Competitiveness and Economic Development: Where Does Texas Stand?

Professor Michael E. Porter
Harvard Business School

Texas Economic Summit
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Additional information may be found at the website of the Institute for Strategy and Competitiveness, www.isc.hbs.edu
Comparative Performance of U.S. States
Wages, 1990 – 2004

Comparative Performance of U.S. States
Gross State Product per Capita, 1998 – 2005

Note: Southern states as defined by the U.S. census highlighted in blue. All figures in chained 2000 dollars.
What is Competitiveness?

- Competitiveness is the **productivity** (value per unit of input) with which a nation, region, or cluster utilizes its human, capital, and natural resources. Productivity sets a nation’s or region’s standard of living (wages, returns on capital, returns on natural resources)
  - Productivity depends both on the **value** of products and services (e.g. uniqueness, quality) as well as the **efficiency** with which they are produced.
  - It is not **what** industries a nation or region competes in that matters for prosperity, but **how** firms compete in those industries
  - Productivity in a nation or region is a reflection of what both domestic and foreign firms **choose to do in that location**. The location of ownership is secondary for prosperity.
  - The productivity of “**local**” industries is of fundamental importance to competitiveness, not just that of traded industries

- Nations or regions compete in offering the **most productive environment** for business
Innovation and Competitiveness

- Prosperity Growth
- Productivity Growth
- Innovative Capacity

Competitiveness
Enhancing Competitiveness: Improving the Business Environment

- **Context for Firm Strategy and Rivalry**
  - Local rules, regulations, and norms that encourage *investment* and *productivity*
  - Open and vigorous local competition

- **Factor (Input) Conditions**
  - Presence of high quality, business inputs
    - Human resources
    - Capital resources
    - Physical infrastructure
    - Scientific and technological infrastructure
    - Administrative systems (e.g., permitting and approvals)
    - Wide availability of information
    - Natural resources

- **Demand Conditions**
  - Sophisticated and demanding local customer(s)
  - Local needs that *anticipate* those elsewhere

- **Related and Supporting Industries**
  - Access to capable, locally based suppliers and firms in related fields
  - Presence of clusters instead of isolated industries

- Successful economic development is the process of enhancing the business environment to support and encourage increasingly sophisticated ways of competing
Enhancing Competitiveness: Developing Clusters Hospitality and Tourism in Cairns (Australia)

Public Relations & Market Research Services

Food Suppliers

Property Services

Maintenance Services

Travel agents

Tour operators

Restaurants

Attractions and Activities e.g., theme parks, casinos, sports

Hotels

Airlines, Cruise Ships

Local retail, health care, and other services

Local Transportation

Souvenirs, Duty Free

Banks, Foreign Exchange

Government agencies e.g. Australian Tourism Commission, Great Barrier Reef Authority

Educational Institutions e.g. James Cook University, Cairns College of TAFE

Industry Groups e.g. Queensland Tourism Industry Council

Sources: HBS student team research (2003) - Peter Tynan, Chai McConnell, Alexandra West, Jean Hayden
Enhancing Competitiveness: Developing Clusters

Oil and Gas in Houston

Upstream

- Oil & Natural Gas Exploration & Development
- Oil & Natural Gas Completion & Production

Downstream

- Oil Transportation
- Oil Trading
- Oil Refining
- Oil Distribution
- Oil Wholesale Marketing
- Oil Retail Marketing

- Gas Gathering
- Gas Processing
- Gas Trading
- Gas Transmission
- Gas Distribution
- Gas Marketing

Oilfield Services/Engineering & Contracting Firms

- Equipment Suppliers
  (e.g. Oil Field Chemicals, Drilling Rigs, Drill Tools)
- Specialized Technology Services
  (e.g. Drilling Consultants, Reservoir Services, Laboratory Analysis)

- Subcontractors
  (e.g. Surveying, Mud Logging, Maintenance Services)

- Business Services
  (e.g. MIS Services, Technology Licenses, Risk Management)

Specialized Institutions
(e.g. Academic Institutions, Training Centers, Industry Associations)
Clusters and Competitiveness

• Clusters Increase Productivity
  – Efficient **access** to specialized inputs, services, employees, information, institutions, and “public goods” (e.g. training programs)
  – Ease of **coordination** and transactions across firms
  – Rapid **diffusion** of best practices
  – Ongoing, visible **performance comparisons** and strong incentives to improve vs. local rivals

• Clusters Stimulate and Enable Innovations
  – Enhanced ability to **perceive innovation opportunities**
  – Presence of multiple entities involved in specialized **knowledge creation**
  – Ease of **experimentation** given locally available resources

• Clusters Facilitate Commercialization and New Business Formation
  – Opportunities for **new companies** and **new lines of established business** are more apparent
  – **Commercializing** new products and starting new companies is easier because of available skills, suppliers, financing, etc.

Clusters reflect the fundamental influence in competition of **linkages and spill-overs** across firms and associated institutions
Cluster Development
Life Sciences in Massachusetts

Teaching and Specialized Hospitals

Biological Products

Biopharmaceutical Products

Research Organizations

Specialized Business Services
Banking, Accounting, Legal

Specialized Risk Capital
VC Firms, Angel Networks

Specialized Research Service Providers
Laboratory, Clinical Testing

Cluster Organizations
MassMedic, MassBio, others

Educational Institutions
Harvard University, MIT, Tufts University, Boston University, UMass

Health and Beauty Products
Surgical Instruments and Suppliers
Medical Equipment
Dental Instruments and Suppliers
Ophthalmic Goods
Diagnostic Substances
Containers and Packaging
Analytical Instruments
Institutions for Collaboration
Massachusetts Life Sciences, Selected Organizations

**Life Sciences Industry Associations**
- Massachusetts Biotechnology Council
- Massachusetts Medical Device Industry Council
- Massachusetts Hospital Association

**University Initiatives**
- Harvard Biomedical Community
- MIT Enterprise Forum
- Biotech Club at Harvard Medical School
- Technology Transfer offices

**General Industry Associations**
- Associated Industries of Massachusetts
- Greater Boston Chamber of Commerce
- High Tech Council of Massachusetts

**Informal networks**
- Company alumni groups
- Venture capital community
- University alumni groups

**Economic Development Initiatives**
- Massachusetts Technology Collaborative
- Mass Biomedical Initiatives
- Mass Development
- Massachusetts Alliance for Economic Development

**Joint Research Initiatives**
- New England Healthcare Institute
- Whitehead Institute For Biomedical Research
- Center for Integration of Medicine and Innovative Technology (CIMIT)
Specialization of Regional Economies

Select U.S. Geographic Areas

**Boston**
- Analytical Instruments
- Education and Knowledge Creation
- Communications Equipment

**Chicago**
- Communications Equipment
- Processed Food
- Heavy Machinery

**Denver, CO**
- Leather and Sporting Goods
- Oil and Gas
- Aerospace Vehicles and Defense

**San Diego**
- Leather and Sporting Goods
- Power Generation
- Education and Knowledge Creation

**San Francisco-Oakland-San Jose Bay Area**
- Communications Equipment
- Agricultural Products
- Information Technology

**San Francisco-Oakland-San Jose Bay Area**
- Communications Equipment
- Agricultural Products
- Information Technology

**Seattle-Bellevue-Everett, WA**
- Aerospace Vehicles and Defense
- Fishing and Fishing Products
- Analytical Instruments

**Seattle-Bellevue-Everett, WA**
- Aerospace Vehicles and Defense
- Fishing and Fishing Products
- Analytical Instruments

**Pittsburgh, PA**
- Construction Materials
- Metal Manufacturing
- Education and Knowledge Creation

**Philadelphia, PA**
- Construction Materials
- Metal Manufacturing
- Education and Knowledge Creation

**Wichita, KS**
- Aerospace Vehicles and Defense
- Heavy Machinery
- Oil and Gas

**Wichita, KS**
- Aerospace Vehicles and Defense
- Heavy Machinery
- Oil and Gas

**Raleigh-Durham, NC**
- Communications Equipment
- Information Technology
- Education and Knowledge Creation

**Raleigh-Durham, NC**
- Communications Equipment
- Information Technology
- Education and Knowledge Creation

**Atlanta, GA**
- Construction Materials
- Transportation and Logistics
- Business Services

**Atlanta, GA**
- Construction Materials
- Transportation and Logistics
- Business Services

Note: Clusters listed are the three highest ranking clusters in terms of share of national employment

Source: Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School

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The Composition of Regional Economies
United States, 2004

<table>
<thead>
<tr>
<th>Share of Employment</th>
<th>Traded</th>
<th>Local</th>
<th>Natural Resource-Driven</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment Growth Rate, 1990 to 2004</td>
<td>29.3%</td>
<td>70.0%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Average Wage</td>
<td>$49,367</td>
<td>$30,416</td>
<td>$35,815</td>
</tr>
<tr>
<td>Relative Wage</td>
<td>137.2%</td>
<td>84.5</td>
<td>99.5</td>
</tr>
<tr>
<td>Wage Growth</td>
<td>4.2%</td>
<td>3.4%</td>
<td>2.1%</td>
</tr>
<tr>
<td>Relative Productivity</td>
<td>144.1</td>
<td>79.3</td>
<td>140.1</td>
</tr>
<tr>
<td>Patents per 10,000 Employees</td>
<td>20.4</td>
<td>0.4</td>
<td>3.0</td>
</tr>
<tr>
<td>Number of SIC Industries</td>
<td>590</td>
<td>241</td>
<td>48</td>
</tr>
</tbody>
</table>

Note: 2004 data, except relative productivity which uses 1997 data.
The Evolution of Regional Economies

San Diego

- Climate and Geography
- U.S. Military
- Bioscience Research Centers


- Hospitality and Tourism
- Transportation and Logistics
- Power Generation
- Aerospace Vehicles and Defense
- Communications Equipment
- Analytical Instruments
- Education and Knowledge Creation
- Information Technology
- Medical Devices
- Biotech / Pharmaceuticals
- Sporting and Leather Goods
- Biotech / Pharmaceuticals
Linkages Across Clusters

Note: Clusters with overlapping borders or identical shading have at least 20% overlap (by number of industries) in both directions.
The Process of Economic Development

Shifting Roles and Responsibilities

**Old Model**

- **Government** drives economic development through policy decisions and incentives

**New Model**

- Economic development is a **collaborative process** involving government at multiple levels, companies, teaching and research institutions, and institutions for collaboration

- Competitiveness must become a **bottom-up process** in which many individuals, companies, clusters, and institutions take responsibility

- **Every** region and cluster can take steps to enhance competitiveness
## Economic Performance Indicators

### Texas

<table>
<thead>
<tr>
<th>Economic Performance</th>
<th>Innovation Output</th>
<th>Demographic Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Employment, 2004</strong></td>
<td><strong>Patents per 10,000 employees, 2004</strong></td>
<td><strong>Population, 2005</strong></td>
</tr>
<tr>
<td>in Texas: 8,118,483 (rank 2)</td>
<td>in Texas: 7.35 (rank 16)</td>
<td>22,859,968 (rank 2)</td>
</tr>
<tr>
<td>% of US: 7.05%</td>
<td>in the US: 7.29</td>
<td>% of US: 7.71%</td>
</tr>
<tr>
<td><strong>Employment, annual growth rate, 1990 to 2004</strong></td>
<td><strong>Total patents, annual growth rate, 1990 to 2004</strong></td>
<td><strong>Population, annual growth rate, 1990 to 2005</strong></td>
</tr>
<tr>
<td>in Texas: 2.35% (rank 12)</td>
<td>in Texas: 5.41% (rank 15)</td>
<td>in Texas: 1.98% (rank 8)</td>
</tr>
<tr>
<td>in the US: 1.50%</td>
<td>in the US: 4.36%</td>
<td>in the US: 1.16%</td>
</tr>
<tr>
<td><strong>Gross State Product per capita, 2005</strong></td>
<td><strong>Traded establishment formation, annual rate, 1990 to 2004</strong></td>
<td><strong>Population Density, inhabitants per square mile, 2005</strong></td>
</tr>
<tr>
<td>in Texas: $42,975 (rank 16)</td>
<td>in Texas: 3.33% (rank 22)</td>
<td>in Texas: 64.9 (rank 30)</td>
</tr>
<tr>
<td>in the US: $41,844</td>
<td>in the US: 3.15%</td>
<td>US state median: 94.4</td>
</tr>
<tr>
<td>Texas % above US: 2.70%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Average wage, 2004</strong></td>
<td><strong>Total establishment formation, annual rate, 1990 to 2004</strong></td>
<td></td>
</tr>
<tr>
<td>in Texas: $36,161 (rank 17)</td>
<td>in Texas: 1.58% (rank 18)</td>
<td></td>
</tr>
<tr>
<td>in the US: $36,967</td>
<td>in the US: 1.29%</td>
<td></td>
</tr>
<tr>
<td>Texas % below US: 2.18%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Real Gross State Product per capita, annual growth rate, 1997-2005</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>in Texas: 1.66% (rank 24)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>in the US: 1.83%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Average wage, annual growth rate, 1990 to 2004</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>in Texas: 3.57% (rank 28)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>in the US: 3.61%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Share of Employment in Traded Clusters, 2004</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>in Texas: 27.4% (rank 33)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>in the US: 29.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Change in Share of Employment in Traded Clusters, 1990 to 2004</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>in Texas: -2.6% (rank 23)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>in the US: -4.8%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Includes private, non-agricultural employment. Ranks are among the 50 US states plus the District of Columbia.

Texas
Rural and Metropolitan Wages, 2004

- Rural employment is 10.5% percent of total in Texas versus 16.0% nationwide.
  - Texas is less rural than the US by this measure
- The average wage in the Texas is higher than the national benchmark.
Texas
Patenting per 10,000 Employees, 2004

Texas: 7.35 Patents Per 10,000 Employees

Texas patenting per employee rank: 16 of 51 states plus D.C.

Composition of the Texas Economy

Employment by Traded Cluster, 2004

Rank in US

Employment, 2004

<table>
<thead>
<tr>
<th>Industry</th>
<th>Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Services</td>
<td>356,581</td>
</tr>
<tr>
<td>Financial Services</td>
<td></td>
</tr>
<tr>
<td>Heavy Construction Services</td>
<td>210,977</td>
</tr>
<tr>
<td>Oil and Gas Products and Services</td>
<td>171,349</td>
</tr>
<tr>
<td>Hospitality and Tourism</td>
<td>157,156</td>
</tr>
<tr>
<td>Transportation and Logistics</td>
<td>148,304</td>
</tr>
<tr>
<td>Distribution Services</td>
<td>146,766</td>
</tr>
<tr>
<td>Education and Knowledge Creation</td>
<td>124,741</td>
</tr>
<tr>
<td>Information Technology</td>
<td>107,924</td>
</tr>
<tr>
<td>Metal Manufacturing</td>
<td>83,649</td>
</tr>
<tr>
<td>Publishing and Printing</td>
<td>69,466</td>
</tr>
<tr>
<td>Entertainment</td>
<td>59,103</td>
</tr>
<tr>
<td>Building Fixtures, Equipment and Services</td>
<td>55,489</td>
</tr>
<tr>
<td>Chemical Products</td>
<td>50,694</td>
</tr>
<tr>
<td>Aerospace Vehicles and Defense</td>
<td>49,371</td>
</tr>
<tr>
<td>Analytical Instruments</td>
<td>49,031</td>
</tr>
<tr>
<td>Production Technology</td>
<td>40,313</td>
</tr>
<tr>
<td>Automotive</td>
<td>39,134</td>
</tr>
<tr>
<td>Motor Driven Products</td>
<td>39,045</td>
</tr>
<tr>
<td>Heavy Machinery</td>
<td>38,728</td>
</tr>
<tr>
<td>Power Generation and Transmission</td>
<td>29,949</td>
</tr>
<tr>
<td>Communications Equipment</td>
<td>25,933</td>
</tr>
<tr>
<td>Medical Devices</td>
<td>26,945</td>
</tr>
<tr>
<td>Construction Materials</td>
<td>26,317</td>
</tr>
<tr>
<td>Forest Products</td>
<td>24,459</td>
</tr>
<tr>
<td>Agricultural Products</td>
<td>23,294</td>
</tr>
<tr>
<td>Furniture</td>
<td>20,339</td>
</tr>
<tr>
<td>Prefabricated Enclosures</td>
<td>19,164</td>
</tr>
<tr>
<td>Apparel</td>
<td>16,984</td>
</tr>
<tr>
<td>Biopharmaceuticals</td>
<td>15,952</td>
</tr>
<tr>
<td>Lighting and Electrical Equipment</td>
<td>15,358</td>
</tr>
<tr>
<td>Leather and Related Products</td>
<td>15,141</td>
</tr>
<tr>
<td>Jewelry and Precious Metals</td>
<td>14,813</td>
</tr>
<tr>
<td>Textiles</td>
<td>14,332</td>
</tr>
<tr>
<td>Sporting, Recreational and Children's Goods</td>
<td>13,984</td>
</tr>
<tr>
<td>Footwear</td>
<td>12,279</td>
</tr>
<tr>
<td>Fishing and Fishing Products</td>
<td>12,212</td>
</tr>
<tr>
<td>Aerospace Engines</td>
<td>10,813</td>
</tr>
<tr>
<td>Tobacco</td>
<td>9,421</td>
</tr>
<tr>
<td>Financial Services</td>
<td>8,629</td>
</tr>
<tr>
<td>Heavy Construction Services</td>
<td>8,121</td>
</tr>
<tr>
<td>Chemical Products</td>
<td>8,095</td>
</tr>
<tr>
<td>Agricultural Products</td>
<td>7,711</td>
</tr>
<tr>
<td>Biopharmaceuticals</td>
<td>7,594</td>
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<tr>
<td>Textiles</td>
<td>6,425</td>
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<tr>
<td>Footwear</td>
<td>4,255</td>
</tr>
<tr>
<td>Fishing and Fishing Products</td>
<td>2,997</td>
</tr>
<tr>
<td>Aerospace Engines</td>
<td>2,365</td>
</tr>
<tr>
<td>Tobacco</td>
<td>2,292</td>
</tr>
<tr>
<td>Entertainment</td>
<td>865</td>
</tr>
</tbody>
</table>

Note: Ranks are among the 50 US states plus the District of Columbia.

Texas overall employment rank = 2.

Texas Specialization by Traded Cluster, 1990-2004

Overall change in the Texas Share of US Employment: +0.84%

- Oil and Gas Products and Services (39.8%, +2.9%)
- Aerospace Vehicles and Defense
- Footwear
- Chemical Products
- Heavy Construction Services
- Business Services
- Plastics
- Analytical Instruments
- Construction Materials
- Building Fixtures, Equipment and Services
- Information Technology
- Transportation and Logistics
- Distribution Services
- Power Generation and Transmission
- Jewelry and Precious Metals
- Analytical Instruments

Texas Overall Share of US Traded Employment: 6.76%


50,000 Employees = 1

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Texas
Specialization by Traded Cluster, 1990-2004 (continued)

Texas Overall Share of US Traded Employment: 6.76 %

Overall change in the Texas Share of US Employment: +0.84%


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Texas Economic Growth

Job Creation by Traded Cluster, 1990-2004

Net traded job creation, 1990-2004: +465,900

* Percent change in national benchmark times starting regional employment. Overall traded job creation in Texas, if it matched national benchmarks, would be +205,776.

Composition of the Texas Economy
Wages by Traded Cluster vs. National Benchmarks

Wages, 2004

- Texas average traded wage: $49,495
- U.S. average traded wage: $49,367

Impact of Cluster Mix on Average Wages

Texas Traded Clusters, 2004

Texas’ traded sector wages are 7.9% higher than they would be if Texas’ mix of employment by cluster matched the U.S. average.

Texas’ traded sector wages are 6.35% lower than they would be if Texas’ wage levels per cluster matched the U.S. averages.
### Top Patenting Universities and Research Institutes

<table>
<thead>
<tr>
<th>Rank</th>
<th>Organization</th>
<th>Patents Issued from 2000 to 2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>UNIVERSITY OF CALIFORNIA, THE REGENTS OF</td>
<td>2107</td>
</tr>
<tr>
<td>2</td>
<td>HARVARD UNIVERSITY</td>
<td>698</td>
</tr>
<tr>
<td>3</td>
<td>MASSACHUSETTS INSTITUTE OF TECHNOLOGY</td>
<td>614</td>
</tr>
<tr>
<td>4</td>
<td>CALIFORNIA INSTITUTE OF TECHNOLOGY</td>
<td>586</td>
</tr>
<tr>
<td>5</td>
<td>UNIVERSITY OF TEXAS</td>
<td>454</td>
</tr>
<tr>
<td>6</td>
<td>STANFORD UNIVERSITY, LELAND JUNIOR, THE BOARD OF TRUSTEES OF</td>
<td>434</td>
</tr>
<tr>
<td>7</td>
<td>JOHNS HOPKINS UNIVERSITY</td>
<td>397</td>
</tr>
<tr>
<td>8</td>
<td>WISCONSIN ALUMNI RESEARCH FOUNDATION</td>
<td>361</td>
</tr>
<tr>
<td>9</td>
<td>UNIVERSITY OF MICHIGAN</td>
<td>293</td>
</tr>
<tr>
<td>10</td>
<td>COLUMBIA UNIVERSITY</td>
<td>266</td>
</tr>
<tr>
<td>11</td>
<td>BATTELLE MEMORIAL INSTITUTE</td>
<td>257</td>
</tr>
<tr>
<td>12</td>
<td>CORNELL RESEARCH FOUNDATION INC.</td>
<td>235</td>
</tr>
<tr>
<td>13</td>
<td>PENN STATE RESEARCH FOUNDATION, INC.</td>
<td>220</td>
</tr>
<tr>
<td>14</td>
<td>RESEARCH FOUNDATION OF STATE UNIVERSITY OF NEW YORK</td>
<td>215</td>
</tr>
<tr>
<td>15</td>
<td>UNIVERSITY OF WASHINGTON</td>
<td>209</td>
</tr>
<tr>
<td>16</td>
<td>MICHIGAN STATE UNIVERSITY</td>
<td>205</td>
</tr>
<tr>
<td>17</td>
<td>UNIVERSITY OF MINNESOTA, THE REGENTS OF</td>
<td>200</td>
</tr>
<tr>
<td>18</td>
<td>DUKE UNIVERSITY INC.</td>
<td>188</td>
</tr>
<tr>
<td>19</td>
<td>UNIVERSITY OF ILLINOIS</td>
<td>187</td>
</tr>
<tr>
<td>20</td>
<td>GEORGIA TECH RESEARCH CORP.</td>
<td>184</td>
</tr>
<tr>
<td>21</td>
<td>UNIVERSITY OF PENNSYLVANIA</td>
<td>184</td>
</tr>
<tr>
<td>22</td>
<td>UNIVERSITY OF FLORIDA BOARD OF REGENTS</td>
<td>170</td>
</tr>
<tr>
<td>23</td>
<td>NORTH CAROLINA STATE UNIVERSITY</td>
<td>167</td>
</tr>
<tr>
<td>24</td>
<td>THE SCRIPPS RESEARCH INSTITUTE</td>
<td>165</td>
</tr>
<tr>
<td>25</td>
<td>SOUTHWEST RESEARCH INSTITUTE</td>
<td>155</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>TEXAS A&amp;M UNIVERSITY SYSTEM</td>
<td>116</td>
</tr>
<tr>
<td>59</td>
<td>BAYLOR COLLEGE OF MEDICINE</td>
<td>81</td>
</tr>
<tr>
<td>120</td>
<td>TEXAS TECH UNIVERSITY</td>
<td>24</td>
</tr>
</tbody>
</table>

**Note:** Texas organizations highlighted.

Regions in the Texas Economy
Comparative Wage Performance of Economic Areas

Texas Average Wage: $36,967
US Average Wage: $36,161

Texas Wage Growth: 3.57%
US Average Wage Growth: 3.61%

CAGR of Wages, 1990–2004


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Regions in the Texas Economy
Comparative Employment Performance of Economic Areas


CAGR of Employment, 1990–2004
CAGR of Wages, 1990–2004

US Average Employment Growth: 1.50%
Texas Employment Growth: 2.35%

US Average Wage Growth: 3.61%
Texas Wage Growth: 3.57%

Cities:
- Austin-Round Rock
- Dallas-Fort Worth
- Houston-Baytown-Huntsville
- San Antonio
- El Paso McAllen-Edinburg-Pharr
- Corpus Christi-Kingsville
- Killeen-Temple-Fort Hood
- Midland-Odessa
- Amarillo
- Texarkana, TX-Texarkana, AR
- San Angelo
- Lubbock-Levelland
- Beaumont-Port Arthur
- Abilene
- Wichita Falls

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Texas Economic Areas

Dallas-Fort Worth
San Antonio
Austin-Round Rock
El Paso
McAllen-Edinburg-Pharr
Corpus Christi-Kingsville
Killeen-Temple-Fort Hood
Houston-Baytown-Huntsville
Abilene
Wichita Falls
Amarillo
Lubbock-Levelland
Midland-Odessa
San Angelo
Beaumont-Port Arthur
Texarkana, TX-Texarkana, AR (part)

Oklahoma City-Shawnee, OK (part)
Texas Economic Development Strategy

Cluster Initiatives

Advanced Technologies and Manufacturing
- Nanotechnology and Materials
- Micro-electromechanical Systems
- Semiconductor Manufacturing
- Automotive Manufacturing

Information Technology and Computer Technology
- Communications Equipment
- Computing Equipment and Semiconductors
- Information Technology

Aerospace and Defense
- Oil and Gas Production
- Power Generation and Transmission
- Manufactured Energy Systems

Biotechnology and Life Sciences

Petroleum Refining and Chemical Products

Energy

Financing Mechanism
Emerging Technology Fund

Cross-Cutting Initiatives
Business Climate
Education
Workforce
Texas Economic Development Strategy

Next Steps

• Refine *cluster definitions*
Texas Economic Development Strategy

Next Steps

• Refine *cluster definitions*

• Widen the *range of participating clusters*
Texas Economic Development Strategy

Next Steps

• Refine cluster definitions

• Widen the range of participating clusters

• **Activate** and **institutionalize** the cluster development process
  – Upgrade institutions for collaboration
  – Matching funds for action plans
  – Organization of Department of Economic Development and Tourism
Public / Private Cooperation in Cluster Upgrading Minnesota’s Medical Device Cluster

Context for Firm Strategy and Rivalry

- Aggressive trade associations (Medical Alley Association, High Tech Council)
- Effective global marketing of the cluster and of Minnesota as the “The Great State of Health”
- Full-time “Health Care Industry Specialist” in the department of Trade and Economic Development

Factor (Input) Conditions

- Joint development of vocational-technical college curricula with the medical device industry
- Minnesota Project Outreach exposes businesses to resources available at university and state government agencies
- Active medical technology licensing through University of Minnesota
- State-formed Greater Minnesota Corp. to finance applied research, invest in new products, and assist in technology transfer

Demand Conditions

- State sanctioned reimbursement policies to enable easier adoption and reimbursement for innovative products

Related and Supporting Industries
Texas Economic Development Strategy

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• Focus **public policy** implementation around clusters
Clusters and Public Policy

- Business Attraction
- Education and Workforce Training
- Science and Technology Infrastructure (e.g., centers, university departments, technology transfer)
- Setting standards
- Environmental Stewardship
- Natural Resource Protection
- Export Promotion
- Market Information and Disclosure
- Specialized Physical Infrastructure

- Clusters provide a framework for organizing the implementation of public policy and public investments towards economic development.
Texas Economic Development Strategy

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• Focus public policy implementation around clusters

• Develop explicit action plans around cross-cutting initiatives
  – General education system
Texas Economic Development Strategy

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Texas Economic Development Strategy

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• Focus public policy implementation around clusters

• Develop explicit action plans around cross-cutting initiatives
  – General education system

• Drive economic development to the regional level

• Create an explicit strategy for addressing economically distressed urban and rural communities

• Create an overall organizational structure for economic development
  – Public-private collaboration
  – Coordinating mechanism for state agencies
Organizing to Compete
South Carolina Council on Competitiveness

South Carolina Council on Competitiveness

- Chaired by a business leader
- Convenes working groups, provides direction and strength, holds working groups accountable
- Acts as sustainable, long-term guider of economic strategy

Executive Committee

- Drives initiative and acts as the primary decision-making body in between Council meetings

Coordinating Staff

- Support Council, Executive Comm. and working groups
- Small full-time staff

- Develop specific action plans to advance issue areas
- Work organized on basis of individual accountability
- Business, academic, and government executives

To Be Formed

- New Institutions
- Marketing
- Others as Needed

Cluster Committees

- Automotive
- Apparel
- Hydrogen / Fuel Cells
- Agriculture
- Textiles
- Travel and Tourism

Task Forces

- Cluster Activation
- Education / Workforce
- Research / Investment
- Start-ups / Local Firms
- Distressed / Disadvan. Areas
- Measuring Progress

Note: As of 01/05
Organizing to Compete
Massachusetts Governor’s Council

Governor’s Council on
Economic Growth and Technology

Industry Cluster Committees
- Advanced Materials
- Biotechnology and Pharmaceuticals
- Defense
- Marine Science and Technology
- Medical Devices
- Software
- Telecommunications
- Textiles
- Information Technology

Functional Task Forces
- International Trade
- Marketing Massachusetts
- Tax Policy and Capital Formation
- Technology Policy and Defense Conversion

Issue Groups
- Cost of Doing Business
- Financing Emerging Companies
- Health Care
- Western Massachusetts
- Business Climate
- Competitive Benchmarking