The Diabetes Community Sentinel Project

Map of the United States showing prevalence of diabetes. The map is color-coded to indicate different prevalence ranges across various regions. There is also a chart with bars representing prevalence by demographic and age group.
A DC-based, research and education organization that publishes the National Health Index (NHI)

The NHI a comprehensive database comprised of over 800 million patient records to define disease prevalence, costs, and outcomes at the zip code level.

It is used to inform, support, and catalyze advocacy, educational, marketing, and public relations activities
User-friendly, web-based disease indexes.

Users can:

**Map** any chronic disease by prevalence, cost, outcomes, co-morbidities, socioeconomic status, Rx drug use, etc. for any state, MSA, congressional and state legislative districts

**Define** where the unmet needs exist by identifying undiagnosed and uncontrolled populations

**Forecast** trends
National Minority Quality Forum

Our Portfolio

- u.s. diabetes iNDEX
- afibindex
- National Clinical Trial NETWORK
- Childhood Obesity Index
- hepatitis c index
- mapping the EPIDEMIC HIV/AIDS ATLAS
- tracking mrsa
- CKD ATLAS
- PAD ATLAS
National Minority Quality Forum

Key Findings

What we have learned
National Minority Quality Forum

Health Care Market Has Structure

Geography Matters

There are geographical bound health care market places in the United States that exhibit stable consumption patterns from one year to the next.
National Minority Quality Forum

Stable Consumption Patterns

Forces that Shape Markets

These consumption patterns are the product of consistencies in the incidence and prevalence of diseases, underlying consistencies in patient response to those diseases, practices variation, and uniformity in the ways in which the health care financing and delivery system responds to patient needs.
Consumption Patterns Can be Shaped

Critical Intelligence

This stability is knowable, predictable and algorithms can be built that can anticipate consumption patterns.
The Value Proposition

An understanding of these consumption patterns can improve management of health care resources.
DM in the Age of Digital Health

Key Findings

What we have learned
The purpose of the Diabetes Community Sentinel Project (DCSP) is to deploy and a national diabetes information system whose purpose is to measure the incidence and prevalence of diabetes by zip code, to provide historic information (outcomes, cost, etc.) on how people with the disorder have used medical services to manage the disease, and to predict how those residents will use care in the near term.
The DM Market can be Defined Geographically

- 80% of those living with DM reside in 9,000 zip codes (diabetes communities) out of 38,000 zip codes.
- Half of these zip codes are minority zip codes, where over 50% of the resident population is minority.
- Within these diabetes communities the prevalence and number of people with the disease is increasing.
- DM communities tend to be medical deserts with a limited number of points of care (physicians’ office, hospitals and clinics) to meet the needs of those living with the disease.
We Are Already Collecting Massive Amounts of Data on the DM Market by Geography

- Data from Points of Care (physicians’ offices, hospitals, payer data, pharmacies)
- Medical Devices (glucose monitors, insulin pumps, heart and sleep monitors)
- Consumer data (internet traffic, home devices)
Crisis Consumers

Percent of Diabetes Population

- 1%

Heavy Consumers

- 9%

Moderate Consumers

- 15%

Light Consumers

- 25%

Low Consumers

- 50%

Crisis Consumers

Percent of Cost

- 17%

Heavy Consumers

- 47%

Moderate Consumers

- 23%

Light Consumers

- 10%

Low Consumers

- 3%

Cost Driven by Hospitalizations

Cost Associated with Non Adherence to Clinical Guidelines
Crisis Consumers

\[ N_c = ? \]

- 0.267\(N_c\) Persistence
- 0.432\(N_c\) Migrate to:
- 0.184\(N_c\) Migrate to:
- 0.074\(N_c\) Migrate to:
- 0.042\(N_c\) Migrate to:

Heavy Consumers

Moderate Consumers

Light Consumers

Low Consumers

Crisis Consumer Migration Patterns (Complex T2D)
### National Health Index

**In Patient Stays**

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>White</th>
<th>Black</th>
<th>Hispanic</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>5,162,749</td>
<td>3,590,716</td>
<td>822,075</td>
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<td>2004</td>
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<td>4,182,506</td>
<td>1,072,500</td>
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<td>2005</td>
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<tr>
<td>2006</td>
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<td>1,129,683</td>
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<td>2007</td>
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<td>4,843,991</td>
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<td>2008</td>
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## National Health Index

### Diabetes in Patient Stays Per 100 Persons

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>White</th>
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<th>Hispanic</th>
<th>Other</th>
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<tbody>
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<td>28.4</td>
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<td>22.6</td>
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<td>2001</td>
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<td>2002</td>
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<td>29.5</td>
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<td>22.0</td>
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<tr>
<td>2003</td>
<td>27.1</td>
<td>27.3</td>
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<td>22.0</td>
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<td>28.4</td>
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<td>2005</td>
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<td>27.8</td>
<td>22.4</td>
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<td>2006</td>
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<td>27.9</td>
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## National Health Index

### Per Patient Cost

<table>
<thead>
<tr>
<th>Year</th>
<th>Cost per Visit</th>
<th>Total Cost</th>
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</thead>
<tbody>
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<tr>
<td>2002</td>
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<tr>
<td>2003</td>
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<tr>
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<tr>
<td>2005</td>
<td>$9,688</td>
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<tr>
<td>2006</td>
<td>$10,137</td>
<td>$70,682,430,002</td>
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<tr>
<td>2007</td>
<td>$10,554</td>
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<td>2008</td>
<td>$11,054</td>
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### National Health Index

#### All Cause Diabetes ER Visits

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>White</th>
<th>Black</th>
<th>Hispanic</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>9,531,036</td>
<td>6,083,308</td>
<td>1,613,744</td>
<td>1,302,808</td>
<td>531,177</td>
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<tr>
<td>2007</td>
<td>10,435,963</td>
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<td>1,758,463</td>
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<tr>
<td>2008</td>
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<td>7,809,657</td>
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<td>943,411</td>
<td>546,585</td>
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# National Health Index

## All Cause Diabetes Hospital Encounters

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>White</th>
<th>Black</th>
<th>Hispanic</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
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<td>2,233,586</td>
<td>1,222,416</td>
<td>759,158</td>
</tr>
</tbody>
</table>
# National Health Index

*All Cause Diabetes Hospital Encounters Per 100 Person*

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>White</th>
<th>Black</th>
<th>Hispanic</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>45.5</td>
<td>46.6</td>
<td>44.9</td>
<td>41.6</td>
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<td>46.6</td>
<td>48.3</td>
<td>46.4</td>
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<tr>
<td>2008</td>
<td>48.9</td>
<td>54.0</td>
<td>47.4</td>
<td>29.3</td>
<td>46.8</td>
</tr>
</tbody>
</table>
Reconfiguring The Diabetes Pyramid

- **Percent of Diabetes Population**
  - Crisis Consumers: 1%
  - Heavy Consumers: 9%
  - Moderate Consumers: 15%
  - Light Consumers: 50%
  - Low Consumers: 25%

- **Percent of Cost**
  - 5%
  - 15%
  - 17%
  - 60%

- **Cost Driven by Hospitalizations**

- **High Adherence**
  - High Persistence in the Cluster

- **Cost Associated with Non Adherence to Clinical Guidelines**
  - 3%
“To Measure is to Know”
Sir William Thomas, Lord Kelvin