population
- **Transportation Infrastructure:**
 - Two ports (>30,000,000 tonnage), four airports

Potential Risks:

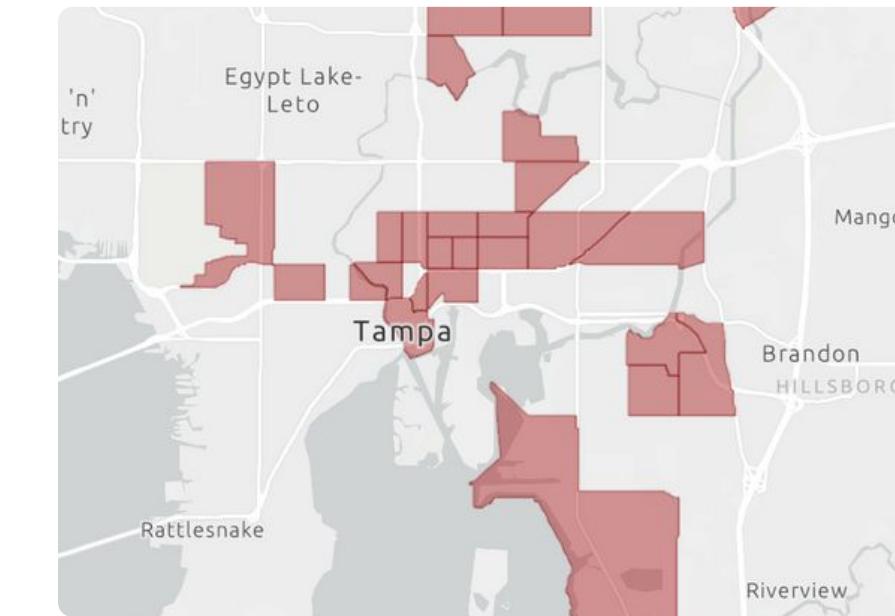
- Hot(< 100°F) + Humid
- Low Diversity Index scores



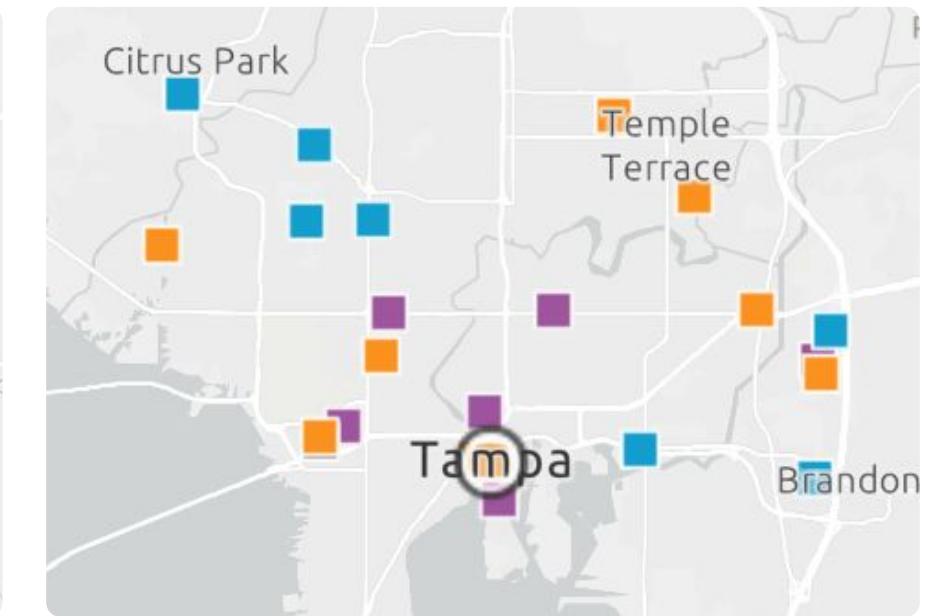
Transportation



Hospitals & Clinics



Opportunity Zones



Universities & Colleges

Sources: American Hospital Directory, ESRI

Baltimore,

Opportunity Areas:

MD Presence:

- 2 major hospitals, 50+ clinics

- Population:

- >900,000 working-age population

- Transportation Infrastructure:

- Ports (>35,000,000 tonnage)

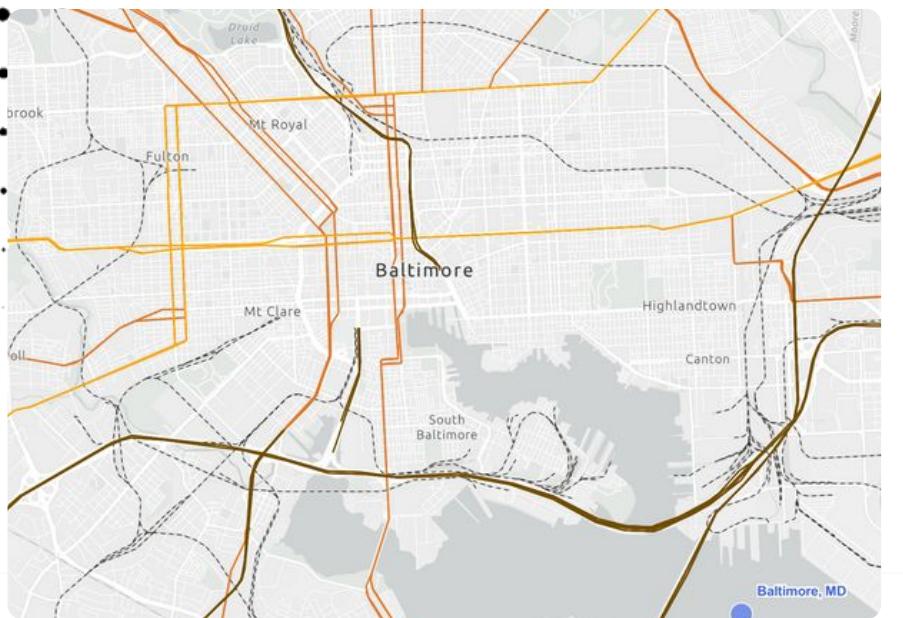
- Network of highways & railroads

- Education:

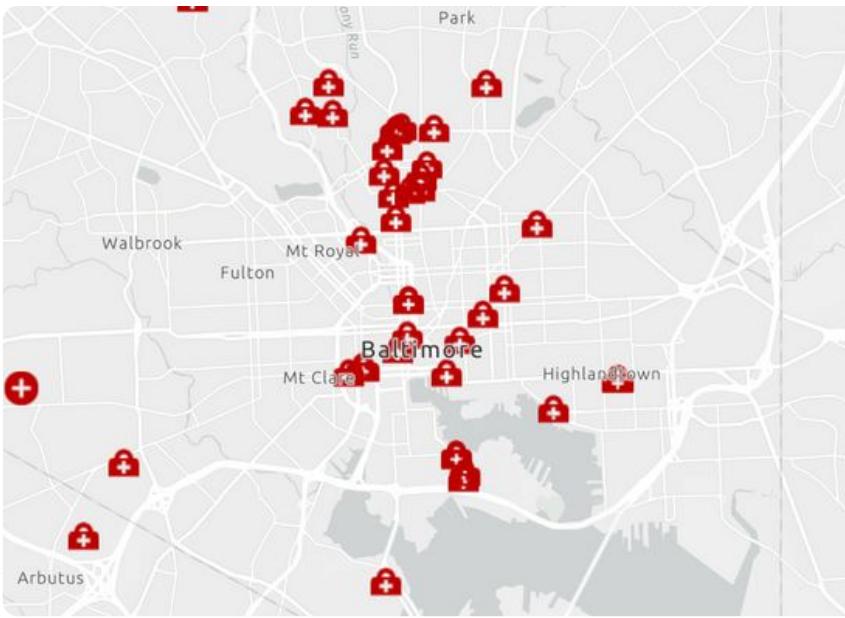
- Johns Hopkins University, University of Maryland,

National Institute of Health
Potential Risk:

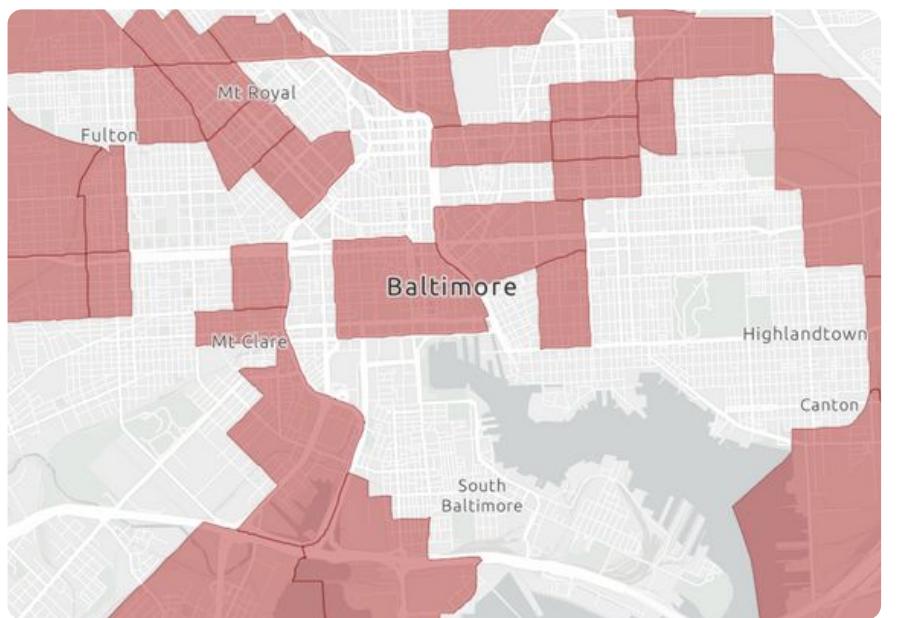
- 86% above HS level
 - High Crime rate



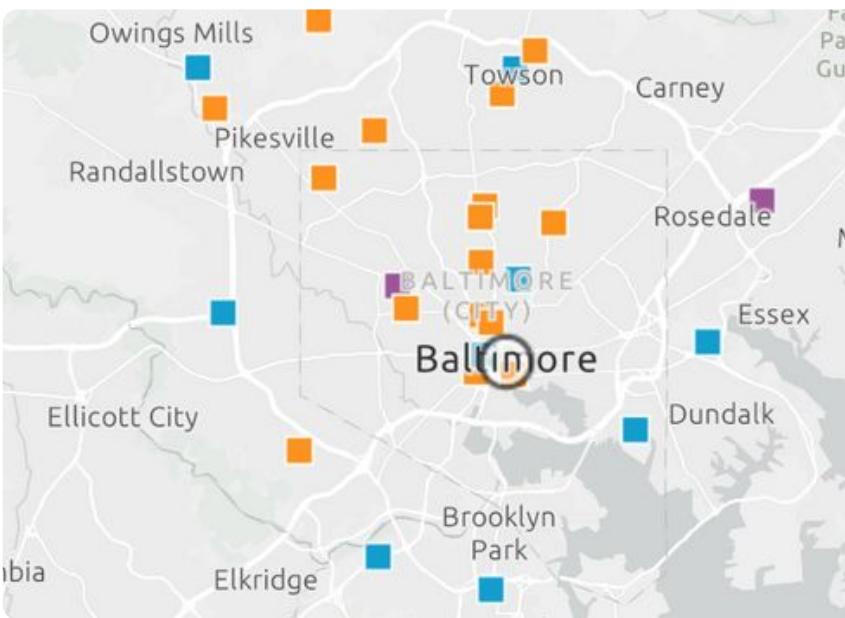
Transportation



Hospitals & Clinics



Opportunity Zones



Universities & Colleges

Source: ESRI, NAIOP Maryland Chapter



Immediate Action

Strike gold in the Golden State

San Jose, CA

Where the gold is.....



High Profit Margin

Large pharmaceutical presence
100+ hospitals and clinics
High demand



Strong Labor Force

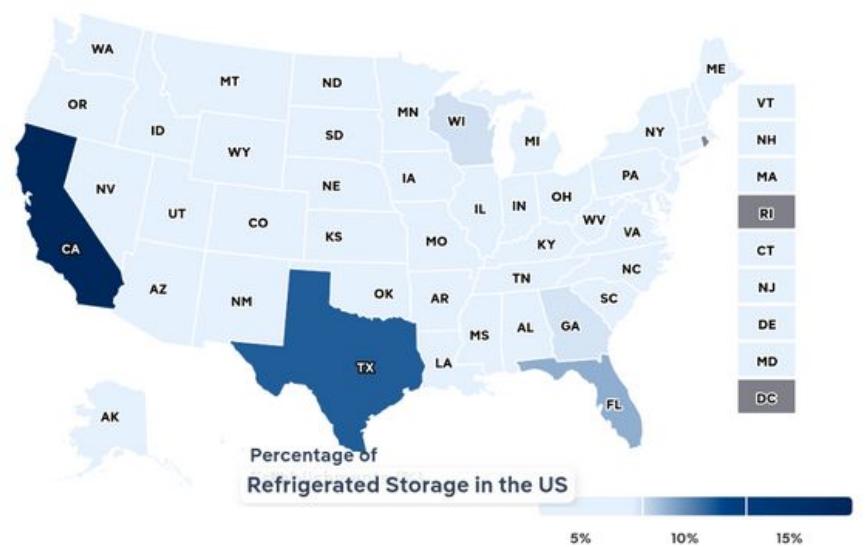
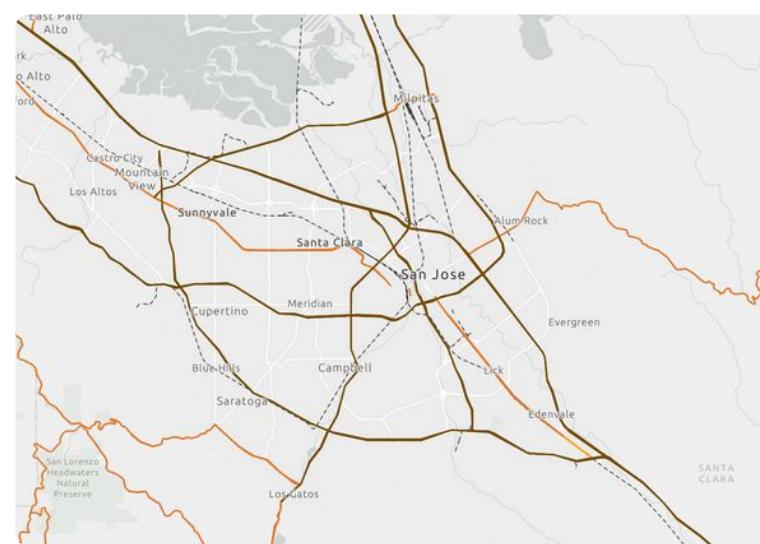
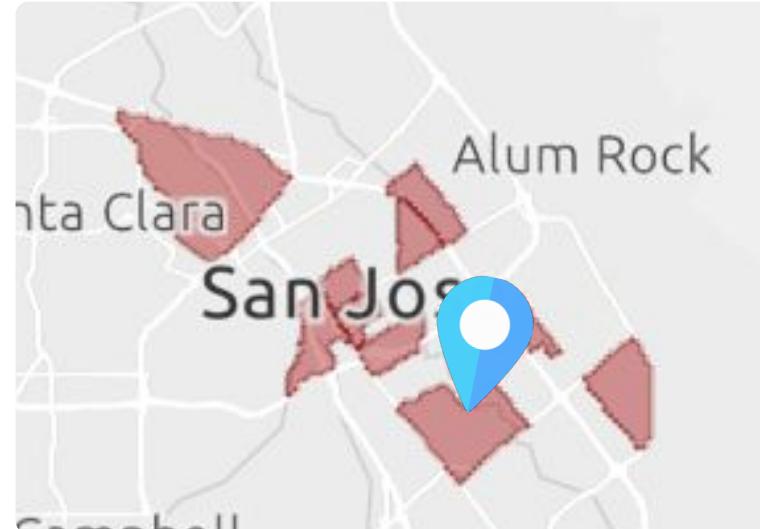
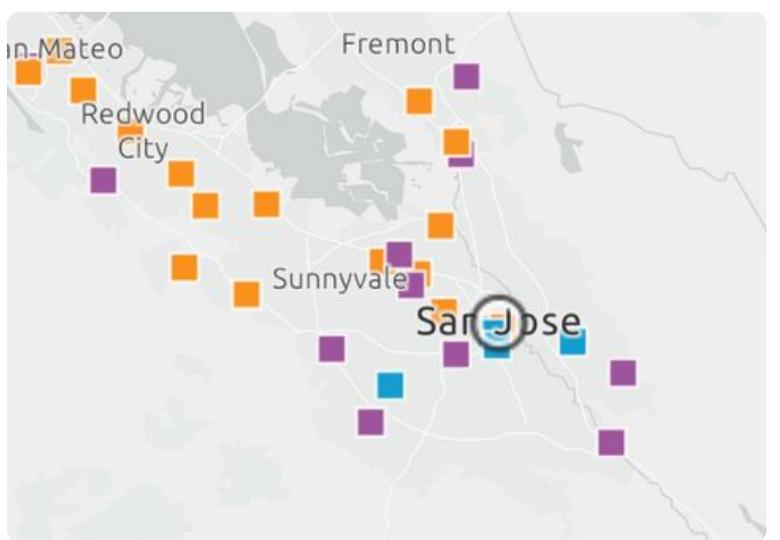
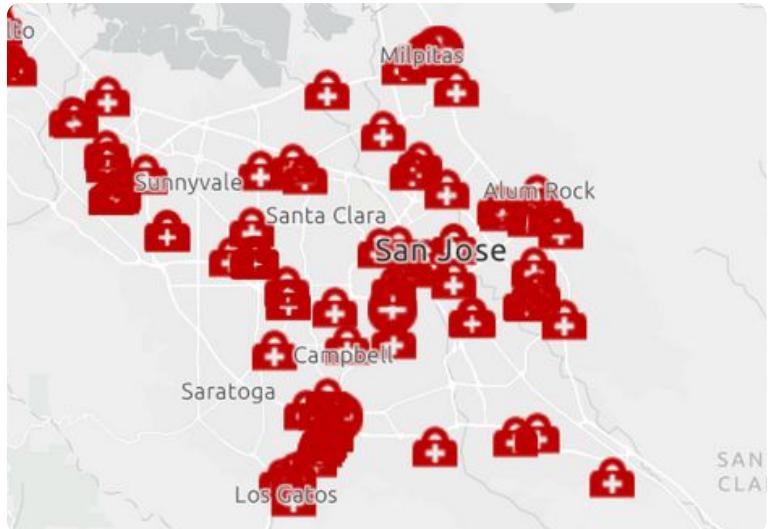
Large number of skilled workers
Federal Opportunity Zone
Strong consumer spending



Robust Infrastructure

Safe, clean, and reliable water sources
Sustainable city
#1 in the mobility index





| State | Establishments Units | Establishments % | Revenue \$ 0 | Revenue % | Wages \$ 0 | Wage % | Employment Units | Employment % |
|------------|-------------------------|---------------------|-----------------|--------------|---------------|-----------|---------------------|-----------------|
| California | 360 | 14.8 | 1,430,830,720. | 18.0 | 500,202,912. | 14.8 | 8,033 | 14.3 |

Key Stats

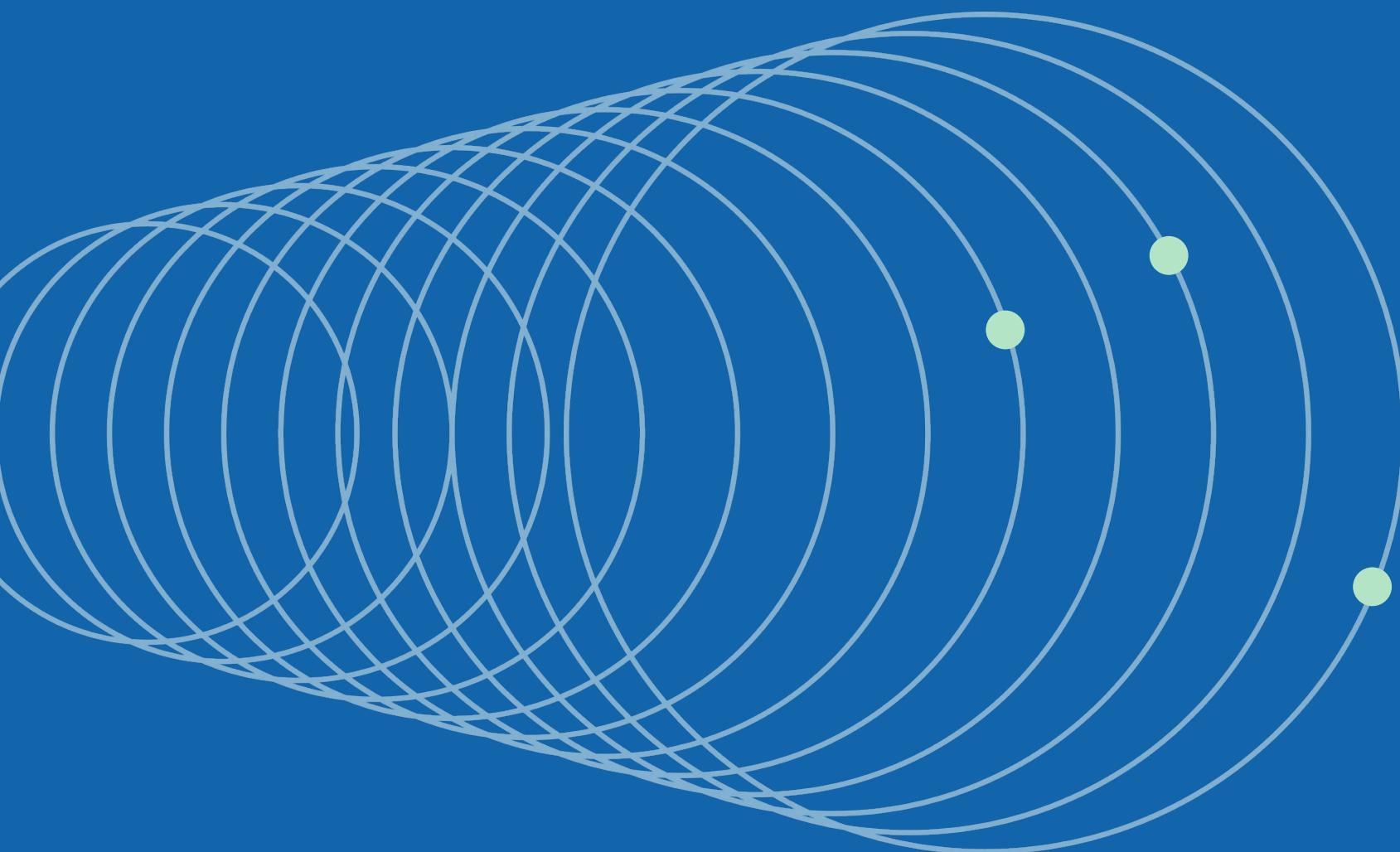
- \$1.4B industry revenue (18%)
- 1,248,070 working-age population
 - 3.30% unemployment rate
- 89.2% with HS education
- 2,400 miles of water mains
- 106 tanks and reservoirs, 20,143 hydrants, and 35,143 valves

Sources: Bureau of Transportation Statistics, ESRI, IBIS World, San Jose Water

Thank Any Questions? YOU!



Appendix



Appendix 1 - Factor Weighting Matrix

Appendix 2 - Additional Data

Appendix 3 - Factor Weights

Appendix 4 - Factor Weights for City

Appendix 1 - Factor Weighting Matrix

| Factors | Medical | Population | Education | Diversity | Infrastructure | University | Climate risk | Land cost | Labor cost | Energy cost | Tax |
|----------------|---------|------------|-----------|-----------|----------------|------------|--------------|-----------|------------|-------------|-----|
| Hospital | 1 | 2 | 3 | 6.5 | 2.5 | 4 | 6 | 7 | 6 | 6 | 8 |
| Population | 0.50 | 1 | 2.5 | 5 | 2 | 3.5 | 6 | 6 | 5.5 | 6 | 8.5 |
| Education | 0.33 | 0.40 | 1 | 4 | 0.33 | 1 | 4.5 | 5 | 5 | 6 | 8 |
| Diversity | 0.15 | 0.20 | 0.25 | 1 | 0.20 | 0.25 | 1 | 0.33 | 0.50 | 1 | 3 |
| Infrastructure | 0.40 | 0.50 | 3 | 5 | 1 | 3 | 5 | 4 | 5 | 7 | 9 |
| University | 0.25 | 0.29 | 1 | 4 | 0.33 | 1 | 5 | 4 | 3.5 | 6.5 | 8 |
| Climate risk | 0.17 | 0.17 | 0.22 | 1 | 0.20 | 0.20 | 1 | 1.5 | 1 | 5 | 6 |
| Land cost | 0.14 | 0.17 | 0.20 | 3 | 0.25 | 0.25 | 0.67 | 1 | 0.33 | 3 | 4 |
| Labor cost | 0.17 | 0.18 | 0.20 | 2 | 0.20 | 0.29 | 1 | 3 | 1 | 4 | 5 |
| Energy cost | 0.17 | 0.17 | 0.17 | 1 | 0.14 | 0.15 | 0.20 | 0.33 | 0.25 | 1 | 3 |
| Tax | 0.13 | 0.12 | 0.13 | 0.33 | 0.11 | 0.13 | 0.14 | 0.25 | 0.20 | 0.33 | 1 |

Appendix 2 - Additional Data

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| | San Jose | Dallas | Tampa | Baltimore | Cleveland | Source |
|--|-----------|----------|----------|-----------|-----------|---|
| Working Age (18-65) Population | 1248070 | 1643121 | 915997 | 905903 | 771066 | Esri |
| Unemployment Rate | 3.30% | 3.90% | 3.20% | 1.80% | 3.70% | US Bureau of Labor Statistics |
| Hospital Discharge | 77777 | 228325 | 158555 | 331340 | 125461 | American Hospital Directory |
| Num of Hospitals & Clinics | 100+ | 120+ | 75+ | 50+ | 60+ | Esri |
| Gross Patient Revenues(\$000) | 21950782 | 35536473 | 29099287 | 11315242 | 34106609 | American Hospital Directory |
| Transportation (Rank) | 44 | 27 | 20 | 43 | 17 | US News |
| Num of Universities (4-year) | 13 | 26 | 14 | 18 | 16 | Esri |
| Education Level (% of population with education over HS) | 89.2 | 81.7 | 89.2 | 86.3 | 90.7 | Esri |
| NRI | 99.84 | 99.14 | 99.55 | 93.67 | 91.25 | Esri |
| Avg Temp Diff | 21 | 19.67 | 16.25 | 16 | 13.17 | National Oceanic and Atmospheric Administration |
| Diversity | 88 | 85 | 80 | 82 | 81 | Esri |
| Property Tax | 0.75% | 1.68% | 0.91% | 1.05% | 1.59% | US Census Bureau |
| Corporate Income Tax | 8.84% | 0 | 5.50% | 8.25% | 0 | Tax Policy Center |
| Consumer spending | \$101,880 | \$71,932 | \$67,636 | \$82,095 | \$67,327 | US Bureau of Labor Statistics |
| Labor cost (min wage by states) | 15.5 | 7.25 | 12 | 13.25 | 10.1 | US Department of Labor |
| Land cost (Arce Value) | \$39,092 | \$7,542 | \$28,961 | \$75,429 | \$32,077 | World Population Review |
| Energy cost (cent/Kwh) | 22.33 | 10.16 | 12.51 | 13.32 | 10.64 | US Energy Information Admininstration |

Appendix 3 - Factor Weights

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| | Weight |
|----------------|--------|
| Hospitals | 0.24 |
| Population | 0.19 |
| Infrastructure | 0.16 |
| Education | 0.11 |
| University | 0.10 |
| Labor Cost | 0.05 |
| Climate Risk | 0.04 |
| Land Cost | 0.04 |
| Diversity | 0.03 |
| Energy Cost | 0.02 |
| Tax | 0.01 |

Appendix 4 - Factor Weights for City

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AHP Algorithms implemented in Python: [Click Here](#)

| | Priority Scores (Benchmarked Against Cleveland) |
|-----------|--|
| San Jose | 0.705 |
| Dallas | 0.622 |
| Tampa | 0.638 |
| Baltimore | 0.438 |