Discover an amazing career in Public Health and Health Administration

Paul K. Halverson, Founding Dean
Indiana University
Richard M Fairbanks School of Public Health
In 1999, the Centers for Disease Control and Prevention named the **ten greatest public health achievements of the 20th century**. These advances have been largely responsible for increasing the lifespan of populations; **over twenty-five of the 30 years can be credited to public health initiatives, while medical advances account for less than 4 years**. Furthermore, since 1900, the average life expectancy for Americans has increased by about 30 years.
### Top 10 Public Health Achievements of the 20th Century

<table>
<thead>
<tr>
<th>Rank</th>
<th>Achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Vaccination</td>
</tr>
<tr>
<td>2</td>
<td>Motor-vehicle safety</td>
</tr>
<tr>
<td>3</td>
<td>Safer workplaces</td>
</tr>
<tr>
<td>4</td>
<td>Control of infectious diseases</td>
</tr>
<tr>
<td>5</td>
<td>Decline in deaths from coronary heart disease and stroke</td>
</tr>
<tr>
<td>6</td>
<td>Safer and healthier foods</td>
</tr>
<tr>
<td>7</td>
<td>Healthier mothers and babies</td>
</tr>
<tr>
<td>8</td>
<td>Family planning</td>
</tr>
<tr>
<td>9</td>
<td>Fluoridation of drinking water</td>
</tr>
<tr>
<td>10</td>
<td>Recognition of tobacco use as a health hazard</td>
</tr>
</tbody>
</table>
>75% of national health spending is attributable to chronic diseases that are largely preventable

- 80% of cardiovascular disease
- 80% of diabetes
- 60% of lung diseases
- 40% of cancers

<3% of national health spending is allocated to public health and prevention
Health Care Spending

Spending on health care

Data downloaded from OECD.StatExtracts. Available at stats.oecd.org

Health Care Investment in the U.S.

Total health care investment in US is less

In OECD, for every $1 spent on health care, about $2 is spent on social services.
In the US, for $1 spent on health care, about 55 cents is spent on social services.

How is the Health System Organized?

From: Milstein B, Homer J. The dynamics of upstream and downstream: why is so hard for the health system to work upstream, and what can be done about it? CDC Futures Health Systems Workgroup; Atlanta, GA; 2003.
Medical Care Offsets Attributable to Local Public Health Spending, 1993-2008

Mays et al. Health Services Research 2009
Indiana is #41

- Low per capita public health funding (#48)
- High levels of air pollution (#47)
- High prevalence of smoking (#44)
- High levels of obesity (#44)
- Cancer deaths (#42)
- Child immunizations (#42)
- Preventable hospitalizations (#42)
- Physical inactivity (#41)
- Substance Abuse challenges
Indiana Health Rankings
Core Measure Impact

Infographic showing various health-related issues with their interactions and connections, such as Smoking, Air Pollution, Lack of Health Insurance, Public Health Funding, Low Birthweight, Preterm Birth, Preventable Hospitalizations, Mentally Health Days, Drug Deaths, Low Income, Children in Poverty, Infectious Disease, Occupational Fatalities, Infant Mortality.
Wellbeing Index 2015– IN #46

The above graph arranges states from lowest well-being in 2015 to highest well-being in 2015 (left to right). Each state is comprised of eight individual lines, representing its historical well-being rank from 2008 - 2015.
Wellbeing Index 2015—
IN 5th Quintile

INDIANA UNIVERSITY

Wellbeing Index 2015—
IN 5th Quintile
Wellbeing Ranking Factors

**Purpose**: Liking what you do each day and being motivated to achieve your goals

**Social**: Having supportive relationships and love in your life

**Financial**: Managing your economic life to reduce stress and increase security

**Community**: Liking where you live, feeling safe and having pride in your community

**Physical**: Having good health and enough energy to get things done daily
### State Rankings - IN46 (+2)

<table>
<thead>
<tr>
<th>2015 Rank</th>
<th>[Change From 2014]</th>
<th>Overall Well-Being Index Score</th>
<th>Purpose Rank</th>
<th>Social Rank</th>
<th>Financial Rank</th>
<th>Community Rank</th>
<th>Physical Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>42. Louisiana</td>
<td>[-2]</td>
<td>61.1</td>
<td>12</td>
<td>22</td>
<td>46</td>
<td>42</td>
<td>39</td>
</tr>
<tr>
<td>43. Mississippi</td>
<td>[+1]</td>
<td>60.9</td>
<td>22</td>
<td>32</td>
<td>50</td>
<td>40</td>
<td>43</td>
</tr>
<tr>
<td>44. Arkansas</td>
<td>[-1]</td>
<td>60.9</td>
<td>25</td>
<td>49</td>
<td>38</td>
<td>23</td>
<td>47</td>
</tr>
<tr>
<td>45. Missouri</td>
<td>[-4]</td>
<td>60.8</td>
<td>35</td>
<td>46</td>
<td>34</td>
<td>36</td>
<td>44</td>
</tr>
<tr>
<td>46. Indiana</td>
<td>[+2]</td>
<td>60.5</td>
<td>39</td>
<td>41</td>
<td>33</td>
<td>44</td>
<td>46</td>
</tr>
<tr>
<td>47. Ohio</td>
<td>[-]</td>
<td>60.5</td>
<td>45</td>
<td>45</td>
<td>27</td>
<td>46</td>
<td>45</td>
</tr>
<tr>
<td>48. Oklahoma</td>
<td>[-9]</td>
<td>60.4</td>
<td>32</td>
<td>47</td>
<td>45</td>
<td>32</td>
<td>48</td>
</tr>
<tr>
<td>49. Kentucky</td>
<td>[-]</td>
<td>60.3</td>
<td>44</td>
<td>44</td>
<td>41</td>
<td>30</td>
<td>49</td>
</tr>
<tr>
<td>50. West Virginia</td>
<td>[-]</td>
<td>58.5</td>
<td>50</td>
<td>50</td>
<td>47</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>
Indianapolis ranked 176/190

<table>
<thead>
<tr>
<th>2015 Rank</th>
<th>City Name</th>
<th>Well-Being Index Score</th>
<th>Purpose Rank</th>
<th>Social Rank</th>
<th>Financial Rank</th>
<th>Community Rank</th>
<th>Physical Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>173.</td>
<td>Akron, OH</td>
<td>60.1</td>
<td>128</td>
<td>184</td>
<td>136</td>
<td>134</td>
<td>155</td>
</tr>
<tr>
<td>174.</td>
<td>Detroit-Warren-Dearborn, MI</td>
<td>60.0</td>
<td>174</td>
<td>165</td>
<td>142</td>
<td>166</td>
<td>141</td>
</tr>
<tr>
<td>175.</td>
<td>Erie, PA</td>
<td>60.0</td>
<td>146</td>
<td>171</td>
<td>119</td>
<td>152</td>
<td>172</td>
</tr>
<tr>
<td>176.</td>
<td>Indianapolis-Carmel-Anderson, IN</td>
<td>59.9</td>
<td>152</td>
<td>157</td>
<td>147</td>
<td>136</td>
<td>182</td>
</tr>
<tr>
<td>177.</td>
<td>Utica-Rome, NY</td>
<td>59.9</td>
<td>187</td>
<td>130</td>
<td>132</td>
<td>178</td>
<td>87</td>
</tr>
<tr>
<td>178.</td>
<td>Flint, MI</td>
<td>59.9</td>
<td>156</td>
<td>176</td>
<td>97</td>
<td>188</td>
<td>160</td>
</tr>
<tr>
<td>179.</td>
<td>Baton Rouge, LA</td>
<td>59.9</td>
<td>55</td>
<td>172</td>
<td>170</td>
<td>164</td>
<td>170</td>
</tr>
</tbody>
</table>
### Best Ranked Cities 2014/2015

#### Well-Being in U.S. Communities by Size of Community, 2014/2015

**Highest Well-Being, Large Communities**

1. San Jose-Sunnyvale-Santa Clara, CA
2. Austin-Round Rock, TX
3. San Antonio-New Braunfels, TX
4. San Diego-Carlsbad, CA
5. Minneapolis-St. Paul-Bloomington, MN-WI
6. San Francisco-Oakland-Hayward, CA
7. Raleigh, NC
8. Washington-Arlington-Alexandria, DC-VA-MD-WV
9. Los Angeles-Long Beach-Anaheim, CA
10. Grand Rapids-Wyoming, MI

**Highest Well-Being, Mid-Size Communities**

1. Naples-Immokalee-Marco Island, FL
2. Salinas, CA
3. North Port-Sarasota-Bradenton, FL
4. Fort Collins, CO
5. Boulder, CO
6. Anchorage, AK
7. McAllen-Edinburg-Mission, TX
8. Santa Maria-Santa Barbara, CA
9. Urban Honolulu, HI
10. Provo-Orem, UT

**Highest Well-Being, Small Communities**

1. Barnstable Town, MA
2. Santa Cruz-Watsonville, CA
3. Charlottesville, VA
4. San Luis Obispo-Paso Robles-Arroyo Grande, CA
5. Greeley, CO
6. Daphne-Fairhope-Foley, AL
7. Lynchburg, VA
8. Wilmington, NC
9. Prescott, AZ
10. Amarillo, TX
• Blacks are more than twice as likely to die from diabetes, as compared to Whites.

• Stroke deaths among Blacks are 1.4 times higher as compared to Whites.

• Cancer and heart disease deaths among Blacks are 1.2 times higher as compared to Whites.

• Infant mortality rates for Blacks are nearly three times higher as compared to Whites.
Air Pollution in Indiana

- Indiana ranked 47th for air pollution among states. (America’s Health Rankings)
- Identified as 1 of 3 major health challenges. (America’s Health Rankings)
- Coal provides 95% of the state’s electricity (50% for rest of the country). (Hoosier Environmental Council)
Air Pollution in Indiana

- Indiana ranks 7th nationally, 1st in the Midwest, for greenhouse gas emissions. (U.S. Dept. of Energy)

- Indianapolis has the second highest carbon footprint among U.S. metro areas. (Brookings)

- Estimated CO2 emissions at Edwardsport Coal Gasification plant – 4 million tons/year. (Hoosier Environmental Council)

- BP Petroleum expansion projected to emit 5.8 million tons of CO/2. (Hoosier Environmental Council)
Air Pollution in Indiana
Avg. daily density - particulate matter (mcgs) PM2.5

Avg. daily density particulate matter in (mcgs) PM2.5. Darker = Greater

County Health Rankings & Roadmaps
http://www.countyhealthrankings.org/app/indiana/2016/measure/factors/125/map
Water Pollution in Indiana

- Most of Indiana’s waterways are polluted with sediment runoff, excess nutrients, (e.g., phosphorous), E. Coli.
  (Hoosier Environmental Council)
- One study: Indiana dumped nearly 18 million pounds of toxic chemicals into its lakes and rivers in 2012 (not including farm and street runoff), more than any state in the country.
  (Environment America, 2014)
Drinking Water Violations

Dark = Violations
Light = None

County Health Rankings & Roadmaps
http://www.countyhealthrankings.org/app/indiana/2016/measure/factors/124/map
Severe Housing Problems

Poor quality and inadequate housing contributes to infectious and chronic diseases, injuries, poor childhood development.

Severe housing problems: percentage of households with at least 1 or more of the following:

1. lacks complete kitchen facilities;
2. lacks complete plumbing facilities;
3. severely overcrowded;
4. household is severely cost burdened.

Severe overcrowding = more than 1.5 persons per room. Severe cost burden = monthly housing costs (including utilities) that exceed 50% of monthly income.

County Health Rankings & Roadmaps
http://www.countyhealthrankings.org/app/indiana/2016/measure/factors/136/map
Severe Housing Problems

Darker = More
Lighter = Less

County Health Rankings & Roadmaps
http://www.countyhealthrankings.org/app/indiana/2016/measure/factors/136/map
Infrastructure...
The Public Health System
Transition

- **Fee For Service**
  - Pay for volume
  - No quality measured

- **Value-Based Payment**
  - Quality per click
  - Process improvement

- **Care Coordination**
  - Quality outcomes of episodes
  - Whole system improvement

**THEN**

**NOW**

**FUTURE**
Volume to Value

- Payer
- Disease
- Care-setting

- Treatment
- Today, 10% of Patients

Revenue Transition Period

Value-Based Reimbursement

Fee for Service

Revenue Mix
Population Health Differences?

Current Providers: responsibility for the health of a population group to whom you have direct fiscal responsibility/risk.

Public Health: responsibility for the health of people within a defined jurisdiction.

Future Providers: a healthier community is a healthier location to do business.
The Virtuous Spiral

High Income

Good Health

Poor Health

Low Income
### What if Indiana was ranked #25?

<table>
<thead>
<tr>
<th>Condition</th>
<th>IN Rank</th>
<th>IN Rate</th>
<th>25th Rate</th>
<th>State</th>
<th>Avoided cases</th>
<th>Avoided costs $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking</td>
<td>44</td>
<td>22.9</td>
<td>18.1</td>
<td>KS</td>
<td>317,745</td>
<td>$332,360,893</td>
</tr>
<tr>
<td>Diabetes</td>
<td>32</td>
<td>10.7</td>
<td>10.0</td>
<td>AZ</td>
<td>46,338</td>
<td>$366,068,304</td>
</tr>
<tr>
<td>Obesity</td>
<td>44</td>
<td>31.8</td>
<td>29.6</td>
<td>MD</td>
<td>145,633</td>
<td>$198,060,826</td>
</tr>
<tr>
<td>Preventable Hospitalizations</td>
<td>42</td>
<td>63.2</td>
<td>51.1</td>
<td>NC</td>
<td>80,098</td>
<td>$1,468,999,668</td>
</tr>
</tbody>
</table>
Poor Health is Bad for Business

POOR HEALTH IS BAD FOR BUSINESS
Chronic disease drives health care expenditures, which cuts into company profits and productivity.

67% of our workforce is overweight or obese

1 IN 4 Americans has heart disease

1 IN 3 Americans has high blood pressure

$73 B annual cost of obesity among full-time employees

50% of company profits go towards health care costs

$153 B loss to employers annually due to absenteeism from workers who are overweight or obese and have other chronic health conditions

450 M additional work days missed annually due to chronic health conditions

PREVENTION PAYS AT WORK
Even small investments in health within the workplace can create big returns.

WORKPLACE WELLNESS
For every $1 spent on workplace wellness programs, employers can save up to $6 to $10 per person.

ADDRESS HEALTH RISKS
Reduction in health risks would save as much as $83-103 annually in medical costs per person.

SAVE MONEY
Workplace wellness programs can reduce sick leave, medical costs and workers comp claims by as much as 25%.

HEALTHY COMMUNITIES = HEALTHY BUSINESSES
Building a healthier community saves lives and money.

BIKING SAVES MILLIONS
Do you have bike racks? Are there bike lanes on your street? Bicycle commuters saved Iowa $132 million a year in health care costs and $73.5 million for those who cycle recreationally.

SMOKE-FREE SPACES SAVE LIVES
Are your shared community spaces and workplace smoke-free? Smoke-free strategies and education prevented 800 thousand deaths related to lung cancer between 1975-2000.

WALKABLE SPACES + ECONOMIC GROWTH
Do your workplace and community make physical activity easier? In one California city, $10 million spent on more walkable public outdoor spaces spurred a $125 million economic investment in the local downtown area, which led to the creation of 40 new businesses and 800 new jobs.

HEALTHY OPTIONS, HEALTHY CHOICES
Are healthy foods affordable and accessible at work meetings, in vending machines and in your community? Research shows that making the healthier option the default can lead to healthier choices.
## LHD Providing Select Environmental Health Functions

<table>
<thead>
<tr>
<th>Environmental Health Services</th>
<th>All LHDs</th>
<th>&lt;25,000</th>
<th>25,000–49,999</th>
<th>50,000–99,999</th>
<th>100,000–499,999</th>
<th>500,000+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Safety Education</td>
<td>72%</td>
<td>63%</td>
<td>76%</td>
<td>83%</td>
<td>79%</td>
<td>78%</td>
</tr>
<tr>
<td>Vector Control</td>
<td>48%</td>
<td>39%</td>
<td>51%</td>
<td>55%</td>
<td>57%</td>
<td>62%</td>
</tr>
<tr>
<td>Groundwater Protection</td>
<td>40%</td>
<td>31%</td>
<td>40%</td>
<td>44%</td>
<td>57%</td>
<td>53%</td>
</tr>
<tr>
<td>Surface Water Protection</td>
<td>33%</td>
<td>25%</td>
<td>34%</td>
<td>37%</td>
<td>43%</td>
<td>46%</td>
</tr>
<tr>
<td>Indoor Air Quality</td>
<td>31%</td>
<td>27%</td>
<td>29%</td>
<td>35%</td>
<td>34%</td>
<td>45%</td>
</tr>
<tr>
<td>Pollution Prevention</td>
<td>22%</td>
<td>14%</td>
<td>20%</td>
<td>26%</td>
<td>29%</td>
<td>44%</td>
</tr>
<tr>
<td>Hazmat Response</td>
<td>17%</td>
<td>13%</td>
<td>13%</td>
<td>19%</td>
<td>25%</td>
<td>32%</td>
</tr>
<tr>
<td>Collection of Unused Pharmaceuticals</td>
<td>16%</td>
<td>15%</td>
<td>21%</td>
<td>16%</td>
<td>16%</td>
<td>15%</td>
</tr>
<tr>
<td>Air Pollution</td>
<td>16%</td>
<td>12%</td>
<td>14%</td>
<td>19%</td>
<td>19%</td>
<td>32%</td>
</tr>
<tr>
<td>Hazardous Waste Disposal</td>
<td>15%</td>
<td>13%</td>
<td>12%</td>
<td>15%</td>
<td>19%</td>
<td>29%</td>
</tr>
<tr>
<td>Land Use Planning</td>
<td>14%</td>
<td>11%</td>
<td>13%</td>
<td>20%</td>
<td>17%</td>
<td>17%</td>
</tr>
<tr>
<td>Radiation Control</td>
<td>13%</td>
<td>10%</td>
<td>11%</td>
<td>14%</td>
<td>17%</td>
<td>20%</td>
</tr>
<tr>
<td>Noise Pollution</td>
<td>12%</td>
<td>10%</td>
<td>12%</td>
<td>14%</td>
<td>14%</td>
<td>21%</td>
</tr>
</tbody>
</table>

*n ranged from 1,910 to 1,954

Source: 2013 National Profile of Local Health Departments
## Estimated Size of LHD Workforce

<table>
<thead>
<tr>
<th>Population Served</th>
<th>Profile Study Year</th>
<th>2013 Size of Population Served</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2005</td>
<td>All LHDs</td>
</tr>
<tr>
<td></td>
<td>2013</td>
<td>All LHDs</td>
</tr>
<tr>
<td>Infectious Disease</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tuberculosis Screening</td>
<td>82%</td>
<td>83%</td>
</tr>
<tr>
<td>Tuberculosis Treatment</td>
<td>71%</td>
<td>76%</td>
</tr>
<tr>
<td>STD Screening</td>
<td>60%</td>
<td>64%</td>
</tr>
<tr>
<td>STD Treatment</td>
<td>56%</td>
<td>60%</td>
</tr>
<tr>
<td>HIV/AIDS Screening</td>
<td>58%</td>
<td>61%</td>
</tr>
<tr>
<td>HIV/AIDS Treatment</td>
<td>21%</td>
<td>24%</td>
</tr>
<tr>
<td>Non-Communicable Disease or Condition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blood Lead Screening</td>
<td>63%</td>
<td>61%</td>
</tr>
<tr>
<td>High Blood Pressure Screening</td>
<td>69%</td>
<td>57%</td>
</tr>
<tr>
<td>Diabetes Screening</td>
<td>48%</td>
<td>36%</td>
</tr>
<tr>
<td>Cancer Screening</td>
<td>42%</td>
<td>36%</td>
</tr>
<tr>
<td>Cardiovascular Disease Screening</td>
<td>34%</td>
<td>27%</td>
</tr>
</tbody>
</table>

n ranged from 1,915 to 1,971

Source: 2013 National Profile of Local Health Departments
## LHD Workforce Composition

<table>
<thead>
<tr>
<th>Rank</th>
<th>Program or Service</th>
<th>Percentage of LHDs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Communicable/Infectious Disease Surveillance</td>
<td>91%</td>
</tr>
<tr>
<td>2</td>
<td>Adult Immunization Provision</td>
<td>90%</td>
</tr>
<tr>
<td>3</td>
<td>Child Immunization Provision</td>
<td>90%</td>
</tr>
<tr>
<td>4</td>
<td>Tuberculosis Screening</td>
<td>83%</td>
</tr>
<tr>
<td>5</td>
<td>Environmental Health Surveillance</td>
<td>78%</td>
</tr>
<tr>
<td>6</td>
<td>Food Service Establishments Inspection</td>
<td>78%</td>
</tr>
<tr>
<td>7</td>
<td>Tuberculosis Treatment</td>
<td>76%</td>
</tr>
<tr>
<td>8</td>
<td>Food Safety Education</td>
<td>72%</td>
</tr>
<tr>
<td>9</td>
<td>Population-Based Nutrition Services</td>
<td>69%</td>
</tr>
<tr>
<td>10</td>
<td>Schools/Daycare Center Inspection</td>
<td>69%</td>
</tr>
</tbody>
</table>

\( n \) ranged from 1,949 to 1,975
### LHD Workforce Composition

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Percentage of Total FTEs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative or Clerical Personnel</td>
<td>24%</td>
</tr>
<tr>
<td>Registered Nurse</td>
<td>19%</td>
</tr>
<tr>
<td>Other Profile Occupation Categories*</td>
<td>15%</td>
</tr>
<tr>
<td>Not Categorized</td>
<td>10%</td>
</tr>
<tr>
<td>Environmental Health Worker</td>
<td>9%</td>
</tr>
<tr>
<td>Public Health Manager</td>
<td>7%</td>
</tr>
<tr>
<td>Community Health Worker</td>
<td>5%</td>
</tr>
<tr>
<td>Nursing Aide and Home Health Aide</td>
<td>4%</td>
</tr>
<tr>
<td>Health Educator</td>
<td>3%</td>
</tr>
<tr>
<td>Nutritionist</td>
<td>3%</td>
</tr>
</tbody>
</table>

*n ranged from 1,282 to 1,942 based on occupation

*Ten occupations with less than three percent of LHD workforce.*
Select Occupations of LHD’s

- Administrative or Clerical Personnel: 96%
- Registered Nurse: 96%
- Environmental Health Worker: 85%
- Public Health Manager: 84%
- Emergency Preparedness Staff: 77%
- Health Educator: 68%
- Nutritionist: 63%
- Public Health Physician: 49%
- Licensed Practical or Vocational Nurse (LPN/LVN): 45%
- Community Health Worker: 44%
- Nursing Aide and Home Health Aide: 39%
- Epidemiologist: 36%
- Information Systems Specialist: 33%
- Public Information Specialist: 32%
- Oral Health Care Professional: 28%
- Laboratory Worker: 26%
- Behavioral Health Professional: 25%
- Animal Control Worker: 15%

Percentage of LHDs
Always drink upstream from the herd.