

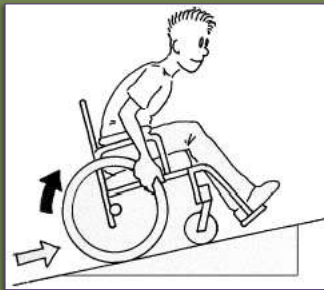
Trails for Everybody

Wheelchair Accessibility in Powell Butte Nature Park



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Christopher Estes

Wheelchair Requirements

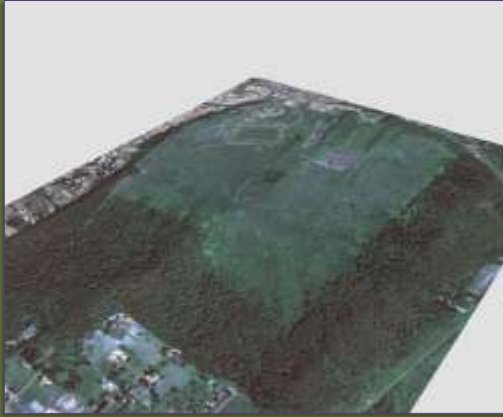


Slope ratio 1:20 – Every foot in elevation change requires 20 feet horizontally.



Cross slope – If the cross slope is too great, a person risks tipping over. Proposed federal regulations specify 2-3% depending on the surface.

Powell Butte Nature Park



Mountain View Trail



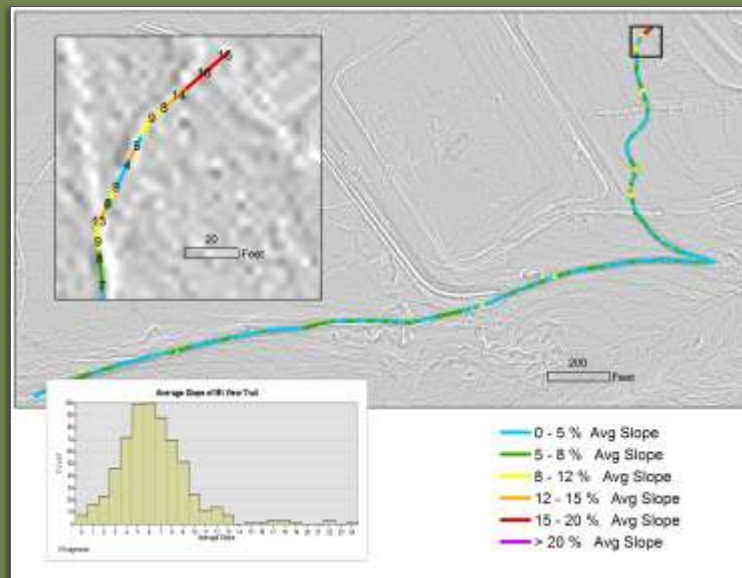
Current details of the trail according to Portland Parks & Recreation...

- Length: .65 miles
- "Accessible"
- Elevation Change: 158 ft
- Slope: Up to 5%
- "You can see forever!" 5 mountain peaks are supposedly visible from Powell Butte.

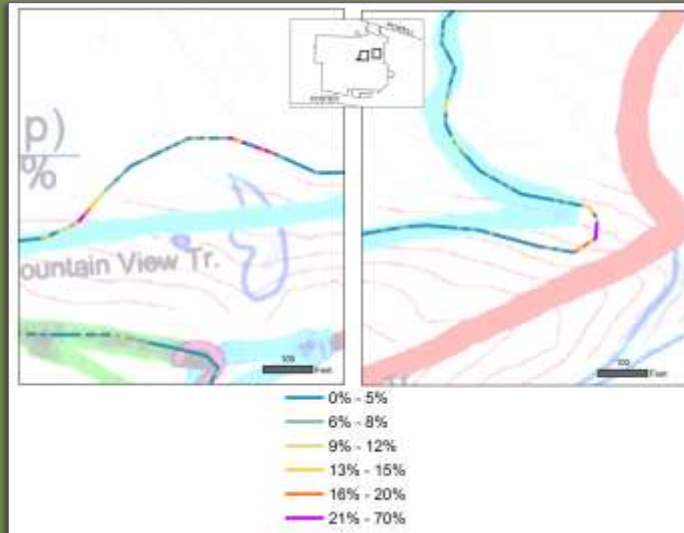
Our Questions

- Is the Mountain View Trail as accessible as Portland Parks & Recreation says?
- Can trail analysis performed on the Mountain View Trail be applied on a greater scale?
- Can you see five mountain peaks from Powell Butte as the literature says?

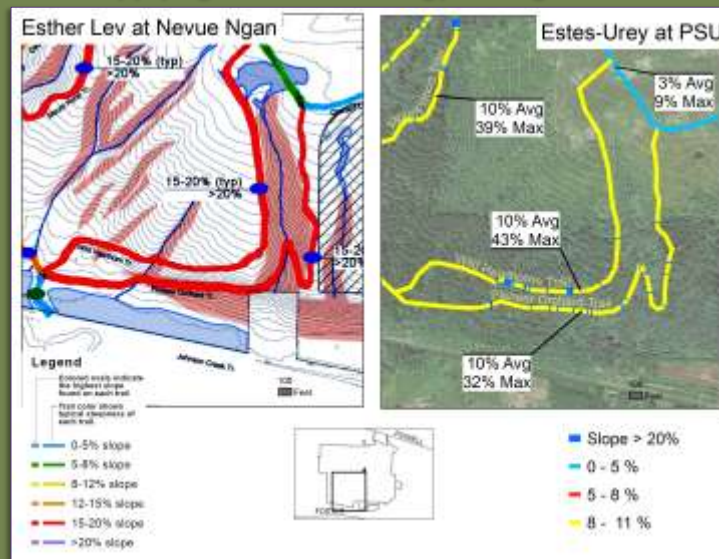
Mountain View Trail Analysis



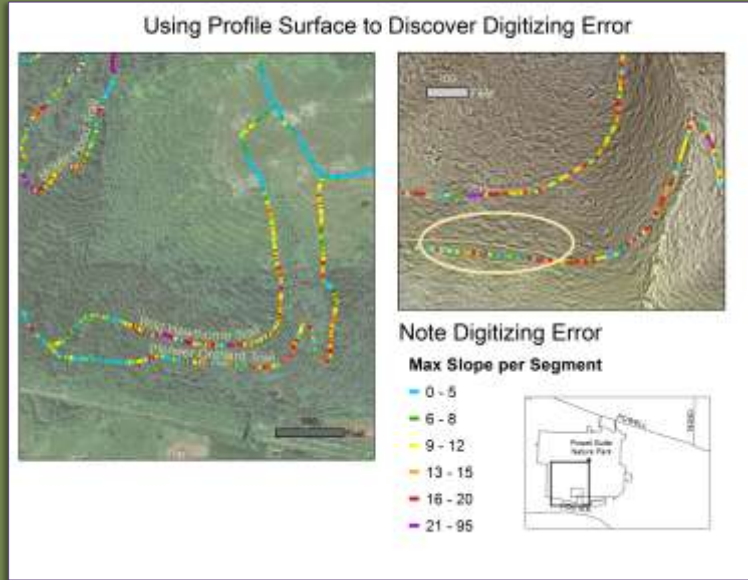
Difficulties Associated with Trail Improvements



The Bigger Picture: Applying Our Methodology to Larger Areas

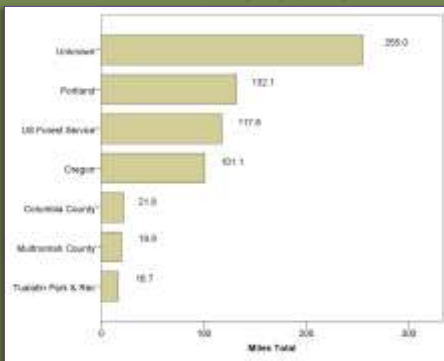


Potential Methodological Issues

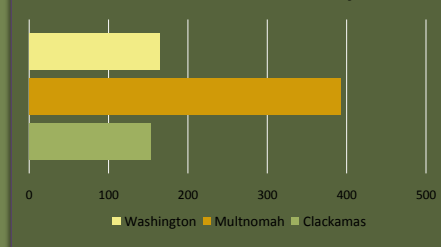


Trails Around the Region

Trail Ownership by Entity

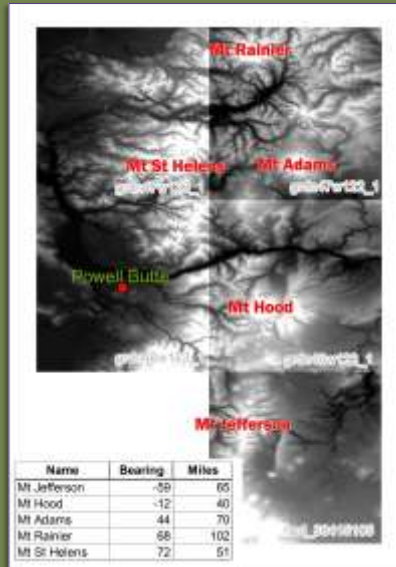


Miles of Trails Per County

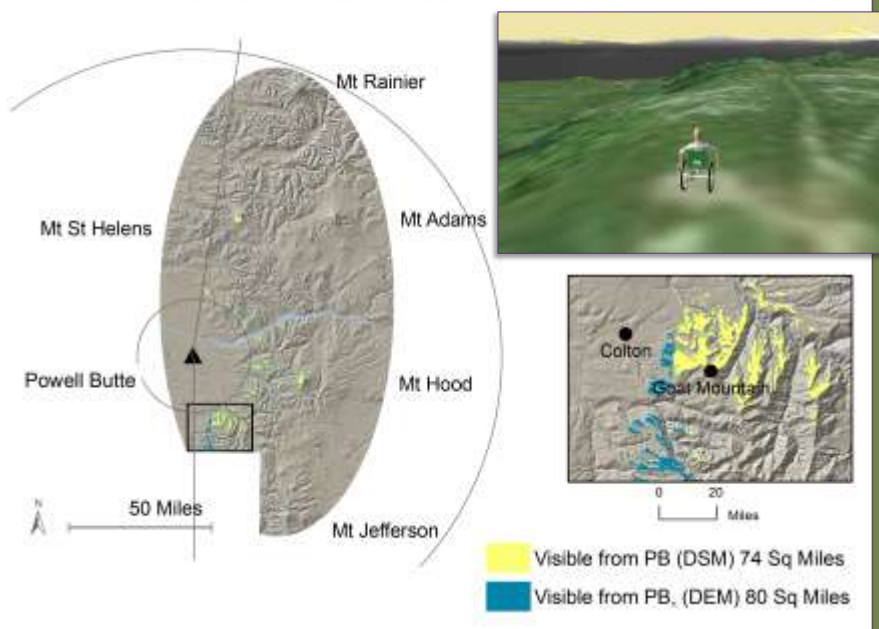


Viewshed Analysis

- Raster Catalog used to assemble DEMs from the USGS Seamless Server
- Locate points of interest – in this case the five mountain peaks
- Perform analysis along segment of a ring to minimize ArcGIS processing time



Comparison of Viewsheds using a DEM and a DSM



Challenges

- Cross slope of a trail can be difficult to derive from 3ft lidar data.
- Accurately digitizing trails or extracting from DEM (algorithms applied to derived surfaces or ArcScan).
- Revising trail segments and updating 3D attributes.
- Familiarity with the study area (knowing where trails start and stop).

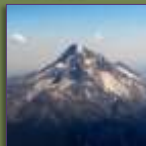
Conclusions

- The Mountain View Trail can be improved to make it more accessible for individuals in wheelchairs.
- This methodology and analysis shows promise and may be useful on a larger scale.
- Yes, you really can “see forever!” Five mountain peaks should be visible.

Mt. Rainier



Mt. Hood



Mt. St Helens



Mt. Adams



Mt. Jefferson



References

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Questions?