Wearables and their Insurance Implications
Understanding the History and Evolution of Wearables and Biometrics
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In keeping with the non-partisan, non-advocative mission of The Griffith Foundation, I will keep my comments and contributions to today's program unbiased and purely educational.
Telematics and Biometrics – A History

Progressive Insurance Autograph (late 1990s)

• Install expensive GPS unit in vehicles to obtain accurate mileage information
  – Log miles driven
  – Log time of day
• Provide discount for installing
• Adjust premium based on driving history
• Additional GPS services included

“A mile driven at 2 a.m. is four or five times as expensive than one driven at 7 a.m.”
– Robert McMillan, Progressive manager, 2000
Telematics and Biometrics – A History

Autograph Disposition

• Development and roll-out was discontinued
  – High cost of installation ($500 per vehicle)
  – Privacy concerns
  – Regulatory approval of variable rates
• Re-deployed as TripSense in 2004
• Expanded nationwide as MyRate in 2008
  – GPS device costs fell
  – Multiple car households could see significant premium savings
  – Reports 15% of customers have enrolled
  – Similar programs offered by State Farm and Allstate
A Separating Equilibrium

Adverse Selection

• If all insured are priced equally, regardless of risk
  – The most risky will buy insurance (which is inexpensive for them)
  – The least risky will not buy insurance (which is expensive for them)
  – The insurer will lose money

• The insurer is willing to invest to identify the most and least risky

• Insurers have focused on separating policyholders as narrowly as possible
  – Cost-effectiveness is an issue
  – How much should a life insurer invest in paying for a physical exam for every applicant?
  – How much would your insurer have to pay you to give up your wearable database?

• More on Adverse Selection from Dr. Hoy later
Biometrics and Insurance

• Employers collect data
  – Opt-in process
  – Includes premium discounts
  – Used to incentivize healthy behaviors

<table>
<thead>
<tr>
<th>Health Indicator</th>
<th>My Results</th>
<th>Normal Values</th>
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<tbody>
<tr>
<td>Weight</td>
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<tr>
<td>Height</td>
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</tr>
<tr>
<td>Waist Circumference</td>
<td>&lt;35&quot; women</td>
<td>&lt; 40&quot; men</td>
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<tr>
<td>Blood Pressure</td>
<td></td>
<td>Systolic &lt;120 &amp; Diastolic &lt;80</td>
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<tr>
<td></td>
<td></td>
<td>Normal</td>
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<tr>
<td>Glucose</td>
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<td>&lt;100 optimal (fasting)</td>
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<td></td>
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<td>&lt;140 (non-fasting)</td>
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<td></td>
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<td>140 - 200 pre diabetes</td>
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<tr>
<td></td>
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<td>&gt; 200 diabetes</td>
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<tr>
<td>Total Cholesterol</td>
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<td>&lt; 200 desirable</td>
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<td>200 - 239 borderline high</td>
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<tr>
<td></td>
<td></td>
<td>&gt; 240 high</td>
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<tr>
<td>HDL Cholesterol</td>
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<td>&gt; 60 best</td>
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<tr>
<td></td>
<td></td>
<td>50 - 59 average</td>
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<td></td>
<td></td>
<td>&lt; 40 poor</td>
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<td>LDL Cholesterol (optional)</td>
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<td>&lt;100 optimal</td>
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<td>100 - 129 near optimal</td>
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<td>130 - 159 borderline high</td>
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<td></td>
<td></td>
<td>&gt; 160 very high</td>
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<td>Triglycerides (optional)</td>
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<td>&lt; 150 desirable</td>
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<td>150 - 199 borderline high</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; 200 high</td>
</tr>
</tbody>
</table>
Biometrics and Insurance

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• Employers use data
  – To design health-improvement programs
  – To provide aggregate data to health insurance providers
  – Additional premium discounts can be provided for participating in health interventions

• Employers protect data
  – Biometric data is not provided to supervisors
  – Biometric data are maintained separately from personnel files
  – Neither biometric results, nor refusal to participate cannot be used to discriminate
What are Wearables?

- Electronic devices, often worn on the wrist or carried in the pocket.
- Collects limited biometric data (steps, speed, location, heart rate)
- Communicates with a computer or server
- Data from wearables could supplement annual biometric indicators

Garmin ForeRunner 235  Fitbit Charge 2  Apple Watch
Why are they Popular?

- Simple exercise tracking
- Collects limited biometric data (steps, speed, location, heart rate)
- Communicates with a computer or server
The “Fitbit” Revolution

- Seamless connection to smartphones
- Bluetooth tether to phone reduces equipment cost
- Wearable services use social media, badges, and haptic feedback to motivate movement
- Some models record heart rate and sleep habits
- Can be paired with a wi-fi scale to track weight changes
Examples

Exercise Details

**HEART RATE**
- 133 avg bpm
- 0 Mins Peak
- 30 Mins Cardio
- 2 Mins Fat Burn

**CALORIES BURNED**
- 13 cals/min

**IMPACT**
- +5,318 of 9,032 steps taken
- +412 of 2,939 calories burned
- +33 of 52 active minutes
Examples

Sleep Insights
Wonder what makes you sleepy? It's all because of a chemical in the body called 'adenosine'.

- **TIME ASLEEPS**: 9 hr 35 min
- **SLEEP STAGES**: Learn more
  - Awake: 17%
  - REM: 19%
  - Light: 23%
  - Deep: 27%

Log Weight
A smarter scale for better results.
Reach your weight goals with a scale that keeps you on track. Shop Aria.

This Week
- **Sun**: 30 lbs
- **Manual lbs**: --
- **Burned cal**: 291

DAILY STEPS
- **Trail Shoe**: 30,000 steps in a day
- **Classics**: 25,000 steps in a day
- **High Tops**: 20,000 steps in a day
- **Urban Boot**: 15,000 steps in a day
- **Sneakers**: 10,000 steps in a day
- **Boat Shoe**: 5,000 steps in a day

- **Badge and Trophies**: Badges
- **DAILY STEPS**: Earned 1 time
- **Classics**: Earned 3 times
- **High Tops**: Earned 9 times
- **Urban Boot**: Earned 26 times
- **Sneakers**: Earned 94 times
- **Boat Shoe**: Earned 301 times
Examples

Friends

7-DAY STEPS

Steps

- GOAL MET
- GOAL NOT MET

Amber D.

36,286

5 hrs ago

7-Day Average
9,423 steps

7-Day Total
66,284 steps

Weekly Goal Progress
95% of 70,000
Wearable Concerns

• What data are *automatically* provided to the wearable server?
  – Varies based on model
  – Activity logs
  – Sleep history
  – Heart rate history

• What data are provided to the server after user intervention?
  – Weight history
  – Food intake
  – Water intake

• Who owns these data? What about privacy and security?

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Wearable and Biometrics

• **Linking wearable data with biometric program**
  – Provides data collected daily rather than annually
  – Links snapshot biometric results to regular interventions
  – Provides further data about desired health interventions

• **Social aspect of wearables in the workplace**
  – Challenges may help employees support each other in healthy lifestyles
  – Subsidize employee fitness center fees for participants

• **Reduce employer health expenses**
  – Driving healthy workplace behaviors can reduce short- and long-term health expenses
  – Especially valuable for self-insured employers

• **PPACA currently permits rewards and penalties for wellness programs**
  (including biometric screening) up to 30% of the employee-only premium