An Unhealthy America:
The Economic Burden of Chronic Disease

Charting a New Course to Save Lives
and Increase Productivity and Economic Growth

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Stakeholder Forum
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Economic Burden of Chronic Disease

Introduction: Two Paths, Two Choices

1. What Does Chronic Disease Currently Cost Us?
2. Where Is the Current Course Taking Us?
3. What Costs Are Avoidable If We Make Improvements in Prevention and Treatment?
4. What Are the Impacts of Chronic Disease at the State Level?
5. What Is the Long-term Impact of Reducing the Disease Burden?
6. What Are the Conclusions and Recommendations of our Findings?
The Human Cost: Number of People Reporting Chronic Disease

Number Reporting Seven Common Chronic Diseases, U.S., 2003

- Pulmonary Conditions: 49.2 million
- Hypertension: 36.8 million
- Mental Disorders: 30.3 million
- Heart Disease: 19.1 million
- Diabetes: 13.7 million
- Cancers: 10.6 million
- Stroke: 2.4 million

Population Reporting Condition (Millions)
The Human Cost: Number of People Reporting Selected Cancers

U.S., 2003

Population Reporting Condition (Millions)

- Other Cancers: 7.7
- Breast Cancer: 1.1
- Prostate Cancer: 1.0
- Lung Cancer: 0.4
- Colon Cancer: 0.3
The Human Cost: Number of People Reporting Chronic Disease

Number Reporting Seven Common Chronic Diseases, California, 2003

- Diabetes: 1,573K Cases
- Cancers: 1,155K
- Pulmonary Conditions: 5,301K
- Hypertension: 3,660K
- Stroke: 241K
- Heart Disease: 1,860K
- Mental Disorders: 2,534K

PRC per Capita Relative to U.S. (U.S. = 1)
The Human Cost
Milken Institute State Chronic Disease Index:

States in Top Quartile have the Lowest Rates of
Seven Common Chronic Diseases
## The Human Cost: Milken Institute State Chronic Disease Index

### Composite Scores

<table>
<thead>
<tr>
<th>State</th>
<th>Rank</th>
<th>Composite Score</th>
<th>State</th>
<th>Rank</th>
<th>Composite Score</th>
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The Economic Cost: Treatment Expenditures by Chronic Disease

U.S., 2003

- Heart Disease: $65 billion
- Cancers: $48 billion
- Mental Disorders: $46 billion
- Pulmonary Conditions: $45 billion
- Hypertension: $33 billion
- Diabetes: $27 billion
- Stroke: $14 billion
The Economic Cost: Lost Productivity by Source, U.S.  
*US$ Billions, 2003*

- **Presenteeism**
  - Caregiver, $80.2
  - Individual, $828.2

- **Lost Workdays**
  - Caregiver, $10.8
  - Individual, $127.5

**Total Lost Productivity in 2003 = $1,046.7**
The Economic Cost: Lost Productivity by Chronic Disease

U.S., 2003

- Stroke: $22 billion
- Pulmonary Conditions: $94 billion
- Heart Disease: $105 billion
- Diabetes: $105 billion
- Mental Disorders: $171 billion
- Cancers: $271 billion
- Hypertension: $280 billion
Total Economic Cost of Chronic Disease
U.S., 2003

- Cancers: $48B treatment, $271B lost output
- Hypertension: $33B treatment, $280B lost output
- Mental Disorders: $46B treatment, $171B lost output
- Heart Disease: $65B treatment, $105B lost output
- Pulmonary Conditions: $45B treatment, $94B lost output
- Diabetes: $27B treatment, $105B lost output
- Stroke: $22B treatment

Total Treatment Expenditures = $277B
Total Lost Economic Output = $1,047B
Total Economic Cost of Chronic Disease

California, 2003

- Stroke: $2.2
- Pulmonary Conditions: $4.4, $10.1
- Mental Disorders: $4.4, $14.3
- Heart Disease: $6.0, $10.2
- Diabetes: $3.0, $12.0
- Hypertension: $3.1, $27.8
- Cancers: $4.7, $29.6

Total Treatment Expenditures = $26.9B
Total Lost Economic Output = $106.2B
Projection of Cases and Treatment Costs

Baseline vs. Optimistic Scenario Process

1. Develop Based on Aging Population
2. Develop Based on Behavioral Risk Factors and Other Demographics
3. Develop Based on Screening, Early Detection and Medical Innovations
4. Develop Based on Different Health Care Cost Growth
5. Avoidable Cost = Difference in Expenditure Between Baseline and Optimistic Scenarios
Population Projections
U.S., 65 and Over

Percent

Male 65 and over
Female 65 and over

History | Forecast

Our Current Path: Projected Rise in the Cases of Chronic Disease

U.S., From 2003 to 2023

Population Growth = 19%
Our Current Path

Combined Value of Treatment Expenditures and Productivity Losses, U.S.
Percent Growth in Number of People Reporting Chronic Diseases


<table>
<thead>
<tr>
<th>Disease Type</th>
<th>Current Path</th>
<th>Alternative Path</th>
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<tbody>
<tr>
<td>Pulmonary Conditions</td>
<td>13%</td>
<td>31%</td>
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<tr>
<td>Diabetes</td>
<td>13%</td>
<td>39%</td>
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<tr>
<td>All Cardiovascular</td>
<td>6%</td>
<td>39%</td>
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<tr>
<td>Heart Disease</td>
<td>-8%</td>
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<tr>
<td>Stroke</td>
<td>5%</td>
<td>29%</td>
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<tr>
<td>Mental Disorders</td>
<td>17%</td>
<td>35%</td>
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<tr>
<td>Total</td>
<td>17%</td>
<td>42%</td>
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Avoidable Treatment Expenditures

U.S., 2023

<table>
<thead>
<tr>
<th>Condition</th>
<th>Treatment Expenditures (US$ Billions)</th>
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<tr>
<td>Heart Disease</td>
<td>$110 $76</td>
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<tr>
<td>Cancers</td>
<td>$109 $37</td>
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<tr>
<td>Mental Disorders</td>
<td>$107 $28</td>
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<tr>
<td>Pulmonary Conditions</td>
<td>$92 $26</td>
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<tr>
<td>Hypertension</td>
<td>$65 $23</td>
</tr>
<tr>
<td>Diabetes</td>
<td>$63 $17</td>
</tr>
<tr>
<td>Stroke</td>
<td>$27 $10</td>
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Alternative Future

Expenditures Avoided
Avoidable Productivity Losses

U.S., 2023

<table>
<thead>
<tr>
<th>Condition</th>
<th>Productivity Losses Avoided (US$ Billions)</th>
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<tr>
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<tr>
<td>Hypertension</td>
<td>$666</td>
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<tr>
<td>Mental Disorders</td>
<td>$480</td>
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<td>Diabetes</td>
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<tr>
<td>Pulmonary Conditions</td>
<td>$218</td>
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<tr>
<td>Stroke</td>
<td>$14</td>
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Avoidable Treatment Costs and Output Losses

**U.S., 2023**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Direct Costs</th>
<th>Indirect Impacts</th>
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<tbody>
<tr>
<td>Cancer</td>
<td>$37</td>
<td>$373</td>
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<tr>
<td>Heart Disease</td>
<td>$76</td>
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<tr>
<td>Hypertension</td>
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<td>Mental Disorders</td>
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<td>$88</td>
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<td>Diabetes</td>
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<td>$47</td>
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<tr>
<td>Stroke</td>
<td>$10</td>
<td>$14</td>
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Avoided Treatment Costs and Output Losses
California, 2023

<table>
<thead>
<tr>
<th>Condition</th>
<th>Direct Costs</th>
<th>Indirect Impacts</th>
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<tbody>
<tr>
<td>Cancer</td>
<td>$3.2</td>
<td>$41.8</td>
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<tr>
<td>Heart disease</td>
<td>$6.7</td>
<td>$14.8</td>
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<tr>
<td>Hypertension</td>
<td>$2.0</td>
<td>$18.2</td>
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<td>Diabetes</td>
<td>$1.7</td>
<td>$9.0</td>
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<tr>
<td>Mental disorders</td>
<td>$2.3</td>
<td>$7.7</td>
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<tr>
<td>Pulmonary conditions</td>
<td>$2.1</td>
<td>$5.1</td>
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<tr>
<td>Stroke</td>
<td>$0.8</td>
<td>$1.6</td>
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</table>

US$ Billions
Costs That Can Be Avoided Each Year

US$ Billions

Economic Costs Avoided
(US$ Billions)

Lost Economic Output (Indirect)
Treatment Expenditures (Direct)


$0 $200 $400 $600 $800 $1,000 $1,200 $1,400 $1,600 $1,800 $2,000 $2,200 $2,400

MILKEN INSTITUTE
Avoidable Economic Costs Attributable to Decline in Obesity

**U.S., 2023**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Avoidable Economic Impact (US$ Billions)</th>
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<tbody>
<tr>
<td>Cancers</td>
<td>$397</td>
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<td>Heart Disease</td>
<td>$191</td>
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<td>Hypertension</td>
<td>$187</td>
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<td>Diabetes</td>
<td>$92</td>
</tr>
<tr>
<td>Stroke</td>
<td>$19</td>
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- $3 = Obesity
- $39 = Other Factors

Total Avoidable Economic Impact: $397
Long-Term Economic Impacts

Overview

• Attempt to quantify health (chronic disease) impact
  – on human and physical capital formation
  – the restrictions imposed on intergenerational economic growth

• Determinants of economic growth and model specification
  – Historically, only few have been found to be significant in explaining growth

• Human capital’s role
  – Dynamic economic growth depends upon
    • health \((\text{life expectancy at 65})\),
    • stock of labor \((\text{labor force})\),
    • quality of labor \((\text{percent of adult population with bachelor’s degree or above})\),
    • physical capital \((\text{real stock of equipment and structures})\)
  – Good health increases the rate of return to investments in education
  – Improves the nation’s competitiveness in the long-term
  – The higher the income earner’s human capital, the greater the probability that they will invest in their children’s and grandchildren's education
Intergenerational Impact of Health on Education

2000, Actual versus Fitted Explained by Life Expectancy
Health and Human Capital

2003

Life Expectancy at 65

Population with Bachelor’s Degree, Percent
U.S. Long-Term Forgone Economic Output

Change in Real GDP Between Baseline and Optimistic Scenarios

Year

US$ Trillions

2005 2010 2015 2020 2025 2030 2035 2040 2045 2050

0 1 2 3 4 5 6
California Long-Term Forgone Economic Output

Change in Real GDP Between Baseline and Optimistic Scenarios

- 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0

US$ Trillions

Year

2005 2010 2015 2020 2025 2030 2035 2040 2045 2050
Conclusions:
• Lost Productivity Surpasses Treatment as the Cause of Economic Burden
• Early Interventions and Medical Innovations Improve Quality and Longevity of Life
• Healthcare Expenditure Accounts by Disease Are Needed
• Good Health Is an Investment in Economic Growth

Recommendations:
• Incentives for Prevention and Early Intervention
  – We need private–public partnerships to incentivize patients and providers to prevent chronic disease effectively
• “Healthy Body Weight Initiative”
  – We need a strong, long-term national commitment to promote health, wellness, and healthy body weight