

The Evolving Healthcare Landscape: Strategies for Rural Health Leadership

Appalachian Health Leadership Forum
Center for Rural Health Development
Stonewall Resort & Conference Center
April 27, 2024

Robert L. Coffield



Topic Overview

- Legal Entities 101
- Board of Director Governance vs Management Refresher
- Duty of Care, Duty of Loyalty, Duty of Obedience
- Board Compliance and Qualified Immunity
- The Healthcare Industry “Big Picture” Statistics
- Healthcare Trends and the Changing Landscape
- The Future: 2023 to 2030 . . .

Legal Entities 101

- **Federal, State, and Local Government Organizations.** An organization created by statute or regulation (statutory vs quasi-governmental).
 - The statute or regulation grants the scope of legal capacities and powers (owning assets, hiring employees, entering contracts, suing and being sued, etc.)
 - May be governed by a board, commission, appointed individual, etc.
- **Sole Proprietor.** a sole proprietorship is governed by its owner without any formal organization or documents. Income and losses are taxed on the owner's personal tax return
- **Partnership.** A business owned by two or more people who agree to share the profits and losses of the business
 - Governed by a partnership agreement (General vs Limited)
 - Income and losses are typically passed through to partners and taxed on their personal tax returns

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Legal Entities 101

- **Corporation and Medical Corporation.** A legal entity that is separate and distinct from its owners who are shareholders. Business Corporation – W. Va. Code § 31D-1-101 et seq. and Nonprofit Corporation – W. Va. Code § 31E-1-101 et seq.
 - Governed by its articles of incorporation, bylaws, and its board of directors. The board may operate through committees (executive, governance, etc.).
 - Official action by vote of board of directors or action by written board resolution
 - C Corporation profits are taxed at the corporate level and dividends taxed at the individual level. S Corporations are considered a passthrough entity and taxed at the individual level
- **Limited Liability Company (LLC) and Professional Limited Liability Company (PLLC).** A legal entity that is separate and distinct from its owners who are members
 - A flexible form that blends elements of a partnership and corporate structure. Limited Liability Company - W. Va. Code § 31B-1-101 et seq.
 - Governed by its articles of organization and operating agreement. Can have a board of directors
 - Official action by vote of members or action by written agreement to company action

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Practical Guidance for Governing Boards

- **Role of the Board of Directors:**
 - Decision Making
 - Strategic plan
 - Approve budgets
 - Policy Making
 - Establish and approve rules, regulations and policies
 - Delegate implementation to management
 - Oversight of Management
- **Responsibilities of Board of Directors:**
 - Corporate mission, vision and values
 - Strategic planning
 - Effective administration
 - Financial stability
 - Statutory and regulatory compliance (state and federal)
 - Quality patient/resident care
 - Qualified licensed practitioners and staff
 - Community relations
 - Board education, oversight and efficient processes

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Governance vs Management

Board of Directors

- Strategic planning and vision
- Focus on long-term objectives
- Establish or ensure policies and procedures are in place
- Hire and require reports from chief executive officer
- Credential providers
- Review and respond to reports and information from administration

Administration (CEO and Leadership Team)

- Tactical steps to achieve strategic plan, vision and long-term objectives of the board
- Implement and enforce policies and procedures
- Handle day-to-day operations
- Handle HR/employment issues
- Prepare reports to the board, inform the board, seek guidance/direction from the board, etc.

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Board Authority and Action

- The Board has the authority, not individual members
- Board must have a quorum to act (see governing documents)
- Board may delegate authority to committees or individuals
- Board members may expose themselves to liability if they act outside the scope of authority
- The Board has: Fiduciary Duty, Duty of Care, Duty of Loyalty, Duty of Obedience

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Duty of Care

- Board members must act in good faith
- With care that a person in a similar position would reasonably believe appropriate under similar circumstances
 - Take reasonable steps to become informed
 - Make reasonable inquiry where appropriate
 - May rely upon officers, committees or outside professionals if reliance is reasonable

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What Does Duty of Care Mean?

- Prepare for meetings
- Attend and participate in meetings
- Review relevant information before making decisions
- Ask questions
- Seek advice from experts and consultants
- Document efforts and information in board minutes
- Exercise independent judgment – do not “rubber stamp” decisions
- Vote no when necessary
- Do not act in haste
- Establish process for requiring and reviewing reports
- Establish appropriate committees to address key areas

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Duty of Loyalty

- Board members must act in a manner the member reasonably believes to be in the best interest of the corporation
- Do not use position to gain secret information, profits or compete with the corporation
- Always be aware of conflicts of interest (through the eyes of others/perception, not your own)
- Always disclose potential conflicts of interest

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Duty of Obedience

- Board members must act consistent with goals and mission of the corporation and in compliance with:
 - Applicable laws and regulations
 - Articles and Bylaws
- Become generally familiar with governing rules and regulations, federal/state laws for health care, etc.

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Qualified Board Immunity

- Civil liability immunity exists for qualified directors of certain non-profit entities
- West Virginia Code § 55-7C-1 et. seq.
- What is a qualified director?
 - Must serve without compensation
 - Applies to officer, member or director of a board
 - Nonprofit organization (and certain government boards and commissions)
 - Must be “Volunteer Organization or Entity”

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Purpose of Qualified Immunity

- Protect those serving without compensation
- Applies to organizations engaged in religious, charitable, or cultural endeavors such as helping the indigent or the elderly (among others)
- Assists nonprofit corporations to find board of director members willing to serve
- Provide those qualified directors with limited immunity from civil liability

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Limited Civil Liability of Qualified Directors

- Director is not personally liable for their own negligence . . . in the performance of managerial functions on behalf of a volunteer organization
- BUT, is personally liable when grossly negligent
- Nothing in this section relieves a volunteer organization . . . from imputed liability for the negligent acts of a qualified director committed within the scope of the qualified director's duties

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The Healthcare Industry “Big Picture” Statistics

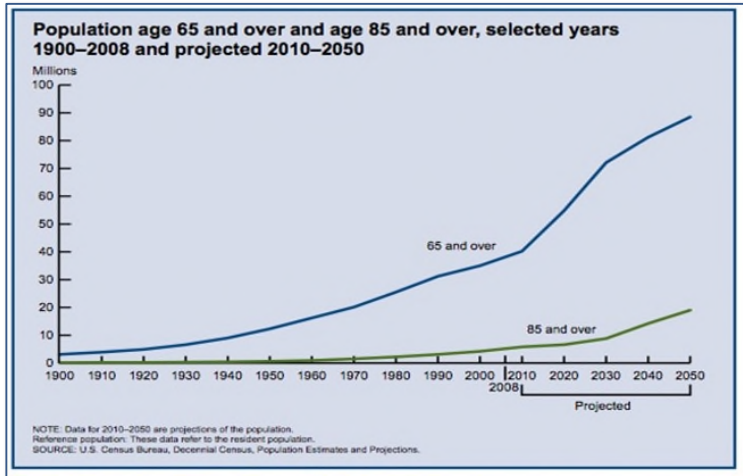
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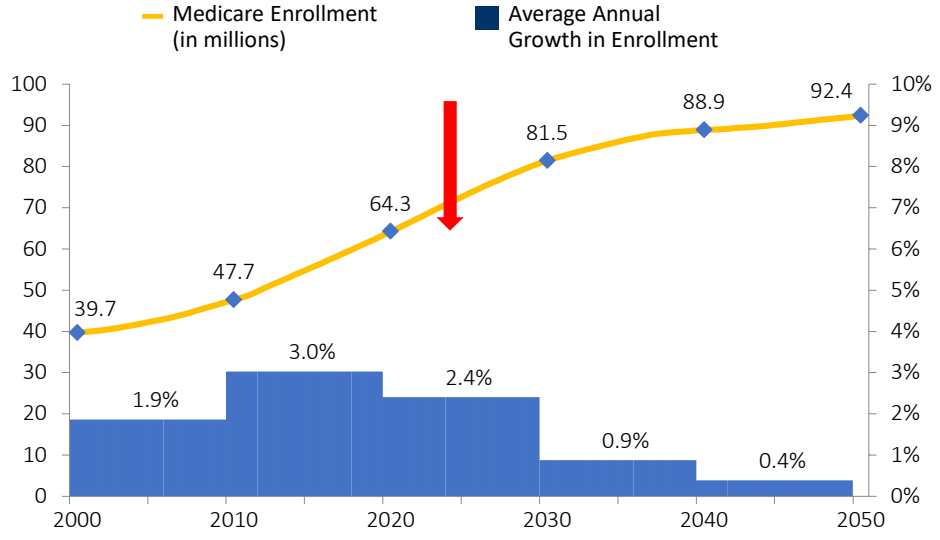
THE PERFECT STORM = cost increase + medical science + technology + aging baby boomers (1946-1964)



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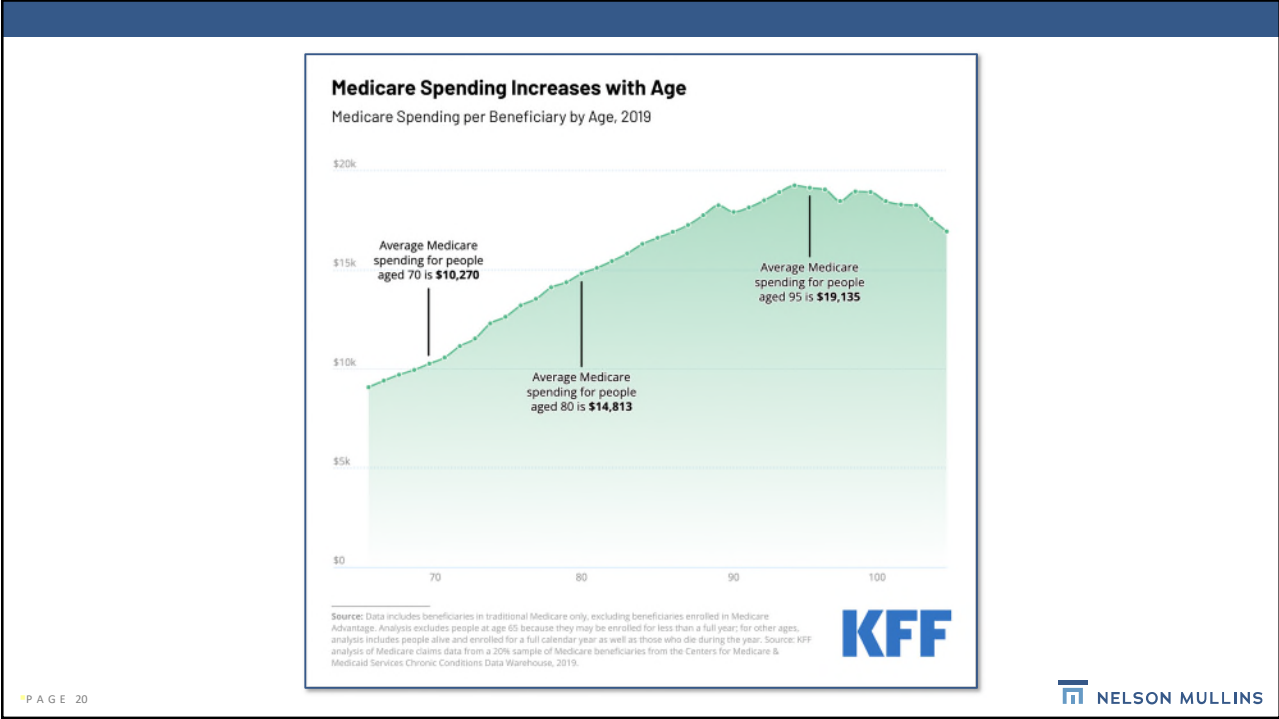
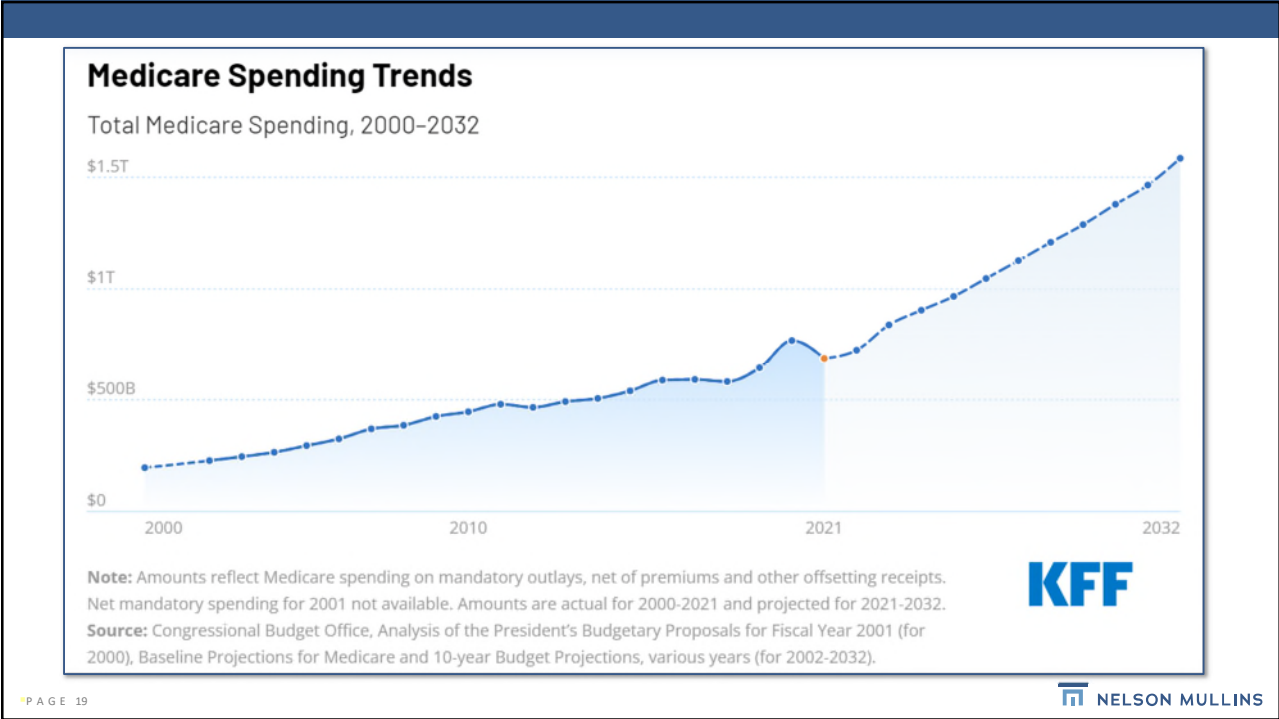
Projected Change in Medicare Enrollment, 2000-2050

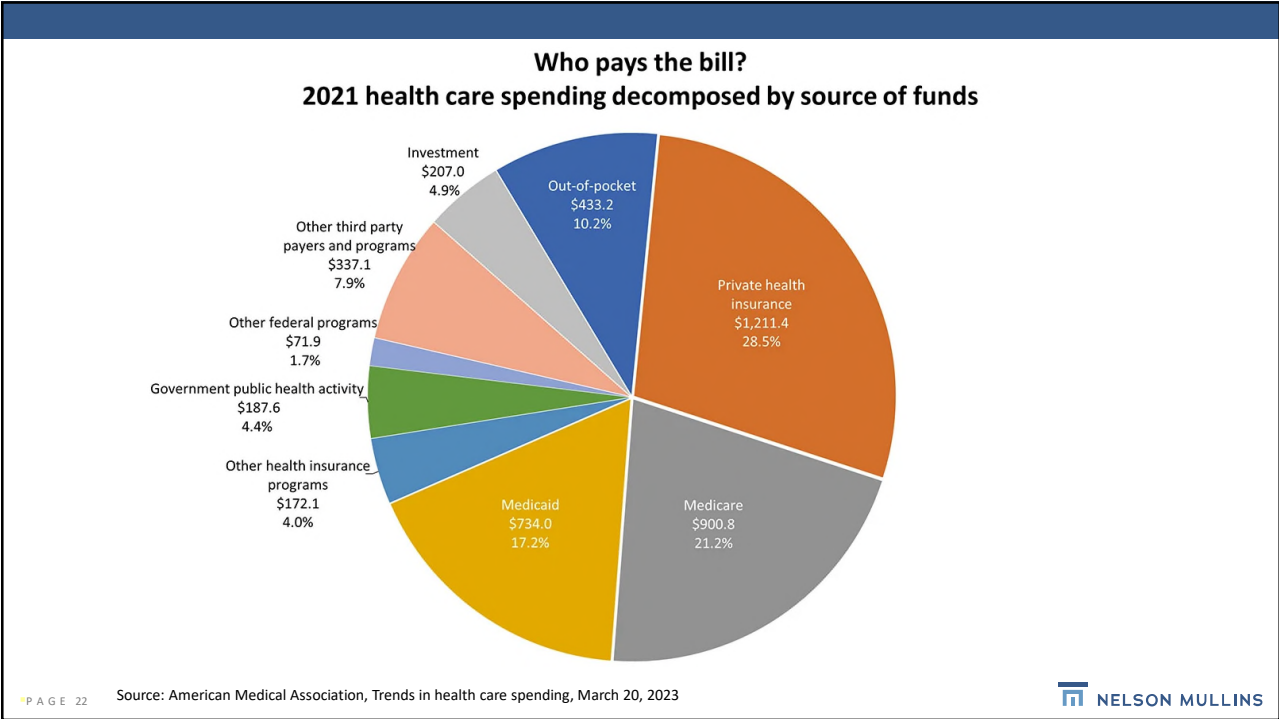
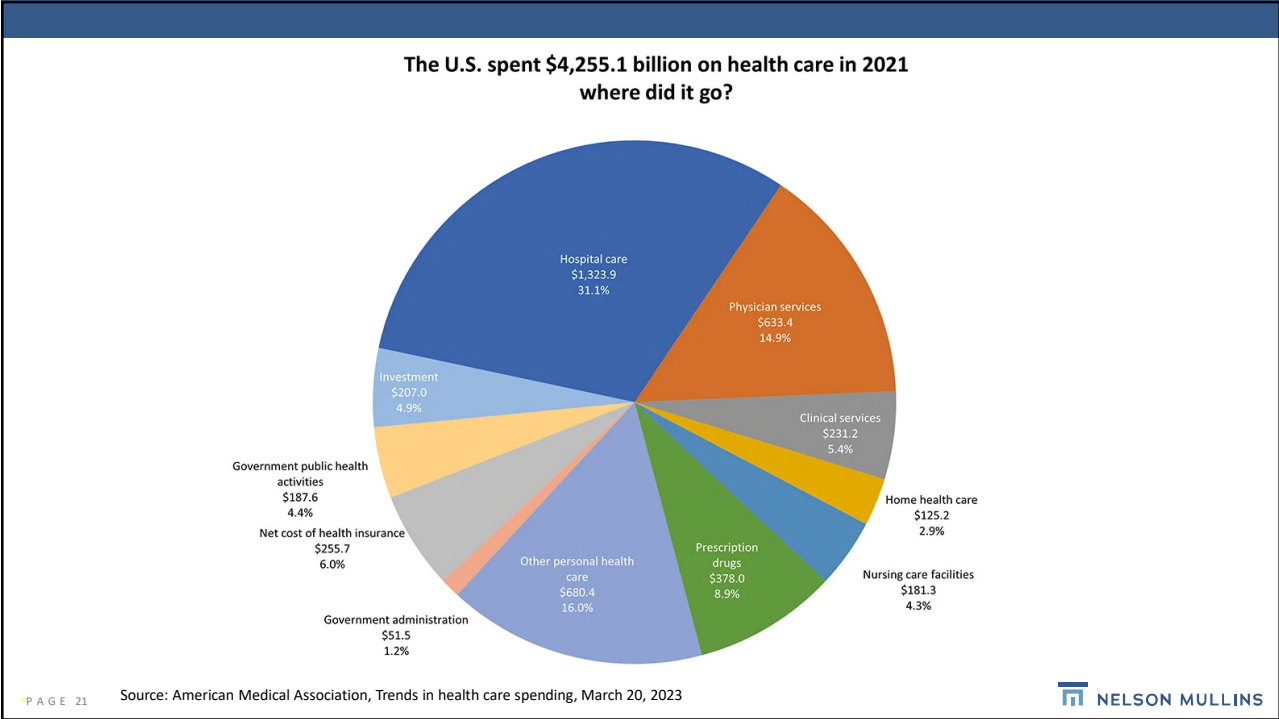


Source: 2013 Annual Report of the Boards of Trustees of the Federal Hospital Insurance and Federal Supplementary Medical Insurance Trust Funds.

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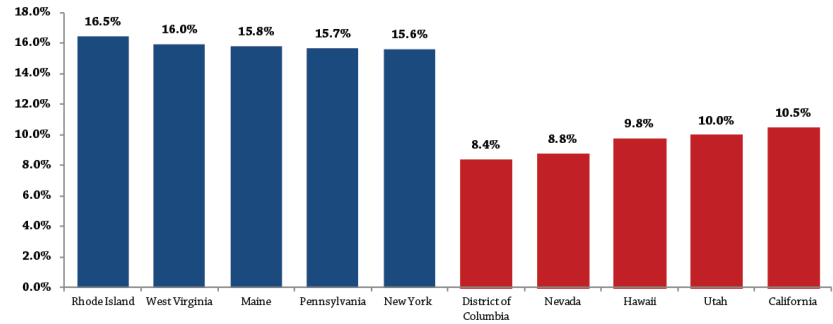




The "Friends of Health Care" drive West Virginia's Economy

HEALTH CARE AS SHARE OF TOTAL JOBS HIGHEST AND LOWEST STATES, 2013

(Includes Public Sector)



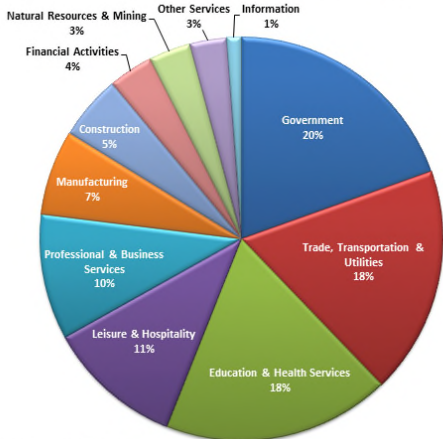
SOURCE: QCEW Employees, Non-QCEW Employees & Self-Employed - EMSI 2013.3 Class of Worker

Source: Forbes, Health Care's Unrivaled Job Gains and Where It Matters Most, October 2013



The "Friends of Health Care" drive West Virginia's Economy

Figure 2.5: West Virginia Employment Distribution by Sector (2019)



Source: US Bureau of Labor Statistics

Source: West Virginia Economic Outlook 2021-2025, Bureau of Business & Economic Research, John Chambers College of Business & Economics, West Virginia University, Javier Reyes, PhD, Milan Puskar Dean



HB 2006 DHHR REORGANIZATION

West Virginia Department of HEALTH
Sherri A. Young, D.O., MBA, FAAFP
Cabinet Secretary

West Virginia Department of HUMAN SERVICES
Cynthia A. Persily, Ph.D.
Cabinet Secretary

West Virginia Department of Health Facilities
Michael J. Caruso
Cabinet Secretary

- Bureau for Public Health
- Office of Emergency Medical Services
- Office of the Chief Medical Examiner
- Center for Threat Preparedness
- Health Care Authority
- Office of Inspector General
- Human Rights Commission
- Boards and Commissions
 - Developmental Disabilities Council
 - WV Advisory Council on Rare Diseases
 - WV Commission for the Deaf and Hard of Hearing
 - WV Governor's Early Intervention Interagency Coordinating Council

- Bureau for Social Services
- Bureau for Medical Services
- Bureau for Child Support Enforcement
- Bureau for Family Assistance
- Bureau for Behavioral Health
- Office of Drug Control Policy
- Boards and Commissions
 - Commission to Study Residential Placement of Children
 - Family Protection Services Board
 - Catastrophic Illness Commission
 - WV Women Workers Commission

- Hopemont Hospital
- Jackie Withrow Hospital
- John Manchin Sr. Health Care Center
- Lakin Hospital
- Mildred Mitchell Mitchell-Bateman Hospital
- Walch Community Hospital
- William B. Sharps, Jr. Hospital

Office of Shared Administration

On January 1, 2024, the West Virginia Department of Health and Human Resources (DHHR) was officially reorganized into three separate departments in accordance with House Bill 2006. The legislation passed during the 2023 Legislative Session and was signed by Governor Jim Justice on March 6, 2023.

Governor Jim Justice appointed Sherri A. Young, D.O., MBA, FAAFP, as Cabinet Secretary of the West Virginia Department of Health (DH); Cynthia Persily, Ph.D., as Cabinet Secretary of the West Virginia Department of Human Services (DoHS); and Michael J. Caruso as Cabinet Secretary of the West Virginia Department of Health Facilities (DHF).

Medicare & Medicaid Basics

Medicare

Federal health care coverage for:

People age 65 or older

Certain people under 65 with disabilities

People of any age with ESRD

More than **99.8 million** beneficiaries enrolled

More than **6,214** hospitals

15,015 skilled nursing facilities

1.4 million physicians and other providers

Medicaid

Cooperative federal and state health care coverage for:

People with disabilities

Elderly people

Pregnant women

Low-income adults

Children

More than **72 million** individuals enrolled, including more than


39.7 million children

enrolled in Medicaid and the Children's Health Insurance Program (CHIP)

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Medicare	Medicaid
<p>Medicare is a national program the federal government administers, and includes:</p> <ul style="list-style-type: none"> • Part A – Hospital Insurance Inpatient hospital, inpatient skilled nursing facility, hospice, and some home health services • Part B – Medical Insurance Physician services, outpatient care, Durable Medical Equipment (DME), lab and X-ray services, home health services, and many preventive services • Part C – Medicare Advantage (MA) (like Health Maintenance Organizations [HMOs] or Preferred Provider Organizations [PPOs]) Medicare-approved private insurance companies provide all Part A and Part B services and may provide prescription drug coverage and other supplemental benefits • Part D – Prescription Drug Benefit Medicare-approved private insurance companies provide outpatient prescription drug coverage 	<p>Medicaid is a network of statewide programs the federal and state governments fund. Each state administers their own program, following broad federal guidelines, statutes, regulations, and policies. Each state:</p> <ul style="list-style-type: none"> • Establishes eligibility standards • Decides type, amount, duration, and scope of services • Sets payment rates 

Medicare	Medicaid
<p>Beneficiaries may choose coverage:</p> <ul style="list-style-type: none"> • Part A and Part B services through Original Medicare with optional Part D coverage through an approved stand-alone Medicare drug plan • Part A and Part B services through an MA Plan if they live in its service area, with a drug plan included in some plans <p>Note: Some beneficiaries get a Medicare supplemental insurance (Medigap) to expand coverage in Original Medicare.</p> <p>Part A helps cover:</p> <ul style="list-style-type: none"> • Inpatient hospital care • SNF care • Hospice care • Home health care <p>Part B helps cover:</p> <ul style="list-style-type: none"> • Doctors and other provider services • Outpatient care • Home health care • Ambulance services • DME • Many preventive services <p>Part C includes all benefits and services covered under Part A and Part B and may include extra benefits and services for an extra cost.</p> <p>Part D helps cover prescription drug costs.</p> <p>See if your beneficiary qualifies for Extra Help With Medicare Prescription Drug Plan Costs.</p>	<p>Some Medicaid Programs directly pay care through Fee-for-Service coverage. Others offer Medicaid through managed care or other integrated care models.</p> <p>States must cover certain services through their Medicaid Programs, including:</p> <ul style="list-style-type: none"> • Doctor visits • Inpatient and outpatient hospital services • Mental health services • Prescription drugs • Prenatal care and maternity care • Preventive care like immunizations, mammograms, and colonoscopies <p>States may cover added services, including:</p> <ul style="list-style-type: none"> • Dental services • Home- and community-based services • Physical therapy • Prosthetic devices • Vision and eyeglasses <ul style="list-style-type: none"> ◦ Children and adolescents get vision, dental, hearing, and other services through the Medicaid Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) benefit • While each state Medicaid Program varies, generally you must: <ul style="list-style-type: none"> ◦ Bill only covered services ◦ Ensure beneficiary eligibility for services where they're provided ◦ Ensure accurate, legible, signed, and dated medical records



Healthcare Trends and the Changing Landscape

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Healthcare Industry Trends: National and West Virginia

- **Payvider Movement**
 - Providers of healthcare services (hospitals, physician groups, integrated delivery networks) taking on the role of payer (insurers)
 - Integrating the financing and delivery of healthcare under one organization to streamline operations, reduce costs, improve outcomes, etc.
 - Examples: Kaiser, Geisinger, UPMC, WVUHS/Peak, etc.
- **Fee for Service to Value-Based Care Model**
 - A move to emphasize quality and value of care rather than the quantity of services
 - Focused to address inefficiencies, high costs, and varied quality associated with fee for service
 - Examples: Pay for Performance, Accountable Care Organizations, Patient-Centered Medical Homes, Bundled Payments, etc.

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Healthcare Industry Trends: National and West Virginia

- **Horizontal Integration**

- Physician and physician practices being acquired by hospitals and other providers (FQHCs, private equity, etc.)
- Specialty physician services being consolidated over multi-state service areas (radiology, cardiology, dermatology, ophthalmology, dental, etc.)
- Small hospitals being acquired by larger hospitals and health systems
- Larger health systems and health insurers acquiring smaller health systems

- **Vertical Integration**

- Integrating services vertically to create efficiencies and provide continuity of care
- Long term care example: Personal care, waiver services, DME, home health, assisted living, skilled nursing/nursing home, hospice, etc.

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Horizontal Integration of Physicians

Key Findings: Accelerated Nationwide Growth in Acquisitions of Physician Practices and Employed Physicians in 2019 and 2020 associated with COVID-19 Impact

NATIONAL TRENDS:

- **48,400 additional physicians left independent practice and became employees of hospitals or other corporate entities – 22,700 of that shift occurred after the onset of COVID-19**
- This represents a **12% increase** in the percentage of employed physicians over the two-year study period
- **Hospital and other corporate entities acquired 20,900 additional physician practices over the two-year period, resulting in a 25% increase** in corporate-owned practices

REGIONAL TRENDS:

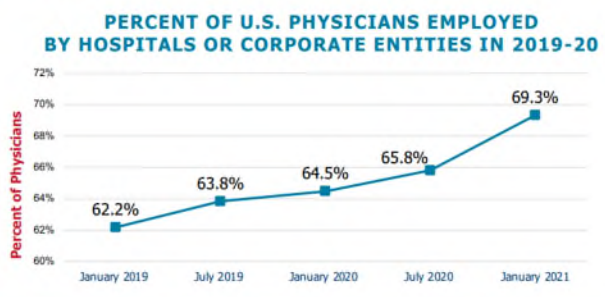
- Continued growth that accelerated in all regions in last half of 2020
- The percentage of hospital or corporate-owned practices increased between **20% and 29%**
- The percentage of hospital or corporate-employed physicians increased between **9% and 15%**

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Horizontal Integration of Physicians

National Trends: Nearly Seven in Ten Physicians Employed by Hospitals or Corporate Entities at the End of 2020



- 69% of physicians were hospital or corporate-employed by January 2021
- Over the two-year study period, the percentage of employed physicians grew by 12%

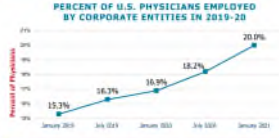
Avanere analysis of IQVIA OneKey database that contains physician and practice location information on hospital/health system ownership

National Trends: Nearly Half of Physicians Employed by Hospitals/Health System at the End of 2020



- 46.9% of physicians were hospital-employed by January 2019
- Over the two-year study period, the percentage of employed physicians grew by 5%

National Trends: One in Five Physicians Employed by Corporate Entities at the End of 2020

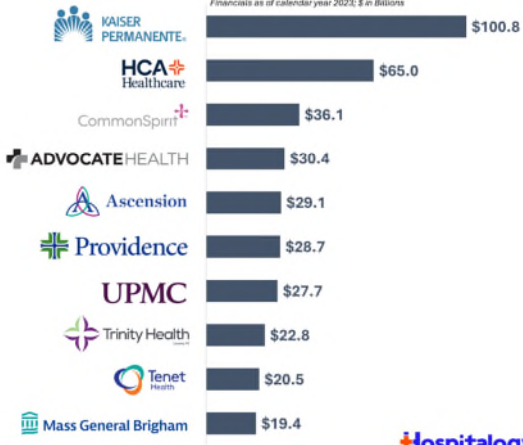


- 20% of physicians were employed by "other" corporate entities by January 2021
- Over the two-year study period, the percentage of employed physicians grew by 31%

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The top 10 health systems ranked by revenue

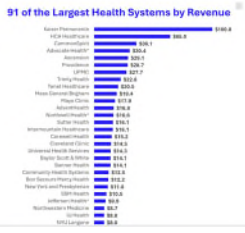
10 Largest Health Systems by Revenue



Source: EMMA Filings, public company filings, Hospitalogy research



The Full List – 91 of the Largest Health Systems in the U.S. ranked by Revenue



WEST VIRGINIA UNITED HEALTH SYSTEM INC

1 Medical Center Drive, Morgantown, WV 26505 wvmedicine.org

Total Revenue	Total Expenses	Net Assets
\$239,994,288	\$249,237,406	\$121,922,006

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Healthcare Industry Trends: National and West Virginia

- **Consumer Driven Healthcare and Wellness**

- A market-driven model where patient (consumer) has greater control over their health expenses and decisions
- Goal is to involve “you” as the consumer in the cost of healthcare so you will seek higher-quality, lower cost health care services
- Wellness and tracking technology designed to engage the consumer/patient
- Examples: Higher deductibles, health savings accounts, flexible spending accounts, wellness apps, etc.

- **Healthcare Focused Technology, Big Data, and Artificial Intelligence**

- The integration of technology into healthcare to disrupt and transform the healthcare industry
- The use of “big health care data” to improve health care delivery and outcomes, predictively diagnose, focus on at-risk groups, etc.
- Personalized medicine customized to treat individuals, not groups, through customized drugs and treatment therapy
- Artificial intelligence and large language models (LLMs) fundamentally changing health care delivery
- Examples: EMRs, telemedicine, health/tech app services and companies, artificial intelligence, etc.

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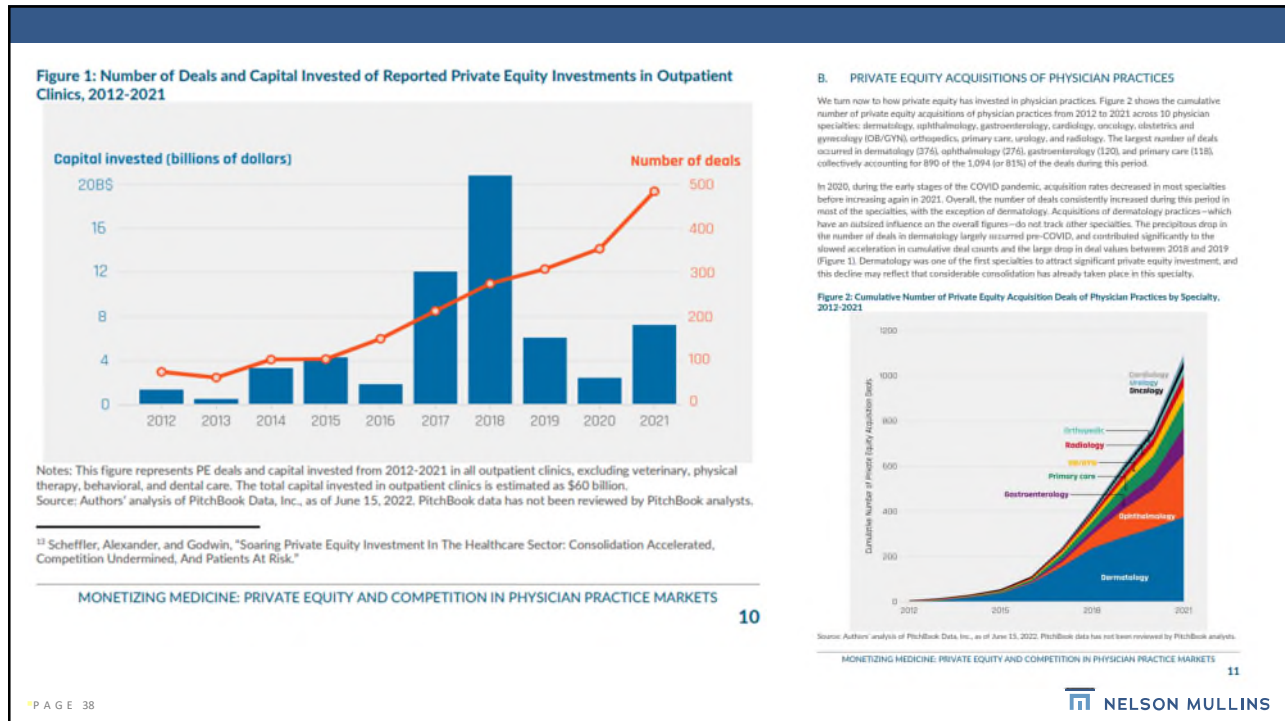
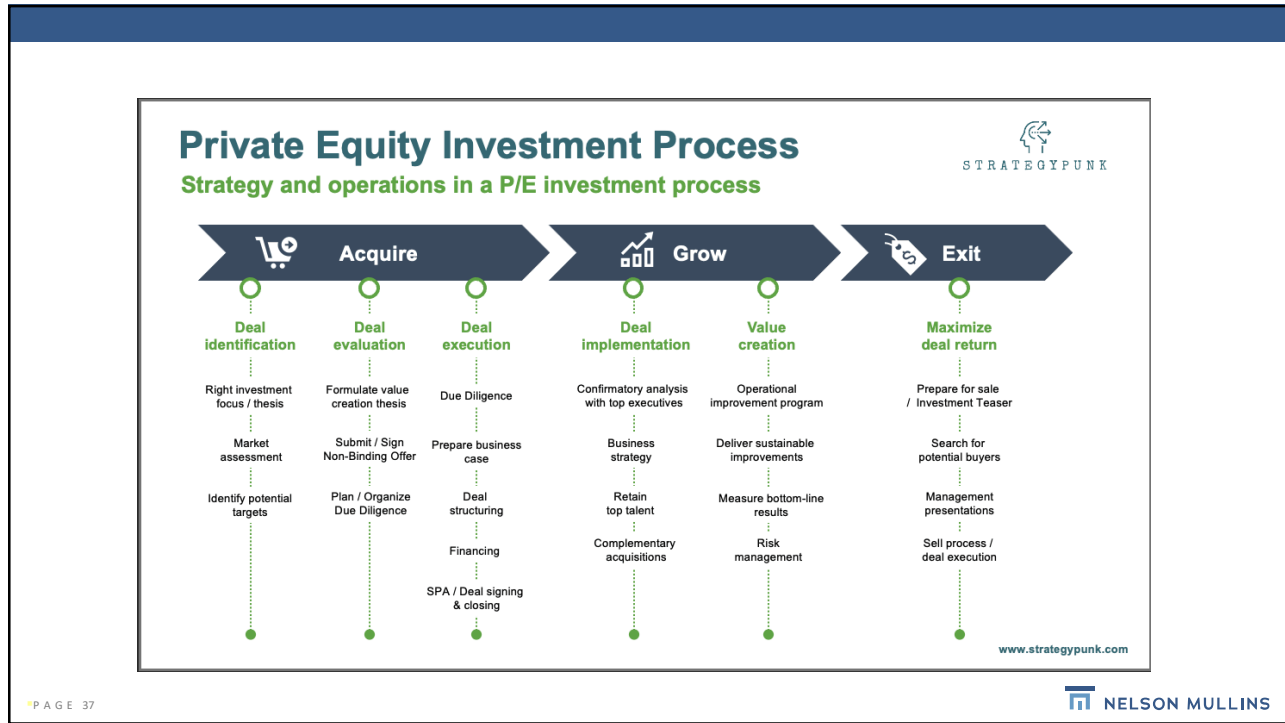
Healthcare Industry Trends: National and West Virginia

- **Private Equity Investment**

- Market-driven by aging population, increasing chronic disease, advancement in treatments, and rising healthcare expenditures globally
- Private equity is attracted to the fragmented systems and largely recession resilience of the healthcare industry
- Opportunities to make huge profits from consolidation, systematic improvements, and innovations through capital and management expertise provided by private equity firms
- Example: Acquisition of Summa Health in Ohio (large, Akron-based, integrated health system) by Health Assurance Transformation Corporation (HATco), owned by General Catalyst, one of the largest venture capital firms in the USA. Announced in January 2024, the transaction will involve a move from non-profit to for-profit. The goal is to be a model for health care transformation – “a partnership between technologist, caregivers, and capital.”

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TheUpshot

Who Employs Your Doctor? Increasingly, a Private Equity Firm.

A new study finds that private equity firms own more than half of all specialists in certain U.S. markets.

In recent years, private equity firms have been gobbling up physician practices to form powerful medical groups across the country, according to a new report released Monday.

In more than a quarter of local markets — in places like Tucson, Ariz.; Columbus, Ohio; and Providence, R.I. — a single private equity firm owned more than 30 percent of practices in a given specialty in 2021. In 13 percent of the markets, the firms owned groups employing more than half the local specialists.

Historically, doctors' practices have been relatively small, and owned by doctors themselves. But that model has been rapidly declining as the business of medicine has become more complex and the insurance companies that negotiate with doctors over prices have become bigger. Nearly 70 percent of all doctors were employed by either a hospital or a corporation in 2021, according to a recent analysis from the Physicians Advocacy Institute.

Share full article

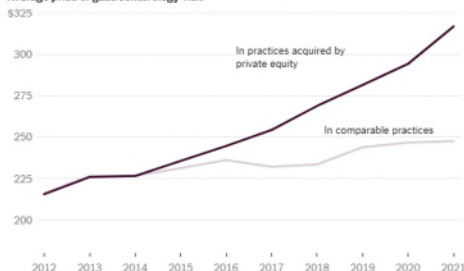


The private equity industry has turned to health care fairly recently, and it has begun purchasing doctors' practices at a steady clip. Chase Castor for The New York Times

When Private Equity Takes Over

Researchers found that when a firm controlled more than 30 percent of the market, the prices paid by private insurers for gastroenterology and other specialties increased sharply.

Average price of gastroenterology visit



Source: Nicholas C. Petris Center on Health Care Markets and Consumer Welfare, University of California, Berkeley; Washington Center for Equitable Growth - By The New York Times

How Patients Fare When Private Equity Funds Acquire Nursing Homes

04/01/2021

Summary of Working Paper 28474

Featured in print Digest

Owner Incentives and Performance in Healthcare: Private Equity Investment in Nursing Homes

Atul Gupta, Sabrina T. Howell, Constantine Varrota & Allison Gupta

Purchases of nursing homes by private equity firms are associated with higher patient mortality rates, fewer caregivers, higher management fees, and a decline in patient mobility.

Private Equity Acquisition of Eldercare Facilities



Light blue bars represent 95% confidence intervals. Deficiency survey ratings are constructed from deficiencies identified by independent contractors during audits. Source: Researchers' calculations using data from the Centers for Medicare & Medicaid Services

In 2013, private equity-owned firms owned less than 1 percent of skilled nursing facilities. By 2015, they owned 9 percent; the share is likely higher today. A new study explores the impact of their business model on patient outcomes and costs. In *Does Private Equity Investment in Healthcare Benefit Patients? Evidence from Nursing Homes*, HHS's Working Paper 28474, Atul Gupta, Sabrina T. Howell, Constantine Varrota, and Allison Gupta analyze Medicare data for a sample of more than 7 million patients over the period 2006-2017. They find that the patient mortality rate during a nursing home stay and the subsequent 90 days is 10 percent higher at facilities owned by private equity firms than at skilled nursing facilities overall.

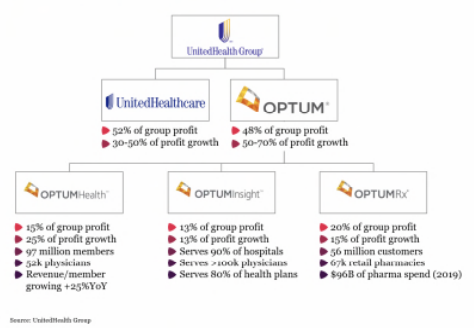
Private equity-owned nursing homes face vastly different financial considerations than their for-profit and not-for-profit counterparts. Private equity buyers are typically concerned with substantial financing. Analysis of the cost reports submitted to Medicare shows that after a buyout, a nursing home's average interest payments more than triple. To generate cash for investors, private equity managers often sell the nursing facility's property and lease the building back, the results in an average increase in lease payments of 75 percent post-buyout. Cash on hand declines by 38 percent after a private equity acquisition. This may leave homes hard pressed to respond to something like a sudden need for personal protective equipment during the COVID-19 pandemic.

To cut costs, private equity-owned nursing homes reduce staffing levels. For-profit caregivers — clinical nursing assistants and licensed practical nurses — saw a 3 percent decline in hours compared with the industry average. However, registered nurses, who make up a much smaller segment of the care staff, saw an 8 percent increase. The researchers attribute this increase to greater regulatory focus on registered nurses; for example, their availability is a factor in determination of Medicare reimbursements.

Taking the results on nurse availability together with the estimated effects on interest, lease, and management fees payments, the researchers infer that private equity ownership shifts operating costs away from staffing towards costs that are profit drivers for the private equity fund.

West Virginia and Private Equity

Introduction to UnitedHealth... and Optum



April 09, 2018 12:00 AM

Optum ac MedExpress

BOB HERMAN

UnitedHealthcare Optum division

Terms of the deal in 11 states which have been profitable in the country by the end of the year.

The MedExpress acquisition is a significant step for UnitedHealthcare's Optum division as it expands its footprint in the retail pharmacy market. The deal is expected to be completed by the end of the year.

Regulators are putting pressure on Amedisys, a leading provider of home care services. The company is facing scrutiny over its financial practices and the quality of its services. Regulators are reportedly looking into the company's revenue cycle management practices.

UnitedHealth Group's Optum unit has completed its \$13 billion acquisition of the software and data analytics firm Change Healthcare after successfully resolving a U.S. Justice Department challenge of the deal.

When the deal was announced over a year ago, Optum, a fast-growing part of UnitedHealth Group, said Change Healthcare will become a part of the OptumInsight business "to provide software and data analytics, technology-enabled services and research, advisory and revenue cycle management offerings to help make health care work better for patients."

REGULATORS ARE PUTTING PRESSURE ON AMEDISYS

HEALTHCARE FINANCE

REVENUE CYCLE MANAGEMENT

MARKET MORE ON COMPLIANCE

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PROFILES

WHY THE GODFATHER OF A.I. FEARS WHAT HE'S BUILT

Geoffrey Hinton has spent a lifetime teaching computers to learn. Now he worries that artificial brains are better than ours.

By Joshua Rothman
November 13, 2023

I think we should think of AI as the intellectual equivalent of a backhoe. It will be much better than us at a lot of things.

— Geoffrey Hinton —

AZ QUOTES



Artificial Intelligence 101

Artificial Intelligence

Artificial Intelligence is the development of systems to mimic human problem-solving behavior by computing a prediction and decision and then executing an action

Machine Learning

Machine learning is a component of artificial intelligence focusing on the use of data and algorithms to imitate the way humans learn.

The machine learns on its own by drawing inferences from patterns in the data, gradually adapting and becoming more accurate.

Deep Learning

Deep learning is a type of machine learning that attempts to simulate the human brain by creating artificial neural networks that utilize and extract more information from the data.

Generative AI

Generative AI is a type of deep learning algorithm that can generate content by learning & imitating the patterns and structure of data it was trained on.

Large language models

Large language models are deep learning algorithms trained on vast datasets to understand, predict, and generate text in a human-like way.

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Ben Parr @benparr Subscribe

Here at #TED2024, Microsoft AI CEO @mustafasuleyman is laying out the idea of "AQ" — Action Quotient, the ability for AI to actually get things done. He's painting a picture of AI running power stations, comforting the sick, and more. He calls them a "new digital species" — they have creativity, memory, and autonomy.

For those of us deep in AI, this world seems inevitable. For everyone else, this is a huge shift in how we think about AI and how AI will fundamentally change our lives.

8:19 PM · Apr 16, 2024 · 57.8K Views

Mustafa Suleyman 1,941 posts

Mustafa Suleyman @mustafasuleyman

CEO, Microsoft AI | Author: The Coming Wave | Past: Co-founder, @InflectionAI & @GoogleDeepMind

Palto Alto, CA the-coming-wave.com Joined January 2014

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Artificial Intelligence 101

AI is revolutionizing the healthcare industry by enhancing efficiency, personalizing care, and improving patient outcomes. Its applications span across various aspects of healthcare, including diagnostics, treatment recommendations, patient monitoring, and research. Here are some key areas where AI is making an impact:

- 1. Diagnostics and Imaging:** AI algorithms are increasingly used to analyze complex diagnostic images. For instance, AI can help radiologists detect abnormalities in X-rays, MRIs, and CT scans more quickly and accurately. It's also used in pathology to analyze biopsy samples for cancer.
- 2. Predictive Analytics:** AI can analyze vast amounts of healthcare data to predict disease outbreaks, patient admissions, and the risk of certain diseases developing in individuals. This helps in preventive medicine and in managing healthcare resources effectively.
- 3. Personalized Medicine:** AI enables the customization of healthcare to the individual patient's genetic makeup, lifestyle, and environment, allowing for more precise treatments. It's used in oncology to identify which treatment and drugs are most likely to be effective for specific cancers.
- 4. Drug Discovery and Development:** AI speeds up the process of drug discovery and development by predicting how different chemical compounds will behave and how likely they are to make an effective treatment for various diseases, significantly reducing the time and cost associated with research.
- 5. Virtual Health Assistants and Telemedicine:** AI-powered virtual assistants can provide constant health monitoring and support, remind patients to take their medication, and offer medical advice, making healthcare more accessible. Telemedicine platforms use AI for initial diagnosis and triage, reducing the need for in-person visits.
- 6. Clinical Trial and Research:** AI tools can sift through vast databases of clinical trials to identify potential participants, optimize trial designs, and even predict outcomes, thereby making the research more efficient and less costly.
- 7. Robotics:** AI-driven robots are used in surgeries to assist surgeons with precision tasks, in hospitals to disinfect rooms and deliver supplies, and as part of rehabilitation therapy to help patients regain lost mobility.
- 8. Administrative Automation:** AI helps in automating administrative tasks, such as billing, compliance monitoring, and patient scheduling, allowing healthcare providers to focus more on patient care.

The infographic is divided into two main columns: 'For medical professionals' and 'For patients'. Each column contains a grid of icons representing various AI applications.

For medical professionals		For patients	
clinical documentation	radiology interpretation	analyzing laboratory results	symptom assessment
creating discharge summaries	suggesting treatment options	disease descriptions	analyzing wearables' data
generating clinical notes	designing treatment plans	interpreting physician notes	mental health chatbot
insurance pre-authorization	diagnostic assistance	personalized health recommendations	medication adherence
summarizing research papers	medical triage	health risk prediction	rehabilitation guidance

Source: The imperative for regulatory oversight of large language models (or generative AI) in healthcare, Bertalan Mesko and Eri J. Topal, Digital Medicine, July 2023.

Regulatory Challenges Related to the Rise of AI

- **Patient Data Privacy:** Ensuring that patient data used for training large language models (LLMs) are fully anonymized and protected from potential breaches. This poses a significant regulatory challenge, as any violation could lead to serious consequences under privacy laws like HIPAA in the US.
- **Medical Malpractice Liability:** Determining who is responsible when an AI's recommendations lead to patient harm. Is it the AI developers, the healthcare professionals who used it, or the institutions that adopted it?
- **Informed Consent:** Patients need to be informed and give consent when AI tools are used in their healthcare management. This is challenging because it can be difficult for patients to fully understand the implications of AI use.
- **Quality Control & Standardization:** Regulation is required to ensure the reliability and consistency of AI-generated medical advice, which can vary based on the data used to train the AI.
- **Data Ownership:** It can be challenging to define and regulate who owns the data that large language models learn from, especially when it comes to patient data.
- **Intellectual Property:** If an LLM generates content similar to proprietary medical research or literature, it could lead to issues regarding intellectual property rights.
- **Interpretability & Transparency:** Regulations need to ensure transparency about how decisions are made by the AI. This is particularly challenging with AI models that are often termed as "black boxes" due to their complex algorithms.
- **Fairness and Bias:** Regulation is needed to prevent biases in AI models, which could be introduced during the training process using patient data. This can lead to disparities in healthcare outcomes.
- **Over-reliance on AI Models:** Over-reliance on AI could lead to decreased human expertise and potential errors if the AI malfunctions or provides incorrect information. Regulations are needed to balance the use of AI and human expertise.
- **Continuous Monitoring & Validation:** Ensuring the continuous performance, accuracy, and validity of AI tools over time and across different populations is a critical regulatory challenge.

Source: The imperative for regulatory oversight of large language models (or generative AI) in healthcare, Bertalan Mesko and Eri J. Topal, Digital Medicine, July 2023.

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The White House: Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence

- On October 30, 2023, the Biden Administration released Executive Order (E.O.) 14110 on Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence
- The E.O. states its purpose as follows:
 - *Artificial Intelligence (AI) holds extraordinary potential for both promise and peril. Responsible AI use has the potential to help solve urgent challenges while making our world more prosperous, productive, innovative, and secure. At the same time, irresponsible use could exacerbate societal harms such as fraud, discrimination, bias, and disinformation; displace and disempower workers; stifle competition; and pose risks to national security. Harnessing AI for good and realizing its myriad benefits requires mitigating its substantial risks. This endeavor demands a society-wide effort that includes government, the private sector, academia, and civil society.*
- Establishes the National AI Advisory Committee (NAIAC), a committee to provide strategic guidance on AI governance and advise the President on AI-related policies and initiatives. Committee comprised of experts from diverse fields (technology, law, and civil rights).

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The White House: Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence

- The E.O. directs over 50 federal entities to engage in more than 100 specific actions to implement the guidance set forth across eight overarching policy areas.
- Requires federal agencies to conduct thorough AI risk assessments and develop best practices for AI testing, security measures, and ethical considerations
- Implementation timeline
 - Within 270 days of the order (by mid-2024), the Secretary of Commerce will work to ensure the development of safe, secure and trustworthy AI systems
 - Federal agencies have varying deadlines (between 30 days to 365 days) to implement the directives outlined in the order

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The White House: Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence

Purpose of the Order:

- To ensure the development and use of Artificial Intelligence (AI) is safe, secure, and responsible.
- Address the potential benefits and risks associated with AI technology.

Urgency and Need:

- Rapid advancements in AI capabilities necessitate a proactive and coordinated approach.
- Emphasizes the U.S. leadership in establishing global norms and standards for AI.

Implementation Strategy:

- These principles will guide the actions of executive departments and agencies.
- Collaboration with industry, academia, civil society, international allies, and more.

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The White House: Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence

The E.O. describes 8 overarching policy and principles:

1. Safety and Security
 - Develop AI systems that are robust, reliable, and secure.
 - Standardize evaluations to mitigate risks before deployment.
2. Responsible Innovation and Competition
 - Lead in AI to unlock technological potential and tackle societal challenges.
 - Support a competitive marketplace that encourages innovation.
3. Workforce Support and Inclusion
 - Adapt job training to AI advancements.
 - Ensure inclusive workforce development and collective bargaining.

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The White House: Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence

The E.O. describes 8 overarching policy and principles:

4. Equity and Civil Rights Advancement
 - Ensure AI does not deepen discrimination or bias.
 - AI systems must comply with federal laws on equity and justice.
5. Consumer Protection
 - Uphold consumer protection laws amid AI integration.
 - Safeguard against AI-induced fraud, bias, and discrimination.
6. Privacy and Civil Liberties
 - Protect sensitive information from being exploited by AI technologies.
 - Implement privacy-enhancing technologies (PETs) where appropriate.

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The White House: Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence

The E.O. describes 8 overarching policy and principles:

7. Internal Governmental Capacity

- Attract and develop skilled AI professionals within the government.
- Modernize IT infrastructure to support responsible AI use.

8. Global Leadership and Collaboration

- Pioneer responsible AI deployment systems globally.
- Collaborate with international partners on AI safety and security.

It Is Coming . . . West Virginia Regulation of AI



HOUSE OF DELEGATES

ARTIFICIAL INTELLIGENCE, SELECT COMMITTEE ON

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AI Guidance for West Virginia Schools
 A 16-Page Guide for West Virginia Schools

This guidance provides support for the use of artificial intelligence (AI) across various roles in West Virginia PK-12 schools, catering to the needs of superintendents, district staff, educators, and support staff. The guidance intends to focus on effectively and safely integrating AI, especially generative AI technologies, in classroom instruction, school administration, and district operations, while aligning with existing West Virginia Department of Education (WVDE) policies. Additionally, recognizing the need for ongoing support, the West Virginia Department of Education (WVDE) has developed a **Learning Resources** site, a digital materials and resources for equity school districts and educators. This site will be regularly updated alongside this guidance to ensure it remains a relevant and valuable resource.

Download The WVDE AI Guidance PDF

AI in Education WV Stakeholder Survey

The West Virginia Department of Education is conducting the Artificial Intelligence in Education (AI) Stakeholder Survey to gather input from community stakeholders. Information from this survey will be used to guide future planning for initiatives and supports provided to WV public schools, as well as inform potential policy considerations.

AI in West Virginia Education Stakeholder Subcommittee Self-Nomination

The West Virginia Department of Education (WVDE) is planning to host a series of virtual meetings through Microsoft Teams during Spring 2024 for each of four stakeholder subcommittees (Business/Families, Education, Administration, Post-Secondary/Industry). Nominations are open for these stakeholder subcommittees.

Lawyer Disciplinary Board Request for Comments

The Lawyer Disciplinary Board is soliciting public comments on the following **DRAFT** Legal Ethics Opinion:

Please submit your written comments to the following address: **Artificial Intelligence Committee**, c/o Office of Lawyer Disciplinary Counsel, 4700 MacCorkle Avenue SE, Suite 1200, Charleston, WV 25304.


DRAFT LEGAL ETHICS OPINION 24-01 ARTIFICIAL INTELLIGENCE

Artificial Intelligence ("AI") is an evolving technology, and as it becomes more advanced, AI's functions and its users will continue to grow, and the legal field is no exception. According to 15 U.S. Code § 9401 AI is defined as "a machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations or decisions influencing real or virtual environments." The notes in 10 U.S. Code § 2358 define AI as:

1. Any artificial system that performs tasks under varying and unpredictable circumstances without significant human oversight, or that can learn from experience and improve performance when exposed to data sets.

John T. Chambers
@JohnTChambers

Saudi Arabia plans to push \$40B into AI, reported by @nytimes. This comes after Microsoft's commitment to train 2M people in AI in India, according to @Fortune. The pace of AI investment will only continue to accelerate.
[linkedin.com/news/story/sau...](https://www.linkedin.com/news/story/sau...)




Microsoft CEO Satya Nadella says 'AI is really in the air now' and is planning to train 2 mi...
From fortune.com

12:39 PM · Apr 18, 2024 · 36 Views

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Saudi Arabia Plans \$40 Billion Push Into Artificial Intelligence

The Middle Eastern country is creating a gigantic fund to invest in A.I. technology, potentially becoming the largest player in the hot market.



Visitors interact with Saudi Arabia's first robot "Sara", at the LEAP conference in Riyadh, February 8, 2023. Ahmed Yousri/Reuters

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DALL-E

Article · Talk

From Wikipedia, the free encyclopedia

DALL-E, **DALL-E 2**, and **DALL-E 3** are text-to-image models developed by OpenAI using deep learning methodologies to generate digital images from natural language descriptions, called "prompts."

The first version of DALL-E was announced in January 2021. In the following year, its successor DALL-E 2 was released. DALL-E 3 was released natively into ChatGPT for ChatGPT Plus and ChatGPT Enterprise customers in October 2023,^[1] with availability via OpenAI's API^[2] and "Labs" platform provided in early November.^[3] Microsoft implemented the model in Bing's Image Creator tool and plans to implement it into their Designer app.^[4]

You
Paint a picture that I can use in a power point presentation on health care and AI

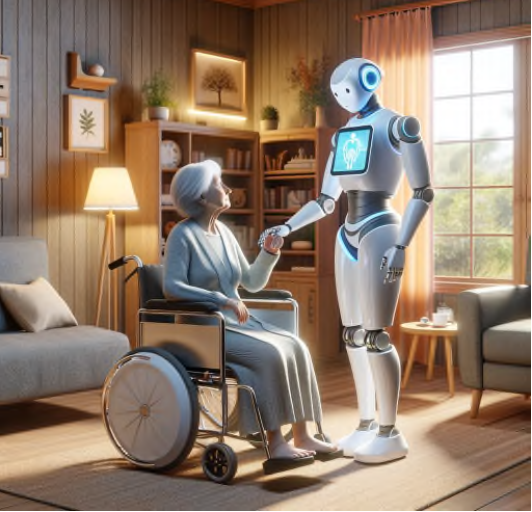
DALLE
Creating an image suitable for a PowerPoint presentation on health care and AI involves depicting elements that visually summarize the integration of these two fields. Here's a detailed description for an image that might be useful for your presentation:

Visual Description for the image:

- Foreground:** A humanoid robot with a sleek, modern design, colored in white and light blue, symbolizing technology. The robot is depicted interacting with a human patient, illustrating the personal touch in healthcare. The robot's hand (which looks precise and gentle) is placed on the patient's arm, suggesting care and attention.
- Background:** A high-tech hospital room with soft blue and white colors, providing a calming atmosphere. The room includes advanced medical equipment that subtly incorporates AI elements (like monitors displaying data analytics, a robotic surgical arm in the corner, etc.).
- Ambiance:** The overall lighting is soft and diffused, with a focus on the interaction between the robot and the patient to emphasize empathy and technological advancement in healthcare.
- Caption:** A subtle caption at the bottom saying "Enhancing Care through AI" in sleek, modern font.

This image would convey the supportive role of AI in healthcare, emphasizing both innovation and the importance of patient care.

Here's the DALL-E request to generate this image:



You
Can you adjust this to represent a patient in a long term care facility

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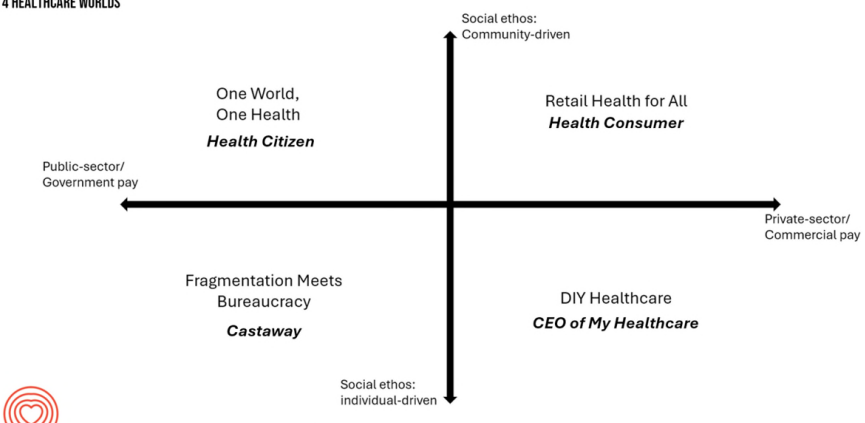
Healthcare 2023 – 2030 The Wild Cards

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Healthcare 2023 - 2030: 4 Scenarios On the Future of Health Care and Who We Are

2030: HEALTH CITIZEN, CONSUMER, CEO, OR CASTAWAY?
2 KEY UNCERTAINTIES - COMMUNITY/INDIVIDUAL VS PUBLIC/PRIVATE HC PAYMENT
4 HEALTHCARE WORLDS



Public-sector/
Government pay

Private-sector/
Commercial pay

Social ethos:
Community-driven

Social ethos:
individual-driven

One World,
One Health
Health Citizen

Retail Health for All
Health Consumer

Fragmentation Meets
Bureaucracy
Castaway

DIY Healthcare
CEO of My Healthcare

Source: Jane Sarasohn-Kahn, THINK-Health LLC, April 2024

Source: <https://www.healthpopuli.com/2024/04/15/healthcare-2030-are-we-consumers-ceos-health-citizens-or-castaways-4-scenarios-on-the-future-of-health-care-and-who-we-are-part-1/>

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Healthcare 2023 - 2030: 4 Scenarios On the Future of Health Care and Who We Are

The screenshot shows a blog post from HealthPopuli. The main title is "Healthcare 2030: Are We Consumers, CEOs, Health Citizens, or Castaways? 4 Scenarios On the Future of Health Care and Who We Are - Part 2". The author is Jane Sarasohn-Kahn. The post discusses four scenarios for the future of healthcare: Health Citizen, Consumer, CEO, or Castaway. It also mentions "Driving Forces 2030 - Wild Cards" and lists several trends like social media, diabetes, and Medicare. A source is cited as Jane Sarasohn-Kahn, THINK-Health LLC, April 2024.

2030: HEALTH CITIZEN, CONSUMER, CEO, OR CASTAWAY? DRIVING FORCES 2030 - WILD CARDS

- Social Media as the New Tobacco – Congress and States aggressively look to hold Facebook, TikTok, et al, to account for ruining our mental health.
- We solve diabetes and obesity through the mass use of GLP-1s (and their next gen drugs) – with knock-on effect of improving heart disease in these patients.
- In 2030 every Boomer will have been eligible for Medicare – breaking that system (and perhaps Social Security, too).

Source: Jane Sarasohn-Kahn, THINK-Health LLC, April 2024

What Next? Stress Test - Test Your Strategy

- You have four alternative worlds to consider for 2030, some six years from “now.”
- How would these different futures play with your current strategy?
- This is the opportunity to stress-test what’s in your plans. Consider the Wild Cards. Revisit the list of driving forces to sort out which of these are most germane to your business and mission.

Source: <https://www.healthpopuli.com/2024/04/17/healthcare-2030-are-we-consumers-ceos-health-citizens-or-castaways-4-scenarios-on-the-future-of-health-care-and-who-we-are-part-2/>



Mission and Vision Statements

- Mission Statement = focuses on what you do today
- Vision Statement = focuses on what you want to become tomorrow
- Core Values = principals that guide decision making and action at every level (board, management, employees, patients, community members)



Questions?



Robert L. Coffield

Partner

Huntington, WV and Raleigh, NC

(919) 329-3813

bob.coffield@nelsonmullins.com