Greenway Design and Physical Activity

UT researchers Dana Wolff, Gene Fitzhugh and Chris Cherry surveyed users of two popular Knoxville greenways—Third Creek and Lakeshore—to find out how the use of the greenways differed.

They defined Third Creek as a more accessible greenway, because it runs through neighborhoods, parks and commercial areas, and users can access it by car, foot or bicycle. They defined Lakeshore as less accessible, because it’s entirely within Lakeshore Park, surrounded by a fence, and because there are no sidewalks or bicycle lanes on the nearby streets.

Demographic Profile of Users

• Third Creek compared to Lakeshore users were:
  • Younger (44.0 ± 13.6 vs. 48.4 ± 14.4)
  • Male (60.7% vs. 34.8%)
  • Never Married (29.8% vs. 18.7%)
  • Employed (78.3% vs. 64.1%)
  • Earning Less than $50,000 (45.7% vs. 32.1%)
PA Behaviors of Greenway Users

<table>
<thead>
<tr>
<th>Purpose of PA</th>
<th>N</th>
<th>Third Creek</th>
<th>Lakeshore</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leisure-Time</td>
<td>592</td>
<td>89.4%</td>
<td>99.7%</td>
<td>p &lt; 0.001</td>
</tr>
<tr>
<td>Transportation</td>
<td>24</td>
<td>10.6%</td>
<td>0.3%</td>
<td></td>
</tr>
</tbody>
</table>

Activity Performed on GW

<table>
<thead>
<tr>
<th>Activity</th>
<th>N</th>
<th>Third Creek</th>
<th>Lakeshore</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking</td>
<td>364</td>
<td>24.1%</td>
<td>78.0%</td>
<td>p &lt; 0.001</td>
</tr>
<tr>
<td>Running</td>
<td>163</td>
<td>34.7%</td>
<td>22.0%</td>
<td></td>
</tr>
<tr>
<td>Biking</td>
<td>89</td>
<td>41.2%</td>
<td>0.0%</td>
<td></td>
</tr>
</tbody>
</table>

GW PA Frequency

<table>
<thead>
<tr>
<th>Frequency</th>
<th>N</th>
<th>Third Creek</th>
<th>Lakeshore</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Days/week</td>
<td>616</td>
<td>2.6 ± 1.8</td>
<td>3.2 ± 1.9</td>
<td>p &lt; 0.001</td>
</tr>
</tbody>
</table>

GW PA Duration

<table>
<thead>
<tr>
<th>Duration</th>
<th>N</th>
<th>Third Creek</th>
<th>Lakeshore</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min/Bout</td>
<td>609</td>
<td>60 (45 – 90)</td>
<td>45 (40 – 60)</td>
<td>p &lt; 0.001</td>
</tr>
</tbody>
</table>

PA Volume (MET-min-wk⁻¹)

<table>
<thead>
<tr>
<th>Volume</th>
<th>N</th>
<th>Third Creek</th>
<th>Lakeshore</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>GW-only</td>
<td>608</td>
<td>630 (396 – 1050)</td>
<td>569 (297 – 990)</td>
<td>p = 0.012</td>
</tr>
<tr>
<td>Total GW-related</td>
<td>609</td>
<td>720 (440 – 1200)</td>
<td>614 (320 – 1070)</td>
<td>p &lt; 0.001</td>
</tr>
</tbody>
</table>

Proportion of GW Users Meeting the 2008 PA Guidelines

Because of the longer duration of their greenway use, Third Creek users were more likely to meet national exercise guidelines.
Active Transit Greenway Users on Third Creek

- Accumulated greater volumes of PA.
- Users more likely to be:
  - Not married (OR = 2.63; 95% CI = 1.10 – 6.30)
  - Under the age 35 (OR = 6.00; 95% CI = 1.87 – 19.16)
  - Live within one mile of the GW (OR = 5.39; 95% CI = 2.03 – 14.30)

Researchers found that those using Third Creek for transportation got more physical activity than other users, and were more likely to be unmarried, young and living near the greenway.

Discussion

- After taking GW accessibility into account, significant differences in users exist
  - Lakeshore users:
    - More Frequent Users
    - Greater years of GW use
    - Live Closer (1 mile)
    - Engage in lower intensity
  - Third Creek users:
    - Spend more time on the GW per visit
    - Perform higher intensity PA
    - More likely to access the GW via AT modes
Conclusions: GW with Low Accessibility

- Should be considered by GW planners and designers
  - High level of use despite barriers to access through AT
  - Users are more purposeful

- Potential reach may be greater

- Creates another factor that city planners should consider
  - Providing adequate parking for users driving to the GW.

Conclusions: GW with High Accessibility

- Creates new opportunities to access outdoor PA through AT.

- May allow for greater volumes of PA
  - ensure individuals to meet public health PA guidelines.

- Potential to impact environmental health goals
  - Automobile traffic
  - Fuel consumption
    - Users who access via AT modes reduce their fuel consumption by 35.48 gallons of gas per year (assuming the average mpg of 22.1, FHA 2000).