What Should New Mexico, Albuquerque and the NM Congressional Delegation Be Emphasizing?

Presented to New Mexicans for Science and Reason

August 11, 2021, 7:00 PM

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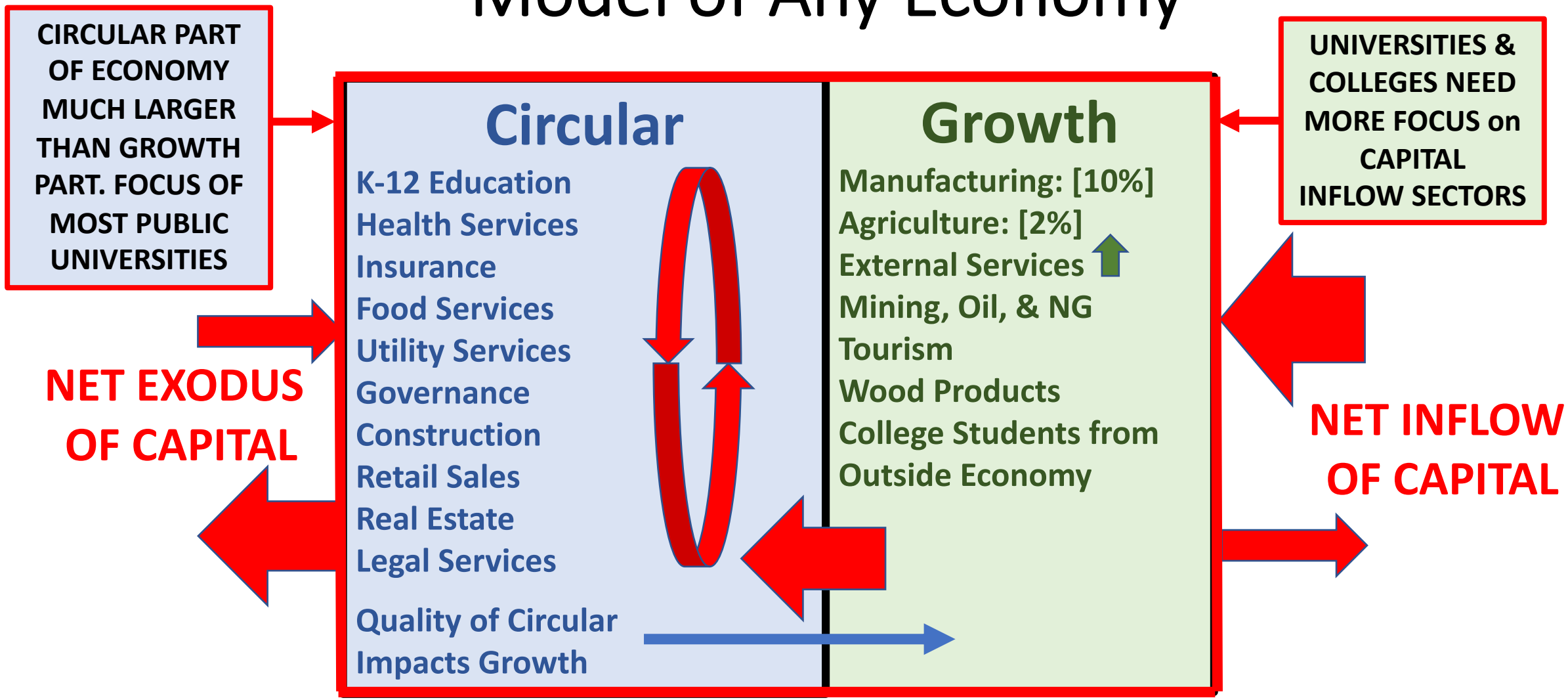
The Answer

- ***New Mexico Private Sector Economic Growth!!!***

- **How To Do This?**
  - **Support Strategic Planning for NM**
  - **Shun Important National Political Issues That Are of Low Relevance to New Mexico**
  - **Emphasize Technology's Role in Economic Growth**
  - **Capitalize on Biden Administration $XT Bills**
  - **Build on NM's Greatest Economic Asset – Federal R&D Funding**
  - **Discuss in More Detail, But First, Economics 101**

Economics 101: The Basics

Model of Any Economy



OVERALL GROWTH RATE OF ECONOMY PROPORTIONAL TO RATE CAPITITAL ENTERING ECONOMY – RATE CAPITAL EXITING ECONOMY

What Kind of Jobs Should NM Be Creating?
Evaluation Criteria for Growth and Circular Industry Sectors

- **Job Multiplier Effect**
  - **Direct Jobs + Supplier Jobs + Induced Jobs**
  - **Utilities - 9.6, Durable Manufacturing - 7.4, Information - 5.7**
- **Average Salary**
  - **Utilities $44.61/hr, Durable Manufacturing -$31.19/hr, Information - $44.53/hr**
- **Growth Potential of Sector Going Into the Fourth Industrial Revolution**

Employment Multipliers per 100 Direct Jobs, by Major Private-Sector Industry Group and Average Worker Salary

Major industry group	Direct jobs	Supplier jobs*	Induced jobs**	Total indirect jobs
Agriculture, forest, fishing, and hunting	100	93.6	134.8	228.5
Mining	100	224.0	166.0	390.0
Utilities	100	515.4	442.2	957.7
Construction	100	88.0	138.1	226.1
Durable manufacturing	100	289.1	454.9	744.1
Nondurable manufacturing	100	184.8	329.5	514.3
Wholesale trade	100	107.3	128.0	235.3
Retail trade	100	46.7	75.4	122.1
Transportation and warehousing	100	112.8	163.3	276.0
Information	100	252.0	321.1	573.1
Finance and insurance	100	149.7	214.7	364.4
Real estate and rental leasing	100	396.6	483.1	879.7
Professional, scientific, and technical services	100	142.1	276.2	418.3
Management of companies	100	144.4	255.4	399.9
Administrative and support services and waste management	100	45.5	89.1	134.5
Educational services	100	63.8	129.9	193.7
Health care and social assistance	100	69.4	136.2	205.6
Arts, entertainment, and recreation	100	123.3	255.2	378.5
Accommodation and food services	100	53.8	107.4	161.2
Other services (except public administration)	100	70.7	139.6	210.3

Industry	June 2021(P)
Total private	$30.40
Goods-producing	30.98
Mining and logging	35.00
Construction	32.86
Manufacturing	29.66
Durable goods	31.19
Nondurable goods	27.14
Private service-providing	30.26
Trade, transportation, and utilities	26.40
Wholesale trade	33.63
Retail trade	21.92
Transportation and warehousing	26.75
Utilities	44.61
Information	44.53
Financial activities	40.10
Professional and business services	36.49
Education and health services	29.54
Leisure and hospitality	18.23
Other services	27.29

Economic Policy Institute, Updated Employment Multipliers for US Economy

U.S. BUREAU OF LABOR STATISTICS

What Are the Big Economic Disrupters Going Forward?

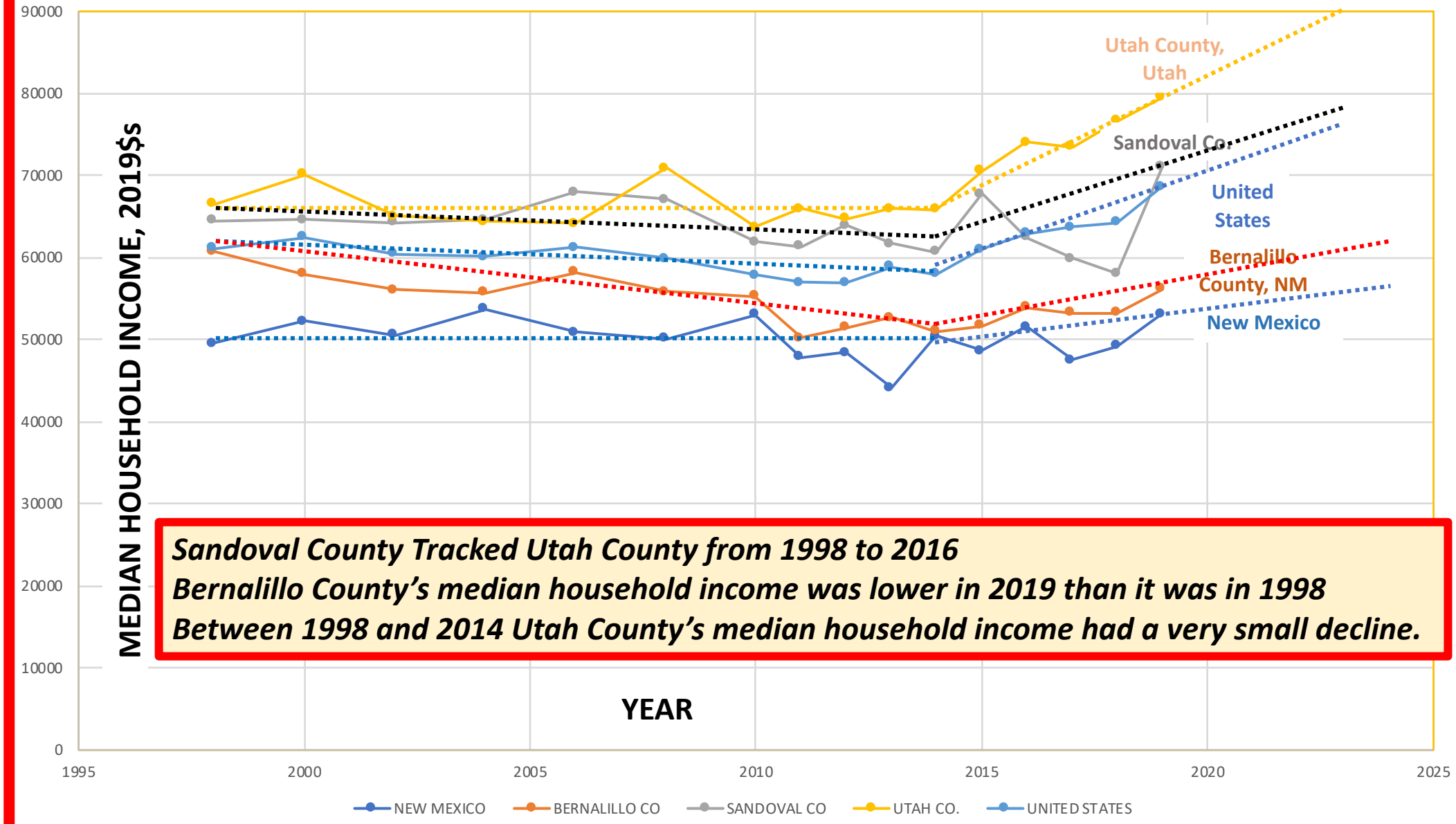
- **Military and Economic Competition Between US and China**
  - **Driving US Legislation, e.g., United States Innovation and Competition Act**
  - **Drive Work at New Mexico National Laboratories**
  - **Imperative to Engage All Americans in Economic Growth**
  - **Reconstructed Supply Lines**
  - **Bringing Back Manufacturing – Buy USA Made**
  - **New Era of Industrial Policy**
- **Climate Change**
- **Pandemics**
- **Fourth Industrial Revolution**
- **Major Domestic Issues, e.g., Infrastructure**

Cities, Not Nations Are Driving Economic Growth

- **Cities, not nation states, will determine our economic future. Half of humanity currently lives in one.**
- **Two thirds of the world's population will be urban dwellers by 2030. Today cities power over two-thirds of global GDP; they are marvels of innovation and engines for prosperity.**
- **How can all cities and rural areas grow economies at the rate of cities built on high-tech business?**
  - **Build a high tech economy**
  - **Another way?**

Chad Shearer, Isha Shah, Alec Friedhoff, and Alan Berube, Brookings Metropolitan Policy Program, Feb. 8, 2018.

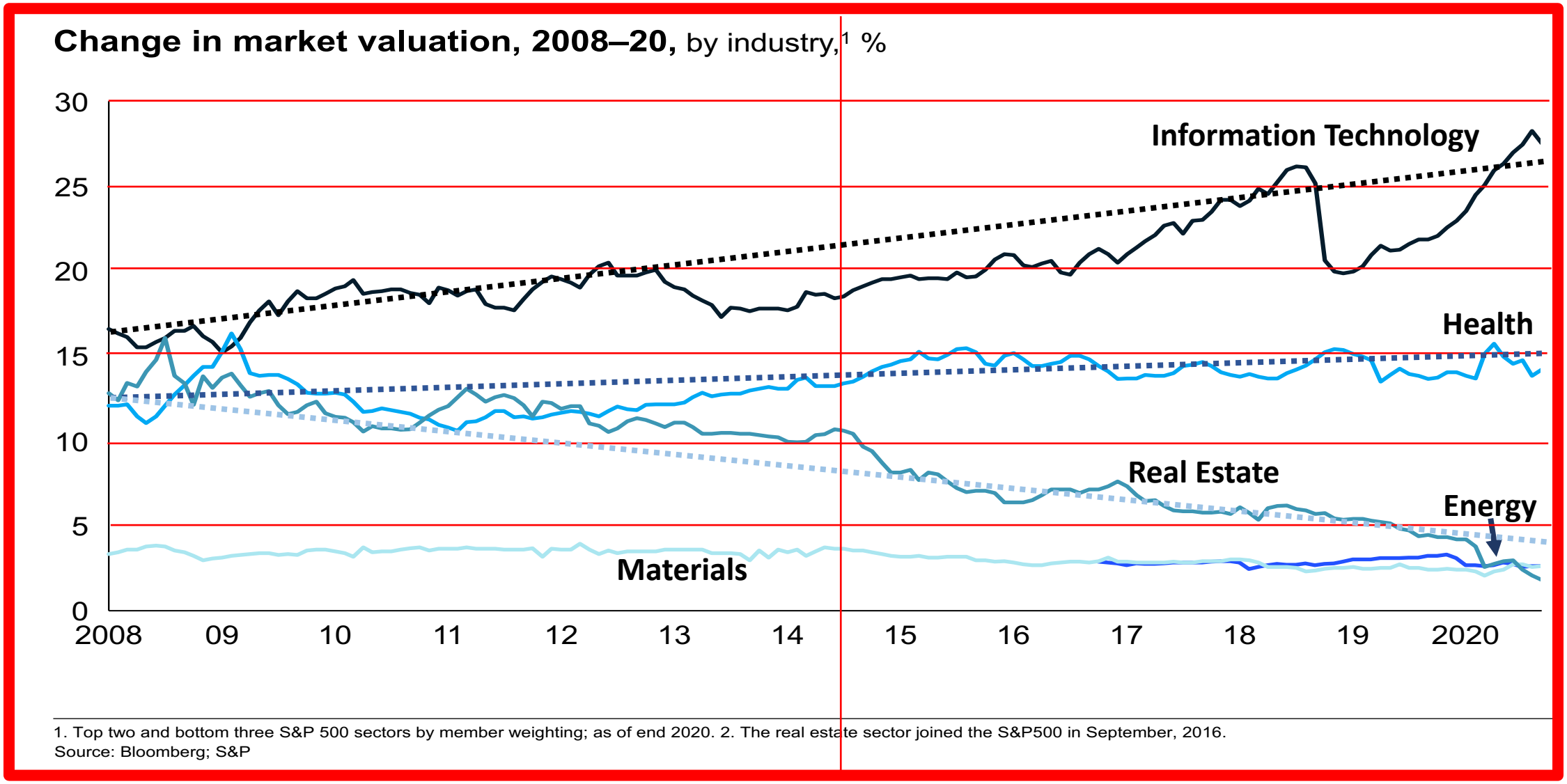
MEDIAN HOUSEHOLD INCOME IN 2019 DOLLARS FROM 1998 to 2019 for UTAH COUNTY, UTAH; SANDOVAL COUNTY, NM; UNITED STATES; BERNALILLO COUNTY, NM; and NEW MEXICO.



Sandoval County Tracked Utah County from 1998 to 2016
Bernalillo County's median household income was lower in 2019 than it was in 1998
Between 1998 and 2014 Utah County's median household income had a very small decline.

Economics 102: Technology Innovation Drives Economic Growth

Market Valuation by Industry Sector



1. Top two and bottom three S&P 500 sectors by member weighting; as of end 2020. 2. The real estate sector joined the S&P500 in September, 2016.
Source: Bloomberg; S&P

McKenzie and Company, the top trends in tech, executive summary, 2021

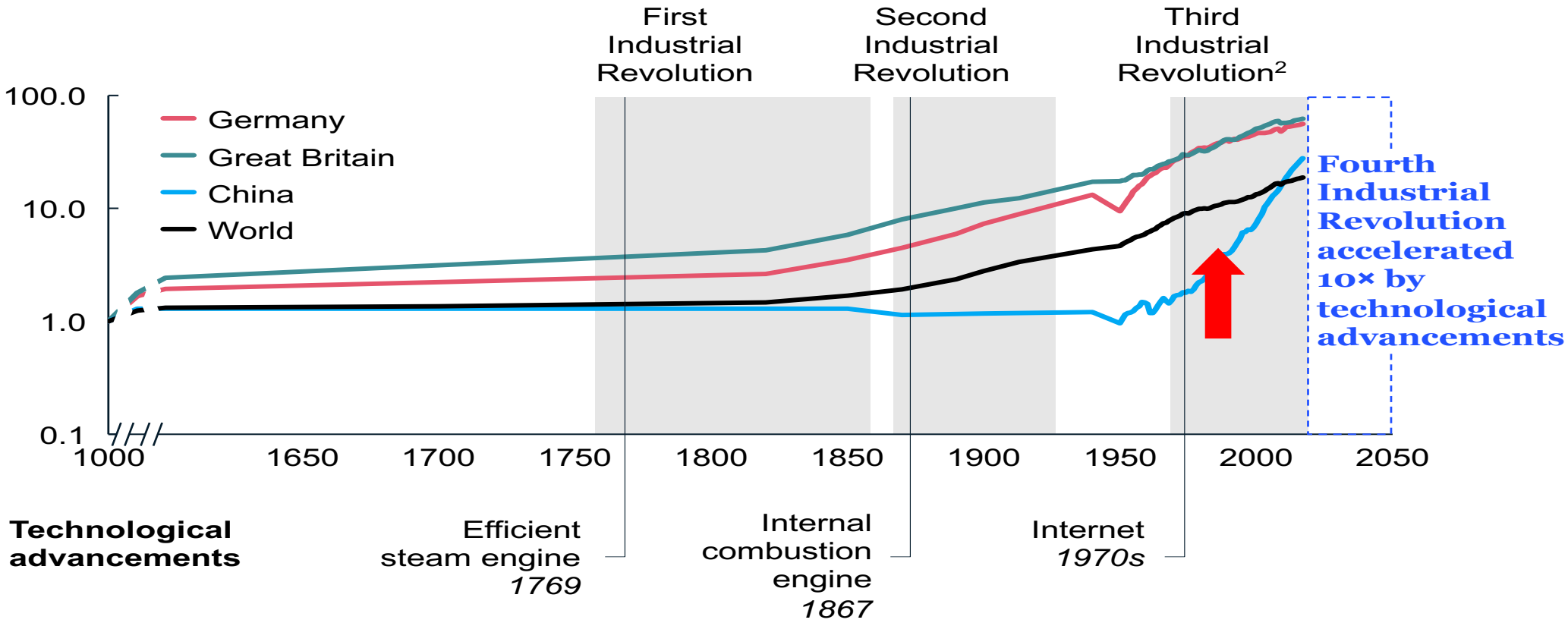
Key Focus Technologies for US – China Economic and Military Competition

1. **Artificial Intelligence and Machine Learning;**
2. **High Performance Computing, Semiconductors, and Advanced Computer Hardware;**
3. **Quantum Computing and Information Systems;**
4. **Robotics, Automation, and Advanced Manufacturing;**
5. **Natural or Anthropogenic Disaster Prevention;**
6. **Advanced Communications Technology (5G);**
7. **Biotechnology, Genomics, and Synthetic Biology;**
8. **Cybersecurity, Data Storage, and Data Management Technologies;**
9. **Advanced Energy; and**
10. **Materials Science, Engineering, and Exploration relevant to the other key technology focus areas described in this subparagraph.**

United States Innovation and Competition Act of 2021, S. 1260, p. 80.

Technology Drives the Economic Growth of Nations

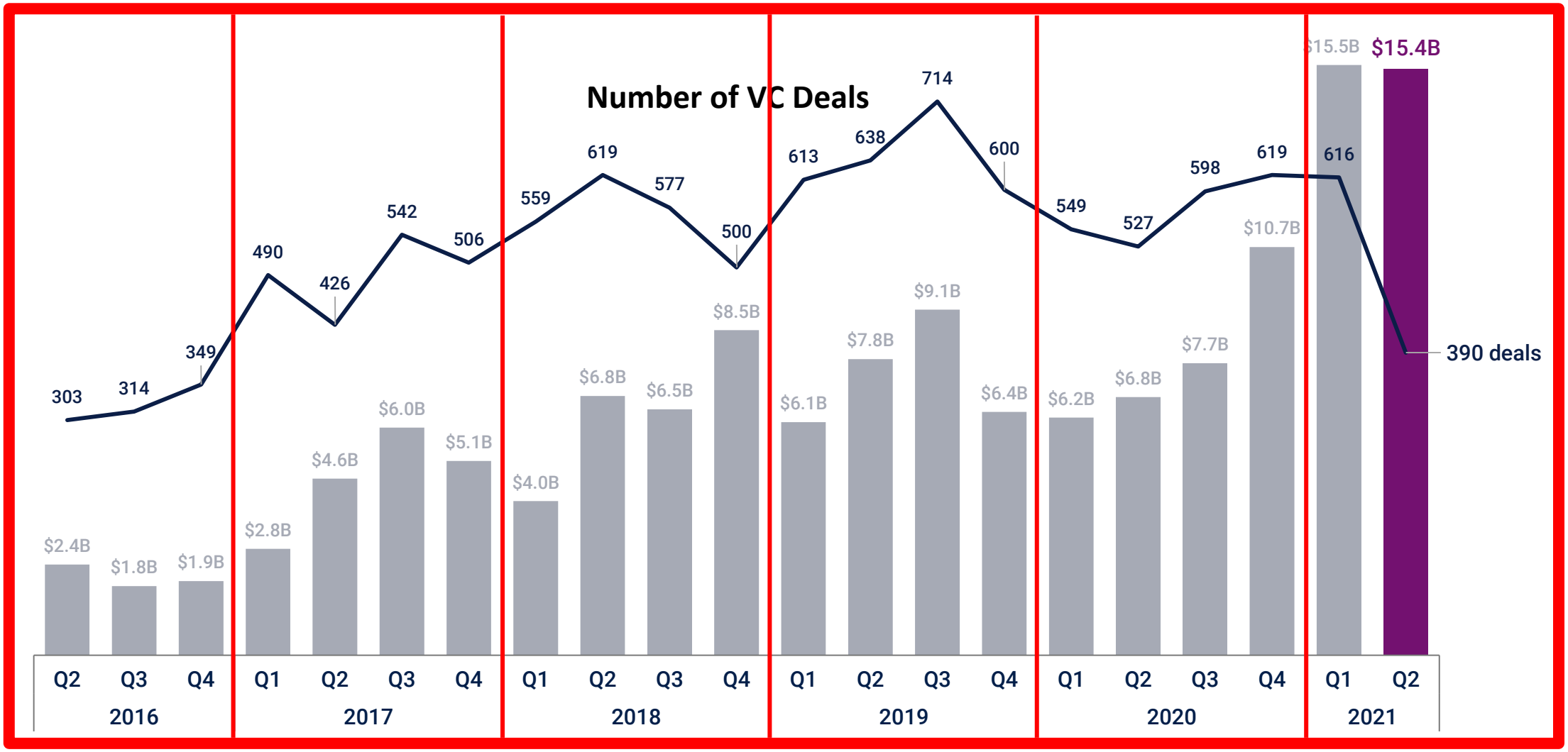
Changes in GDP per capita brought about by technological investments, 1000–2000 AD, by country, indexed[1]



1. Estimated global GDP per capita in USD, adjusted to GDP in 1000 AD = 1; not exhaustive; 2. Includes Industry 4.0 (debate exists as to whether Industry 4.0 is seen as the Fourth Industrial Revolution or simply as the second phase of the Third Industrial Revolution).
Source: Angus Maddison, "Statistics on World Population, GDP & Per Capita GDP, 1-2008 AD," Maddison Project Database; UBS Asset Management; OECD

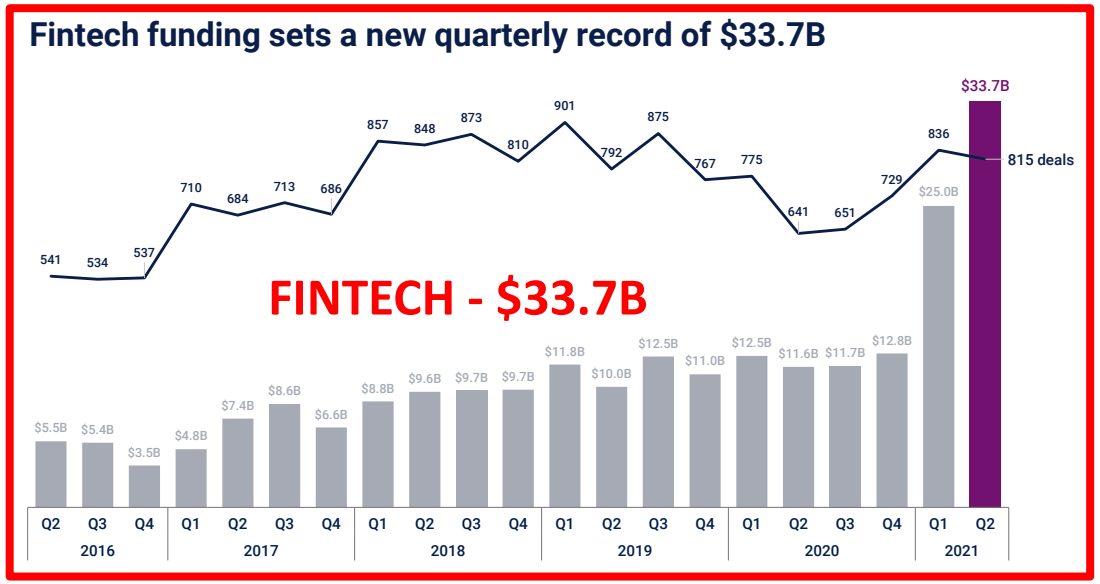
McKenzie and Company, the top trends in tech, executive summary, 2021

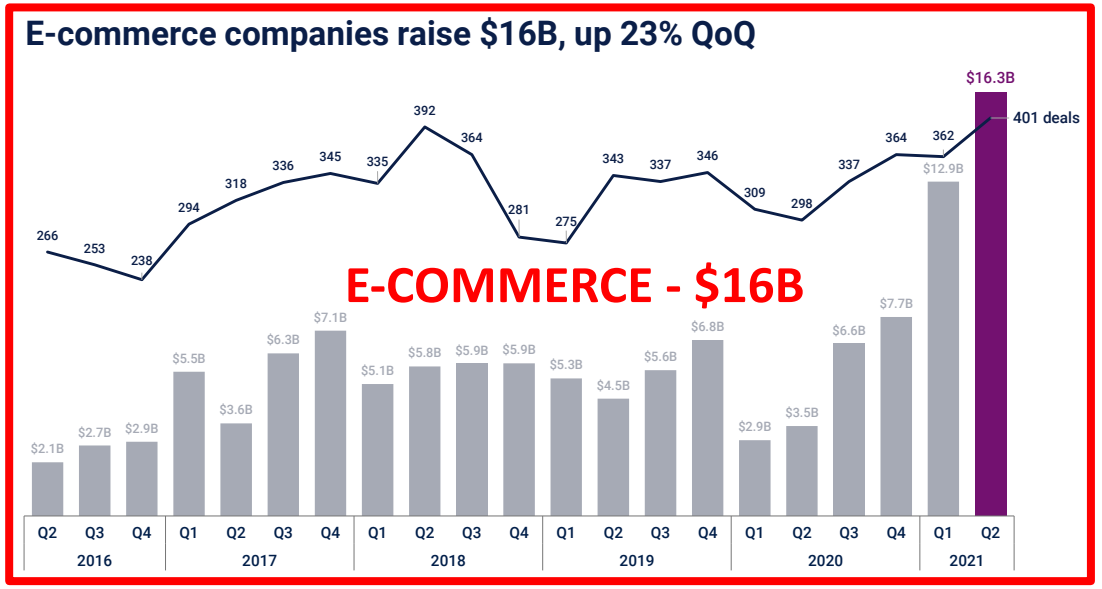
Quarterly Funding for Artificial Intelligence

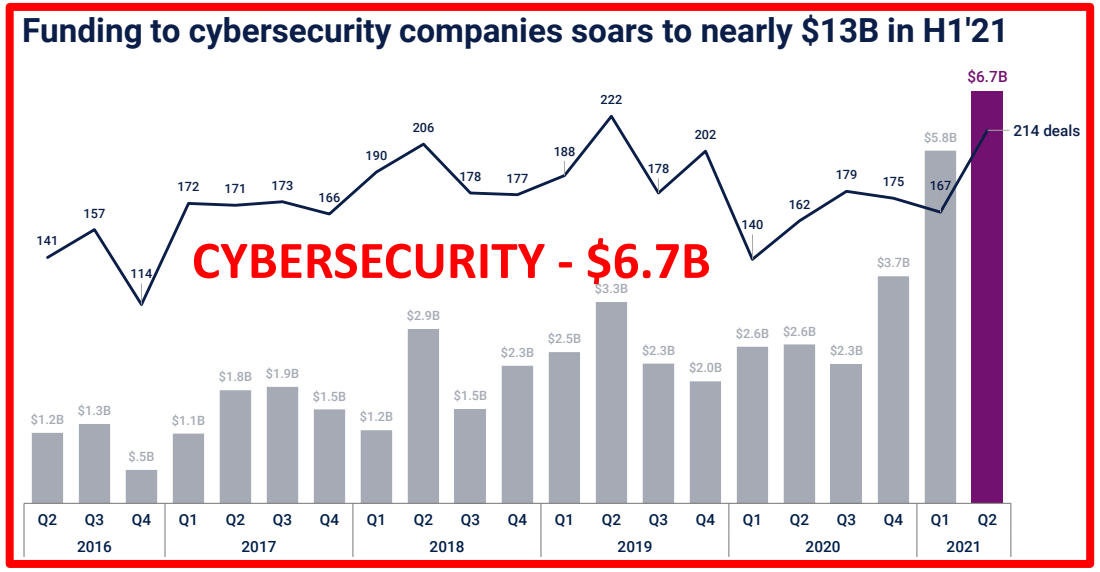


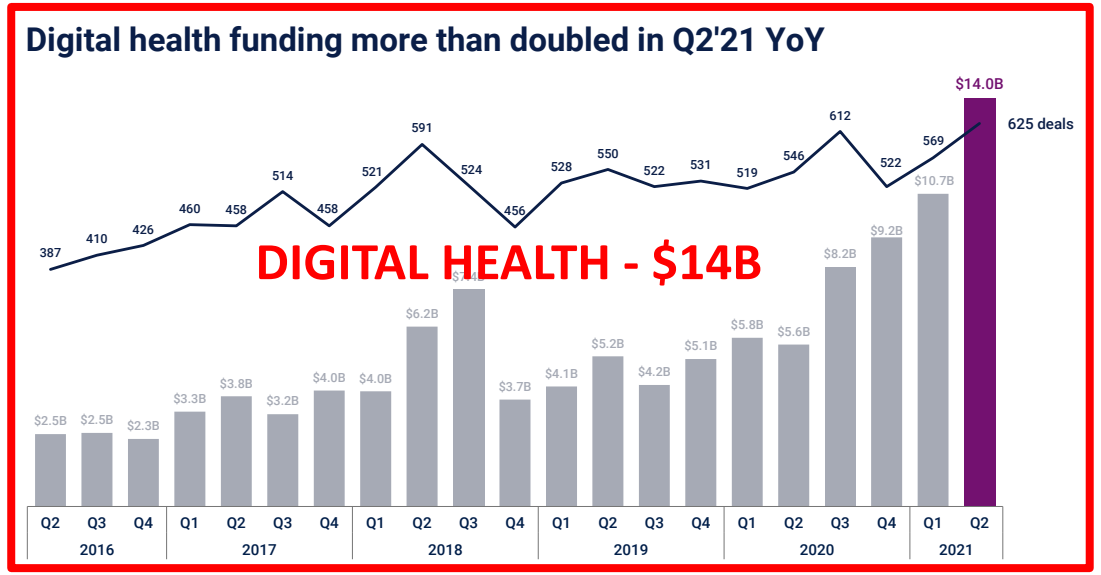
CBINSIGHTS, STATE OF VENTURE REPORT, Q2 2021.

Industry Sectors Where VCs Are Investing Q2-2021



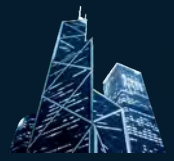






CBINSIGHTS, STATE OF VENTURE REPORT, Q2 2021.

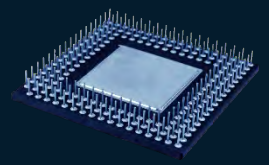
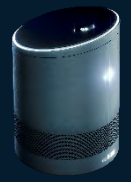
Seven Cross-Industry Technology Trends Will Disrupt Company Strategy, Organization and Operations

Tech-trend clusters			Disruptions
1 **A. Next-level process automation**		Industrial IoT[1] Robots/cobots[2]/ RPA[3]	**Self-learning, reconfigurable robots** will drive automation of physical processes beyond routine activities to include less predictable ones, leading to fewer people working in these activities and a **reconfiguration of the workforce;** policy makers will be challenged to address labor displacement, even as organizations will need to rethink the future of work
B. Process virtualization		Digital twins 3-D/4-D printing	**Advanced simulations and 3-D/4-D printing** will virtualize and dematerialize processes, shortening development cycles as ever-shorter product and service life cycles continue to accelerate, further **pressuring profit pools and speeding strategic and operational practices** that tightly correlate with successful digital efforts
2 **Future of connectivity**		5G and IoT connectivity	With either high-band or low- to mid-band 5G reaching up to 80% of the global population by 2030, enhanced coverage and speed of connections across long and short distances will enable **new services** (eg, remote patient monitoring), **business models** (eg, connected services), and **next-generation customer experiences** (eg, live VR)
3 **Distributed infrastructure**		Cloud & edge computing	Wide availability of IT infrastructure and services through cloud computing could **shift demand for on-premise IT infrastructure and reduce the need for IT setup and maintenance**, while the democratization of infrastructure will help **shift competitive advantage** away from IT to software development and talent.

1. Internet of things. 2. Collaborative robots. 3. Robotic process automation.

McKenzie and Company, the top trends in tech, executive summary, 2021

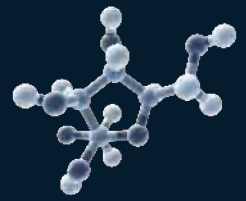
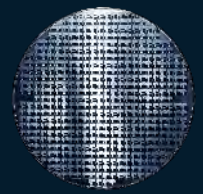
Seven Cross-Industry Technology Trends Will Disrupt Company Strategy, Organization and Operations

Tech-trend clusters			Disruptions
4 **Next-generation computing**		Quantum computing ASICs[4]	**High computational capabilities allow new use cases**, such as molecule-level simulation, reducing the empirical expertise and testing needed for a range of applications and leading to the following: disruption across industries such as materials, chemicals, and pharmaceuticals; highly **personalized product developments**, for instance in medicine; the ability to break the majority of **cryptographic security algorithms**, disrupting today's cybersecurity approaches; and the faster diffusion of **self-driving vehicles**
5 **Applied AI**		Computer vision, natural-language processing, and speech technology	As AI matures and continues to scale, it will enable **new applications** (eg, more rapid development cycles and detailed customer insights), **eliminate labor for repetitive tasks** (eg, filing, document preparation, and indexing), and support the **global reach of highly specialized services and talent** (eg, improved telemedicine and the ability of specialized engineers to work on oil rigs from the safety of land)
6 **Future of programming**		Software 2.0	Software 2.0 creates new ways of writing software and reduces complexity; however, as companies look to **scale their software-development capabilities**, they will need to **master DataOps and MLOps[5] practices** and technology to make the most of the future of programming
7 **Trust architecture**		Zero-trust security Blockchain	Trust architectures help commercial entities and individuals **establish trust and conduct business without need for intermediaries**, even as zero-trust-security measures address growing cyberattacks; countries and regulatory bodies may likely have to **rethink regulatory oversight;** distributed-ledger technologies will **reduce cost and enable transformative business models**

4. Application-specific integrated circuits.
5. DataOps supports and enables better data analytics; MLOps combines infrastructure, tools, and workflows to provide faster and more reliable machine-learning pipelines.

McKenzie and Company, the top trends in tech, executive summary, 2021

Three Industry-Specific Technology Trends Can Help Solve Humanity's Biggest Challenges

Tech-trend clusters			Disruptions
8 **Bio Revolution**		Biomolecules/"-omics"/ Biosystems Biomachines/biocomputing/ augmentation	"-omics" enable **rapid analysis of genetic materials** and open up possibilities (eg, for rapid vaccine development, personalized medicine, and gene therapy) Using **biological material for computing purposes** can enable a vast expansion of data storage using DNA as the information medium
9 **Next-generation materials**		Nanomaterials, graphene and 2-D materials, and molybdenum disulfide nanoparticles	By changing the economics of a wide range of products and services, next-generation materials may change industry economics and reconfigure companies within them (eg, by allowing for the integration of **sustainable materials and renewable energy sources** into processes), even as innovations in materials science help create **smart materials with programmable properties** that respond to stimuli from external factors
10 **Future of clean technologies**		Nuclear fusion Smart distribution/metering Battery/battery storage Carbon-neutral energy generation	As clean technologies come down the cost curve, they become increasingly disruptive to traditional business models, creating new **business-building** opportunities, **operational-improvement** programs driven by clean technologies, and new **climate-change mandates** that could alter the balance sheet of carbon-intense sectors—all while providing the **green energy** needed to sustain exponential technology growth

McKenzie and Company, the top trends in tech, executive summary, 2021

The Combinatorial Effect of Technology Amplifies and Accelerates New Business Models and Innovation

Mutually reinforcing technology leads to exponential growth.

Outcomes of 3 levels of combinatorial effects on cross-industry tech trends

Infrastructure and architecture

2 Future of connectivity

5G and IoT[1] connectivity

3 Distributed Infrastructure

Cloud and edge computing

7 Trust architecture

Zero-trust security

Blockchain

Enabler

6 Future of programming

Software 2.0 (including MLOps and DataOps)

4 Next-generation computing

Quantum computing

Neuromorphic computing (ASICs[2])

Application

1 Next-level process automation and virtualization

IIoT,[3] Robots/cobots[4]/ RPA,[5] Digital twins, 3-D/4-D printing

5 Applied AI

Computer vision, natural-language processing, and speech technology

New business models and innovation

New **programming modalities** to achieve robust models and build applications faster (eg, MLOps, federated learning)

Novel **architecture paradigms** focusing on orchestration of infrastructure, increasing resilience, flexibility, and speed (e.g., decoupled, microservice-based)

Dedicated hardware delivering **increased computing power**, diffused through new levels of connectivity (eg, edge-based processing or 5G)

McKenzie and Company, the top trends in tech, executive summary, 2021

Economics 103: The Fourth Industrial Revolution

Disruption by Digital Economy or Fourth Industrial Revolution

- **The First Industrial Revolution used water and steam power to mechanize production.**
- **The Second Industrial Revolution used electric power to create mass production.**
- **The Third Industrial Revolution used electronics and information technology to automate production.**
- ***The Fourth Industrial Revolution is building on the Third.***
  - ***It is characterized by a fast-changing fusion of technologies that is blurring the lines between the physical, digital, and biological spheres.***

John Lodder, Linked In, The Fourth Industrial Revolution and the Education System, how to respond? (Summary of 2016 World Economic Forum Davos Meeting.)

Characteristics of the Fourth Industrial Revolution

- **Evolving at an *EXPONENTIAL PACE***
  - **Almost every industry in every country is being disrupted. The breadth and depth of these changes transform entire systems of production, management and governance.**
- ***Powered by ARTIFICIAL INTELLIGENCE***
  - **it is transforming the needs of the workplace from task-based to human-centered characteristics.**
- ***TALENT, not Capital, will be the critical factor of production.***
  - **65% of the students in school today will work in jobs that do not currently exist.**
  - **47% of today's jobs will be automated in the next two decades.**
  - **More than 50% of the content in today's graduate degrees will be outdated in 5 years.**
  - **With rapid disruption cycles in industry and rising automation, the end state of being educated is no longer meaningful. An individual must have learning agility, the ability to learn, adapt, and apply in quick cycles.**
  - **Fully 60 percent of global executives in a recent McKinsey survey expect that up to half of their organization's workforce will need retraining or replacing within five years.**

- **CB INSIGHTS, Artificial Intelligence Trends, 2019.**
- **Davis Carlin, Nora Gardner, Bryan Hancock and Brooke Weddle, McKinsey & Company, *Building the Tech Talent Pipeline*, Dec. 10, 2019**

Core Skills of Fourth Industrial Revolution (4IR) Workers

- **Critical Thinking**
- **People Management**
- **Judgement**
- **Cognitive Flexibility**
- **Knowledge Production**
- **Management**
- **Complex Problem Solving**
- **Collaboration/Communications**
- **Digital Literacy**

ARE THESE SKILLS WIDESPREAD in US?

- **Vaccination Shunning**
- **Conspiracy Theories**
- **Climate Change Denial**
- **White Supremacy**
- **Fear of Immigrants**
- **Denial of LGBTQ Rights**
- **Disrespect for Expertise – All Opinions Are Equal**
- **Disrespect for Research**
- **Racism**

- **World Economic Forum Report, GLOBAL ISSUE, Education and Skills.**
- **Arden Bement, Jr., Debasish (Deba) Dutta and Lalit Patil In cooperation with the National Academy of Engineering and the University of Illinois at Urbana-Champaign, *Educate to Innovate Factors That Influence Innovation Based on Input from Innovators and Stakeholders*, 2015.**
- **World Economic Forum Schools of the Future Report, Platform for Shaping the Future of the New Economy and Society, Schools of the Future, *Defining New Models of Education for the Fourth Industrial Revolution*, January, 2020**

4IR Education

- ***Interdisciplinary***
- ***Hands-On: Projects, Laboratories, Co-Op and Internships***
- ***Artificial Intelligence Woven Through All Disciplines***
- ***Working in Teams***
- ***Accessible to All***
- ***Lifelong Learning by Certification and Retraining***
- ***Frequent Curriculum Updating***
- ***Use Education Technology: Gaming, Mixed Reality, Simulation, Distance Learning***

- **Bo Xing and Tshilidzi Marwala, Implications of the Fourth Industrial Age for Higher Education, The Thinker, Issue 73,Third Quarter 2017.**
- **World Economic Forum (WEF), Schools of the Future: Defining New Models of Education for the Fourth Industrial Revolution, Jan. 2020.**
- **WEF and Boston Consulting Group, New Vision for Education: Fostering Social and Emotional Learning through Technology, 2016.**
- **National Governors Association Center for Best Practices, Reimagining Workforce Policy in The Age of Disruption: A state guide for Preparing the future workforce now, July, 2020.**

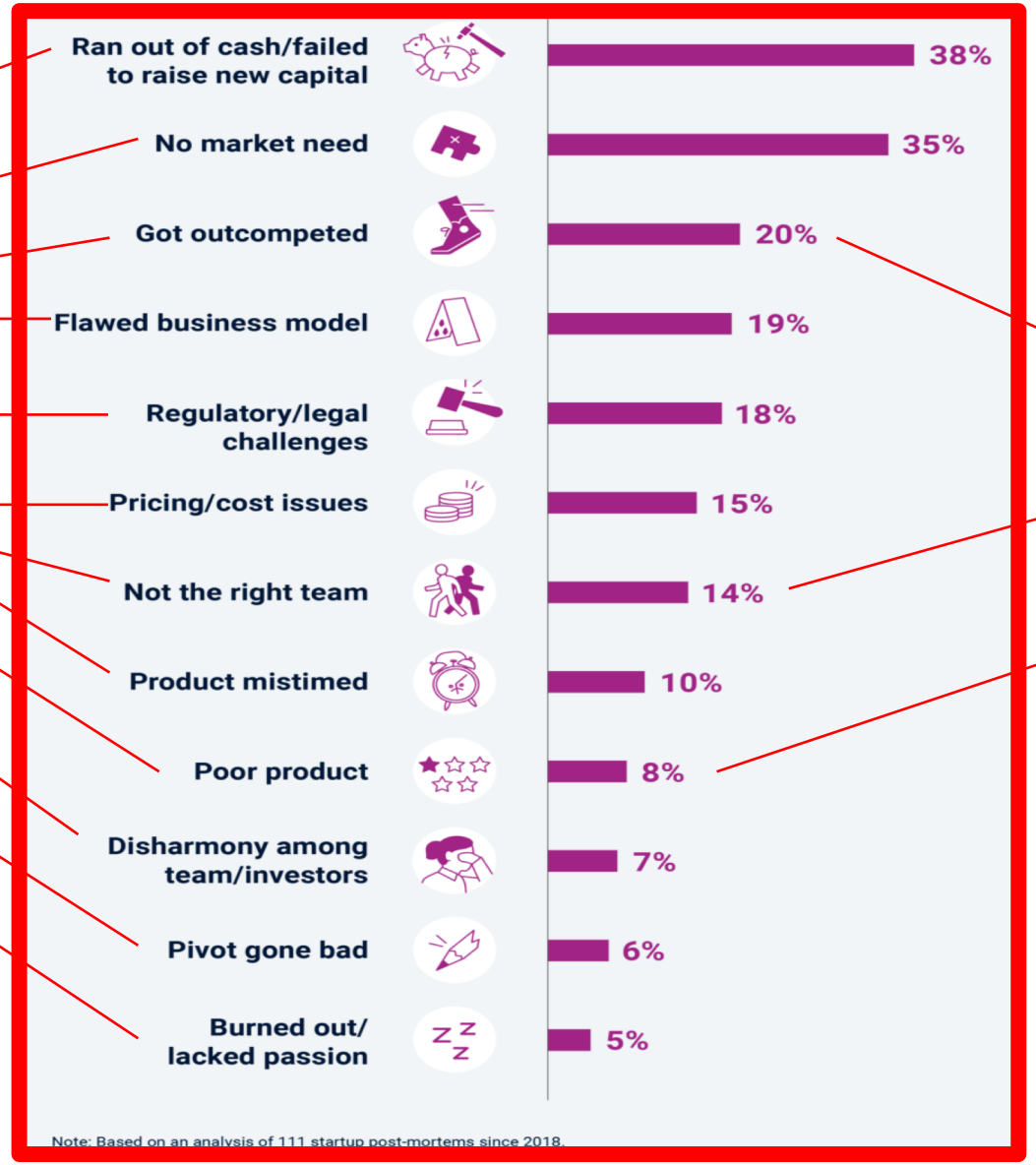
How to Build a 4IR Economic Ecosystem

- **Build Entrepreneurship Education Programs (Not a Single Course) for Students**
- **Educate the workforce in 4IR Technologies, Particularly Artificial Intelligence**
- **Apply 4IR Technologies to Existing Local Companies**
- **Promote/Nourish/Grow High-Tech Start-Ups:**
  - **Attract Successful High-Tech Entrepreneurs**
  - **Attract Entrepreneurial High-Tech Immigrants Directly and Through Education Programs**
  - **Support Local Entrepreneurs**
- **Attract High-Tech Firms**
  - **CART VS. HORSE: As Workforce Competence Grows, Companies Will Relocate to Take Advantage of Workforce Skills**
- **Result Is Economic Ecosystem**

ROBERT D. ATKINSON, MARK MURO, *and* JACOB WHITON, THE CASE *for* GROWTH CENTERS: How to spread tech innovation across America, Brookings and Information Technology & Innovation Foundation, December, 2019.

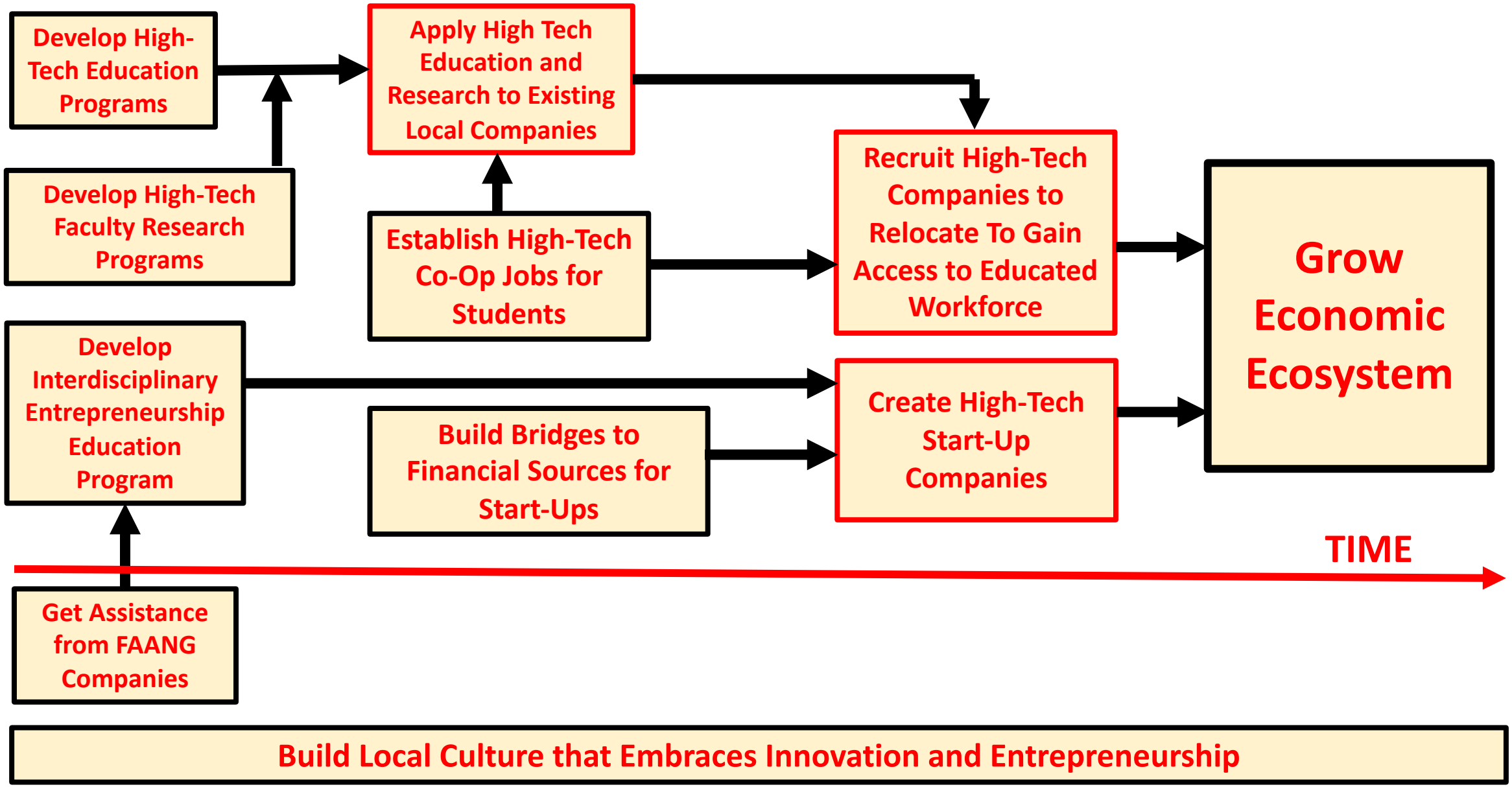
CBINSIGHTS Study of Reasons Start-Ups Fail: What Should Entrepreneurship Education Emphasize?

Inadequate Management!



Inadequate Technical Capabilities Not on List!

Evolution of High-Tech Economic Ecosystem



Why Are Economics 101, Economics 102 and Economics 103 Important to the Bernalillo County and New Mexico Economies.

SWOT Analysis: Albuquerque's Strengths

IF THESE CAN BE CONVERTED INTO MAJOR SOURCE OF LOCAL HIGH-TECH START-UPs, THESE CAN BECOME SUPER STRENGTHS; OTHERWISE, NO HOME-RUNS ON LIST!

- **OUTSTANDING QUALITY OF LIFE AND CLIMATE**
- **CULTURAL AND ETHNIC DIVERSITY**
- **CENTRAL US LOCATION**
- **TRANSPORTATION INFRASTRUCTURE**
- ***ECONOMY: FEDERAL AND MILITARY LABS AND THE INTELLECTUAL CAPITAL AND INNOVATION THEY BRING***
- **HUMAN CAPITAL/WORKFORCE: HIGH CONCENTRATION OF PH.D.S AND STEM BASED PROFESSIONALS**
- **LOWEST COST RENEWABLE ENERGY**
- **HIGHER EDUCATION INSTITUTIONS: CENTRAL NM, NMTECH, UNM**
- **ABSENCE OF NATURAL DISASTERS**
- **WELCOMING TO NEWCOMERS**

KRQE said, "Boulder, Colorado tops U.S. News & World Report's List of best of places to live for the second consecutive year. ..U.S. News and World Report put Albuquerque 120/150 on the list. ... The publication noted Albuquerque's rich culture, access to art galleries and it's unique culinary and brewery scene. It also says the cost of living in New Mexico is slightly below the national average. … Meanwhile, Albuquerque was ranked 133rd for best places to retire."

Albuquerque Economic Development, 2021 and Beyond: A Strategic Plan for Economic Recovery and Resiliency in the Albuquerque Metropolitan Region, July, 2021.

2021-2022 US NEWS and WORLD REPORT
Best Places to Live Methodology, July 2021

- **Job Market Index 21.2%**
  - Unemployment Rate (50%)
  - Average Salary (50%)
- **Value Index 23.7%**
  - Blended Median Annual Household Income (50%)
  - Blended Annual Housing Cost (50%)
- **Quality of Life Index 26.0%**
  - Crime Rates (30%)
  - Quality and Availability of Health Care (10%)
  - Quality of Education (25%)
  - Well-being (15%)
  - Commuter Index (20%)
- **Desirability Index 16.3%**
- **Net Migration 12.8%**

1. Boulder, CO
2. Raleigh and Durham, NC
3. Huntsville, AL
4. Fayetteville, AK
5. Austin, TX
6. Colorado Springs, CO
7. Naples, FL
8. Portland, ME
9. Sarasota, FL
10. Portland, OR
11. Boise, ID
12. Ann Arbor, MI
13. Des Moines, IA
14. Denver, CO
15. San Francisco, CA
16. Madison, WI
17. Fort Collins, CO
18. Melbourne, FL
19. Seattle, WA
20. Charlotte, NC

SWOT Analysis: Albuquerque's Weaknesses

SHOWSTOPPER

SHOWSTOPPER

SHOWSTOPPER

FOCUS ON SHOWSTOPPERS!!

- **QUALITY OF LIFE: CRIME, POVERTY AND HOMELESSNESS**
- ***"SCARCITY" MENTALITY AND FAILURE TO "THINK BIG"***
- ***HOSTILE BUSINESS CLIMATE ON THE PART OF INDIVIDUAL CITIES AND THE STATE GOVERNMENT***
- **RELATIVE ISOLATION FROM MAJOR US MARKETS?**
- ***INNEFFECTIVE EDUCATION, TRAINING AND PREPARING THE LOCAL WORKFORCE***
- **ABSENCE OF A MAJOR INTERNATIONAL AIRPORT AND DIRECT, NONSTOP ROUTES?**
- **ABSENCE OF COLLABORATION BETWEEN AND AMONG MOST POST SECONDARY INSTITUTIONS**
- **DETERIORATED DOWNTOWN ABQ?**
- **FEW NATIONAL AND MAJOR PUBLICLY-TRADED COMPANIES?**

Albuquerque Economic Development, 2021 and Beyond: A Strategic Plan for Economic Recovery and Resiliency in the Albuquerque Metropolitan Region, July, 2021.

ALBUQUERQUE SWOT ANALYSIS: Opportunities and Threats

OPPORTUNITIES

- Improving K-12 Education
- Growing and Diversifying the Region's Economy to Be Less Dependent on Oil/NG/Govt.
- Increasing the Focus on Existing Business
- Attracting Firms and Enterprises in Key Economic Sectors
- Improving the Human Capital/Workforce Assets of the Region
- Elevating the Identify and Brand Awareness of the Albuquerque Region
- Improving Competitiveness and Business Climate
- Creating a More Cohesive, Effective and Efficient Economic Development Ecosystem

THREATS

- Continued Negative Business Climate
- Failure to Become Less Dependent on Oil/NG/Govt. (Labs and Military)
- Failure to Adopt a Systemic, Focused and Performance-Based Approach to Economic Development
- Failure to "Level the Playing Field" vis-à-vis Competition From Other States, Especially Taxation of Business and Lack of Incentives
- Failure to Address Crime, Poverty and Homelessness
- Failure to Improve the Traditional Public K-12 Education
- *Failure to Prepare for The Fourth Industrial Revolution*

Albuquerque Economic Development, 2021 and Beyond: A Strategic Plan for Economic Recovery and Resiliency in the Albuquerque Metropolitan Region.

Greater Albuquerque Metro Should Focus on Six Industries

In Aerospace, Capitalize on The Exceptional Research & Development Capabilities in The Region

- Trips to Space
- Space Mining/Colonization
- Satellite Launch
- Space Militarization

In Biosciences, Convert Research & Development Technologies into The Development of Local Businesses

- Medical Devices
- High Productivity Services
- Digital Healthcare

In Renewable Energy, Become the Green Energy Capital of the United States and the Model for Other Markets in the Future

- Low Cost Electricity for Data Centers
- Accelerated Path to Carbon Neutrality

In Digital Media & Film, Market the Albuquerque Region's Tremendous Advantages Versus Traditional Filming Locations & Become the HQs of Digital Media & Film

- Digital Media Technology
- Digital Media Services

In Corporate & Professional Services, Capitalize on Current Trend and Attract Middle Office (professional jobs) to the Region

- SaaS
- IT

In Manufacturing, Focus on Reshoring and Onshoring Opportunities

- Semiconductor Chips
- Green Energy Technology
- Incentives to Relocate from Off-Shore

Need Strategic Plan for Each Industry Sector!!!

Albuquerque Economic Development, 2021 and Beyond: A Strategic Plan for Economic Recovery and Resiliency in the Albuquerque Metropolitan Region.

NM Strategic Planning Targeting Nine Industries

- **Outdoor Recreation**
- **Value-added Agriculture**
- **Global Trade**
- **Advanced Manufacturing (Albuquerque List + Senate List)**
- **Bioscience (Albuquerque List + Senate List)**
- **Film and Television (Albuquerque List)**
- **Cybersecurity (Senate List)**
- **Aerospace (Albuquerque List)**
- **Renewable Energy (Albuquerque List + Senate List)**
  - **Most Start-Ups are Software Based**

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What Is Missing from Albuquerque and NM Strategic Planning?

1. **Recognition that Federal R&D Funding is Most Important Driver of NM and Albuquerque Economies; Must Develop a Plan to Massively Increase Its Role in Local and NM Economic Growth**
2. **Disruptive Impact of Fourth Industrial Revolution**
   - **Role of Advanced, Interdisciplinary Technology in Job and Business Disruption**
3. **Necessity to Accelerate Entrepreneurship from NM Universities and Government Labs**
4. **Role of Colleges and Universities in Economic Development Through Advanced Technology Education and Linkage to Targeted Industry Sectors**
5. **Learning from Successful Neighboring Cities and States**
   1. **Utah: High Economic Growth + Low Income Inequality + Unicorns**
   2. **Arizona: Chip Manufacturing Cluster + ASU (150,000 Students, Public-Focused Programs)**
   3. **Colorado: High Economic Growth + Diversified Economy**
6. **Too Many Targeted Industries: Reduces Chance of Building Industry Cluster**
7. **Failure to Recognize that Bernalillo County Must Lead Economic Resurgence of New Mexico - Can't Fix State's Economy Without Fixing Bernalillo County Economy**

Recommended Short Term Actions

Federal/State Action

- **The U.S. Innovation and Competition Act, a Bipartisan $250B Package Aimed at Countering China's Technological Ambitions, Has passed in the US Senate by a Vote of 68-32.**
  - **Make CNM in Sandoval County and Northern New Mexico College in Espanola the Site of Regional Technology Centers that Serve NM, especially the Native and Hispanic Communitys**
- **Attract US Companies Manufacturing Off-Shore to Relocate to Slow Growth Economies by Offering Federal Tax Incentives**
  - **NM Supplement with Incentives Similar to Movie Sector**
- **Incentivize High-Tech FAANG Companies, e.g., by Reducing Regulatory Pressure on Anti-Trust and Data Privacy to**
  - **Break-Up by Expanding Their R&D Facilities into Slow-Growth States Like NM**
  - **Assist Local Universities with High-Tech Curriculum Development**

Federal/State Action

- **$1.2T Federal Infrastructure/Climate Bill Has Passed**
  - **Make New Mexico Test Site for Reaching Carbon Neutrality in 10-15 Years**
  - **Create Manhattan Project for Carbon Neutrality Headquartered at LANL**
- **The Defense Authorization Act Has Approved Spending $52B to Build Semiconductor Chip Fabs**
  - **Spend $10B on New Fab Construction in Rio Rancho by Chip Foundry Company**
- **Increase Economic Return from Federal R&D Investment**
  - **Create a New, Temporary Employment Category to Bring Entrepreneurs to Government-Owned Laboratories**
  - **Make 20% of NSF R&D Awards to Universities Focus on Projects with Economic Potential.**
    - **If Work Conducted by Graduate Student on Student Visa, Fast-Track Student to Green Card If They Start Local Company**

$1.2 T Infrastructure Bill Contents

- **Physical Infrastructure Repairs**
  - **$110 billion in new federal funding is set aside for physical infrastructure, with a focus on climate change mitigation and safety measures, including cyclist and pedestrian protections.**
  - **$1 billion over five years to reconnect communities divided by transportation infrastructure.**
  - **$2 billion grant program will expand roads, bridges and other surface transportation projects in rural areas.**
- **Clean Energy Makeover**
  - **$73 billion to expand clean energy sources and modernize the nation's aging electricity grid with new transmission lines.**
  - **Creates a new Grid Deployment Authority within the Department of Energy to finance and encourage the development of high-voltage transmission lines and transport renewable energy to rural communities.**
  - **Includes $7.5 billion to develop electric vehicle charging stations across the country.**
  - **$7.5 billion goes toward upgrading school buses and ferries to use electric power.**
- **Closing the 'Digital Divide'**
  - **$65 billion to connect rural areas and low-income communities to high-speed internet.**
  - **Funding for digital inclusion programs, such as Internet education and skills training for low-income populations.**
- **Lead Pipe Replacement**
  - **$15 billion for lead pipe replacement.**
- **Public Transit**
  - **$66 billion to eliminate the Amtrak maintenance backlog, modernize the Northeast Corridor and expand rail service outside the northeast and mid-Atlantic.**
  - **DOT identify technologies to prevent drunk driving, such as passive in-car breathalyzers, eye scans and motion sensors.**
- **Republican Amendments**
  - **Seventeen Republicans agreed for debate to begin provided they could add amendments to the package for their own pet projects.**

Recommendations for NM Colleges and Universities

- **Organize Around Local Community Outcomes as Arizona State University Has Done.**
- **Help NM Strengthen its Culture of Innovation, Entrepreneurship and Life-Long Learning by Partnering with Local Institutions, e.g., Churches, that Most Impact the Local Culture.**
- **Build an Entrepreneurial, Innovative Mindset Throughout Universities.**
- **Focus Curriculum and Research on Interdisciplinary Topics that Drive Fast-Growth, STEM-Based Businesses that Bring Money into the Local Economy.**
- **Develop Life-Long Learning and Interdisciplinary Faculty Research Programs that Emphasize:**
  - **Artificial Intelligence**
  - **Entrepreneurship**
  - **information Sciences**
  - **Synthetic Biology**
  - **Renewable Energy**
  - **Carbon Neutral Agriculture**
  - **Aerospace Science**
  - **Corporate and Professional Services (SaS)**
  - **Biosciences**
  - **Renewable Energy**
  - **Digital Media and Film**
  - **Manufacturing**

Recommendations for New Mexico MOCs and Governor

- **Make College of Northern New Mexico and CNM, Sandoval County Principals in a National Pilot Study on How to Bring Accelerated Economic Growth to Minority Communities.**
  - **2-NM, 3-SE US, 2-Applachia, 1-SE MI, 2-MidW**
- **Build High-Speed Internet Access throughout New Mexico.**
- **Recruit High-Tech, Work-From-Home Employees on the Coasts to Relocate to New Mexico.**
- **Sponsor High-Tech Immigrants Who Will Start High-Tech Companies in New Mexico, for U.S. H1B visas.**
- **Improve the Quality of Healthcare Throughout Bernalillo and Sandoval Counties: Make More Attractive to Companies and individuals Seeking Relocation Sites.**
- **Assure that New Mexico Benefits from the Biden Climate/Infrastructure Plan.**

Where Are the High-Tech Jobs and Workers?

Ranking of the Leading 25 Metropolitan Areas for High-Tech Jobs

1	*San Jose, CA (Silicon Valley)*
2	*San Francisco / San Mateo, CA*
3	*Washington, DC Region*
4	*Boston / Cambridge, MA*
5	*Raleigh / Durham / Chapel Hill, NC*

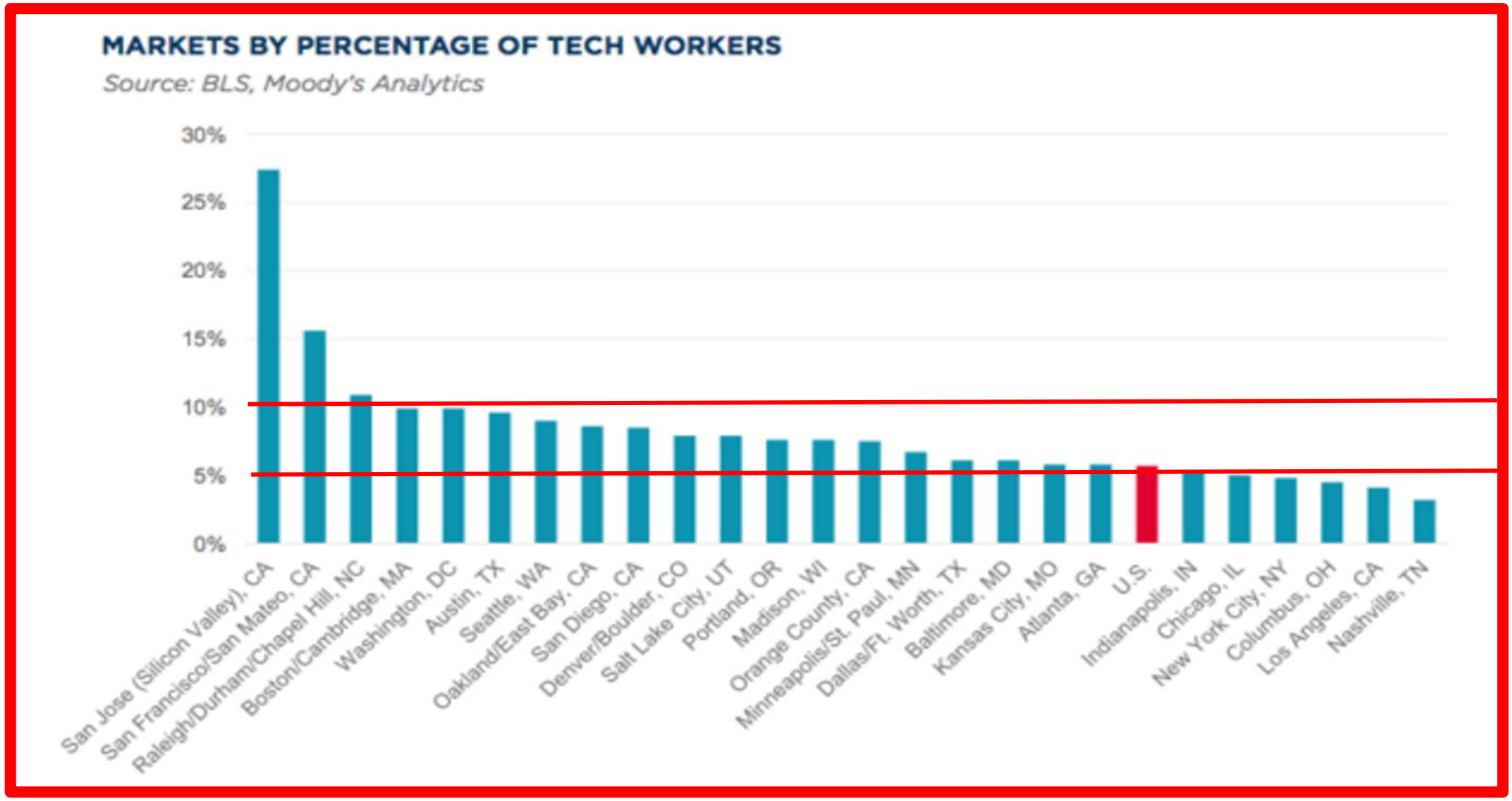
6	Seattle, WA
7	Austin, TX
8	Denver / Boulder, CO
9	San Diego, CA
10	Madison, WI
11	Minneapolis / St. Paul, MN
12	Baltimore, MD
13	Oakland / East Bay, CA
14	Portland, OR
15	New York City, NY

16	Chicago, IL
17	Atlanta, GA
18	Los Angeles, CA
19	Columbus, OH
20	Orange County, CA
21	Dallas / Ft. Worth, TX
22	Kansas City, MO
23	Indianapolis, IN
24	Salt Lake City, UT
25	Nashville, TN

The Bay Area and southern California markets were separated due to the diversification of market metrics.

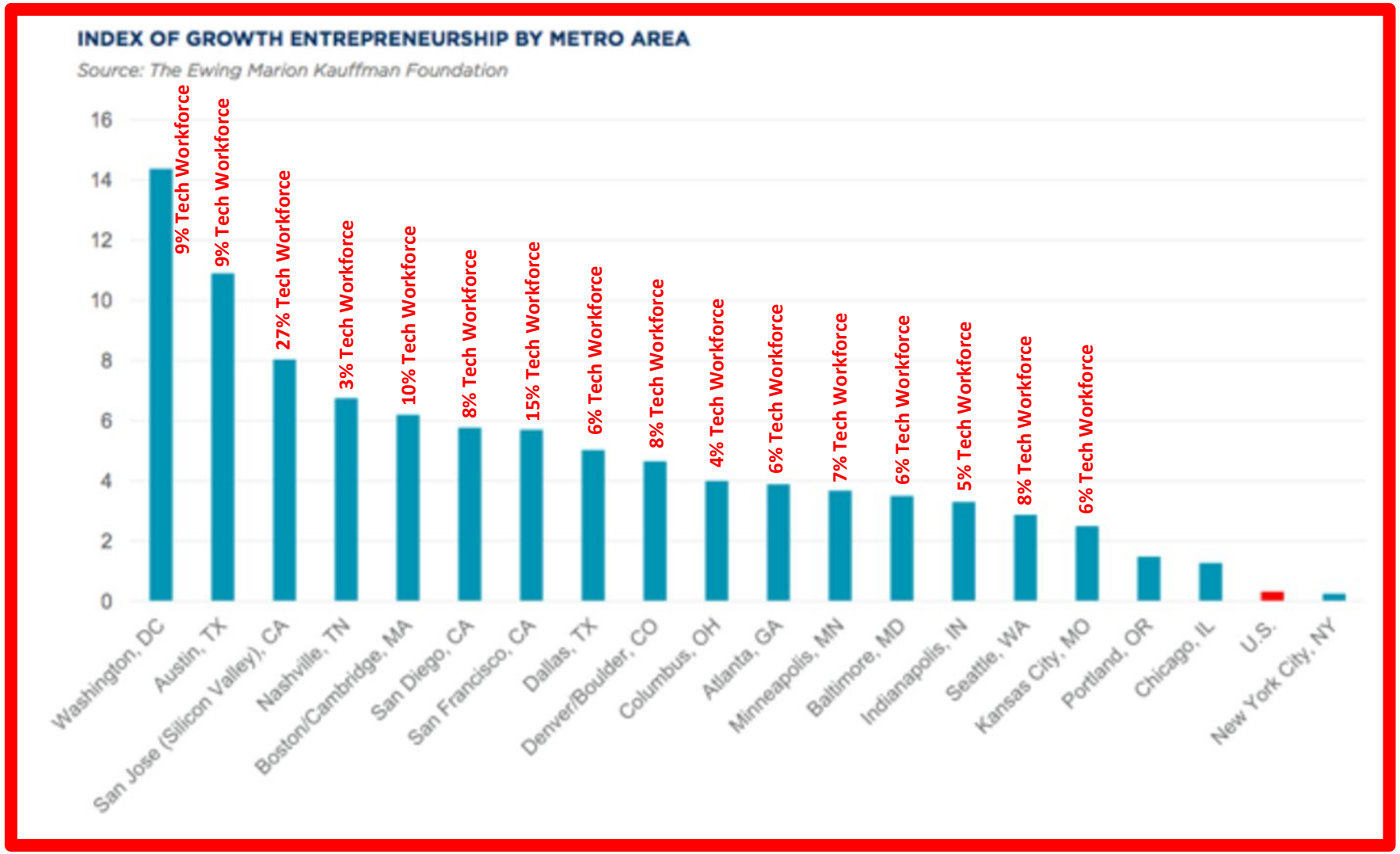
Richard Florida, Bloomberg City Lab, Where's the Real 'Next Silicon Valley'? June 20, 2017

Where Are the Tech Workers?



Richard Florida, Bloomberg City Lab, Where's the Real 'Next Silicon Valley'? June 20, 2017

Where Are Entrepreneurs Growing the Fastest?



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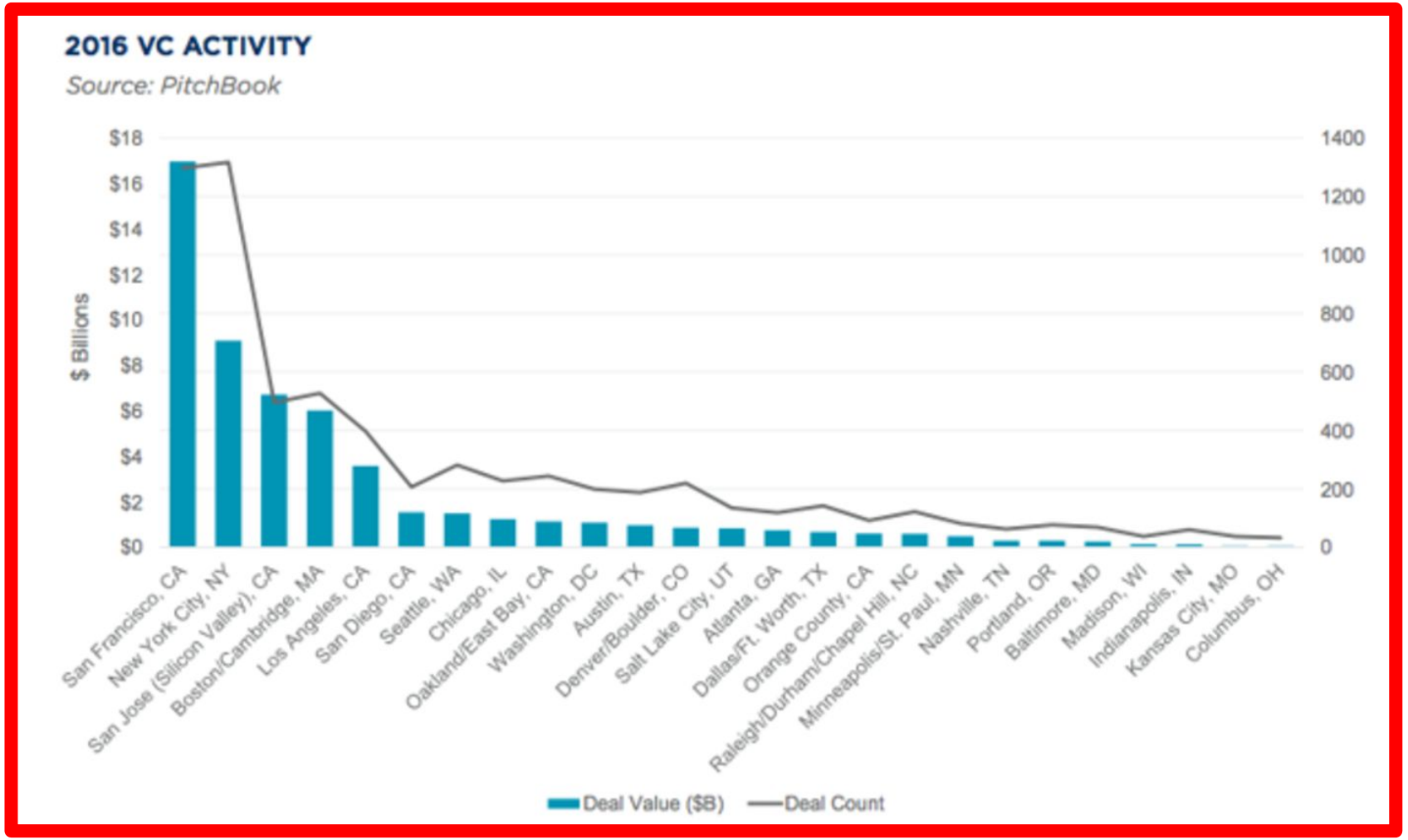
Where Are the Venture Capitalists?



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