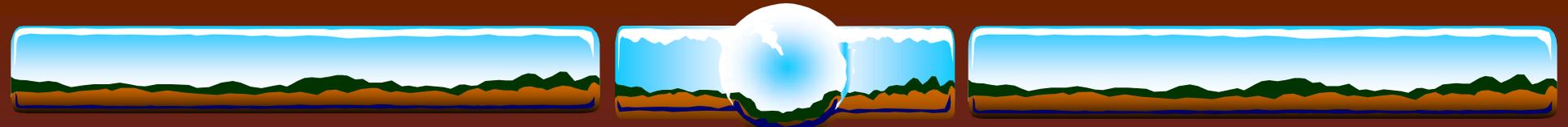
The top of the slide features three horizontal panels. The left and right panels show a stylized landscape with a blue sky, green hills, and brown ground. The middle panel is similar but has a white globe with blue oceans and red continents centered over it, with a blue shadow cast below.

# **The Virginia Creeper Trail: An Analysis of Use, Economic Impacts, Visitor Characteristics, and Preferences**

**J.M. Bowker**  
**USDA Forest Service**

**John C. Bergstrom & Joshua Gill**  
**University of Georgia**

**Abingdon, VA**  
**April 28, 2004**



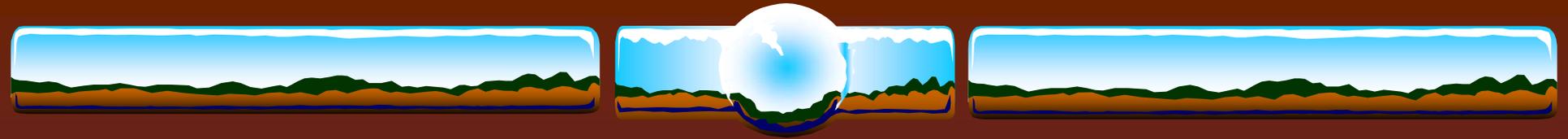
# Partners

- ❖ **Virginia Creeper Club**
- ❖ **Creeper Cabins**
- ❖ **Virginia Trails**
- ❖ **Virginia Dept Conservation & Recreation**
- ❖ **Virginia Dept Forestry**
- ❖ **National Park Service**
- ❖ **University of Georgia, Dept Ag & Applied Econ**
- ❖ **USDA Forest Service, Region 8 & SRS**
- ❖ **Numerous Volunteers**



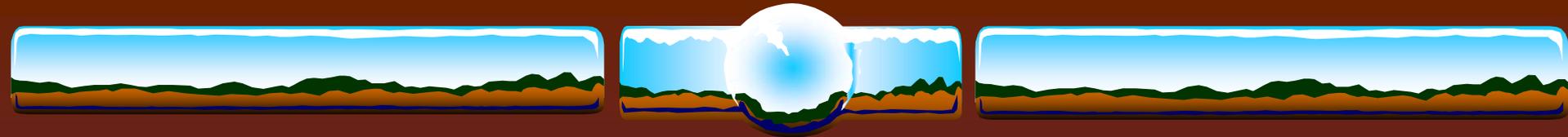
# Major Objectives

- ❖ **Measure Annual Trail Use**
- ❖ **Estimate Local Economic Impacts**
- ❖ **Describe Trail Users**
- ❖ **Examine User Attitudes / Preferences**
  - ❖ **Trail Attributes**
  - ❖ **Management / Policy**
  - ❖ **Benefits**



# Trail Use





# Stratified Random Sampling

## Trail Exits

### ❖ Season

❖ Winter 02-03 / Summer 03

### ❖ Day type

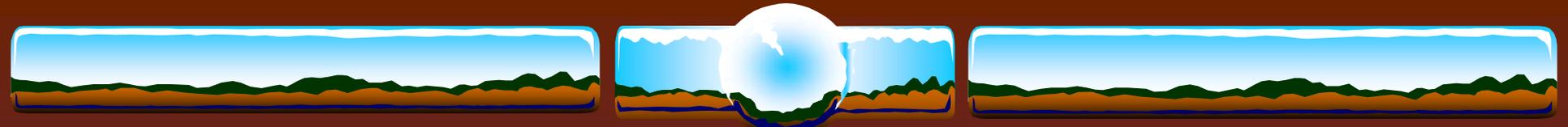
❖ Sat / Sun, Fri, Hol / Weekday

### ❖ Exit type

❖ High / Low

### ❖ Time of day summer

❖ Morning / Afternoon / Evening



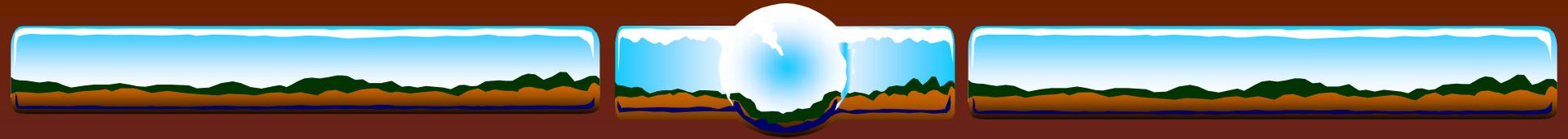
# Winter Counts

- ❖ **Total cells 1629 = 9 (26 + 60 + 95)**
- ❖ **Cells sampled 77 = 4.7 percent**
- ❖ **Lots of 0's Dec – Feb**
- ❖ **Sat ave = 217**
- ❖ **Sun / Fri / Hol ave = 177**
- ❖ **Weekday ave = 77**
- ❖ **Winter Visits = 23, 614 +/- 2,985**



# Summer Counts

- ❖ **Total cells 4968**
- ❖ **Cells sampled 107 = 2 percent**
- ❖ **Very few 0's and higher missings Abingdon**
- ❖ **Sat ave = 1181**
- ❖ **Sun / Fri / Hol ave = 676**
- ❖ **Weekday ave = 358**
- ❖ **Summer Visits = 106,558 +/- 7,282**



# Annual Visits

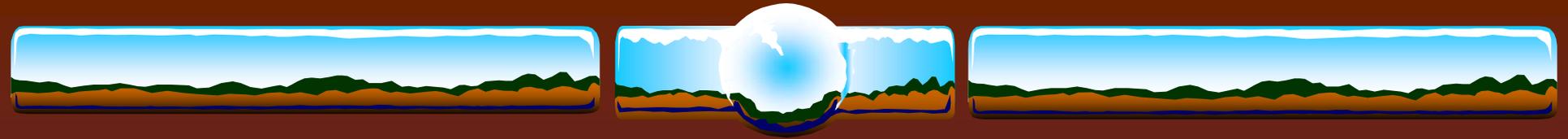
❖ **Total = 130,172**

❖ **Range 119,905 to 140,439**



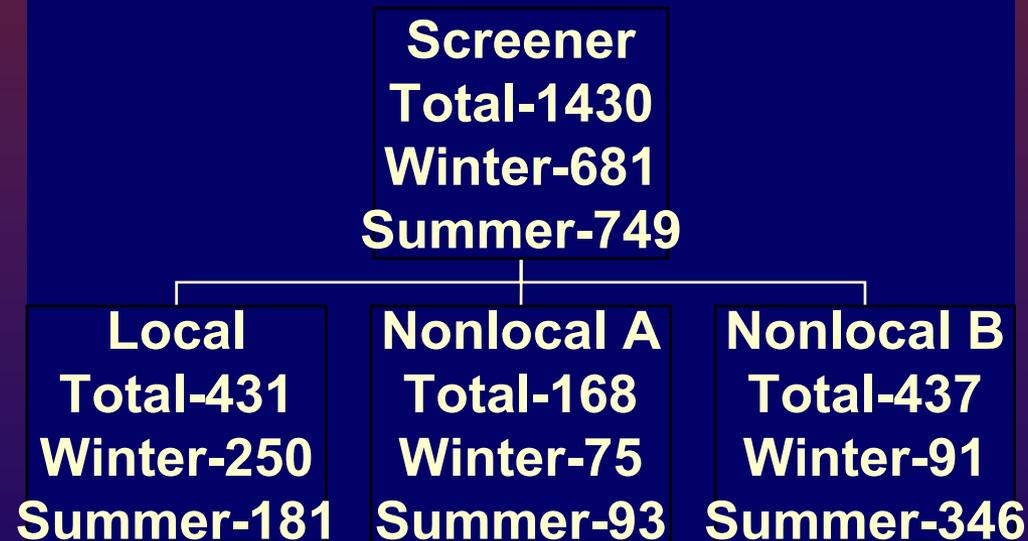
# Survey Instruments

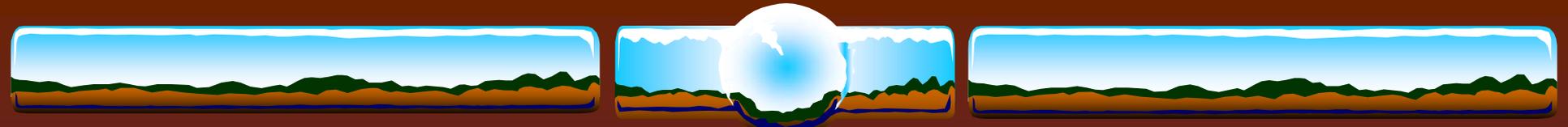
- ❖ **Screening Survey N= 1430**
  - ❖ **Systematic random sample**
  
- ❖ **Detailed Survey N= 1036**
  - ❖ **Systematic random sample**
  - ❖ **Local**
  - ❖ **Nonlocal A & B**



# Survey Hierarchy

**Total Detailed Surveys = 1036**





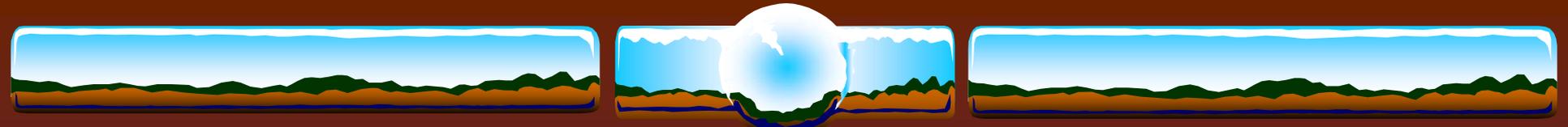
# Screenner Survey Content

- ❖ **Local vs Nonlocal**
- ❖ **Group size**
- ❖ **Activity**
- ❖ **Race**
- ❖ **Gender**
- ❖ **Willingness to be surveyed**



# Detailed Survey Content

- ❖ Trip characteristics
- ❖ Spending characteristics
- ❖ Travel time and distance to site
- ❖ Trail issues and benefits
- ❖ Area features
- ❖ Household demographics
- ❖ Annual usage
- ❖ Primary purpose



# Visit Breakdown

## ❖ Screener Survey

❖ 47 percent Washington & Grayson

❖ **Local visits = 61,503**

❖ 53 percent Nonlocals

❖ **Nonlocal visits = 66,669**



# Nonlocal Visits to Trips

- ❖ Detailed Survey
  - ❖ Primary purpose
  - ❖ Day use vs overnight
  - ❖ Trail visits per trip to area

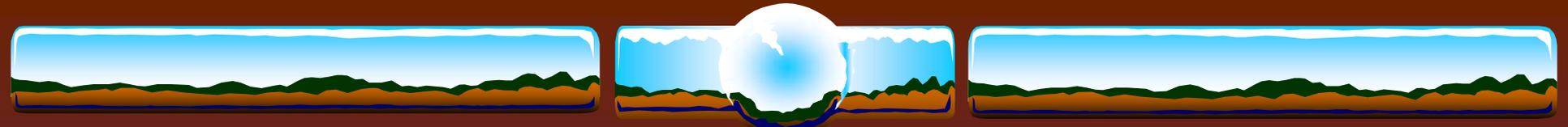


# Nonlocal Visits to Trips

	<u>Visits</u>	<u>Person-trips</u>
❖ PP Day Use	40,034	33,642
❖ PP Ovr Nite	10,305	5,725
❖ NP Day Use	9,473	7,578
❖ NP Ovr Nite	8,857	3,918
	<b>66,669</b>	<b>50,864</b>

# Economic Impact Analysis





# Expenditures by Locals and Nonlocals

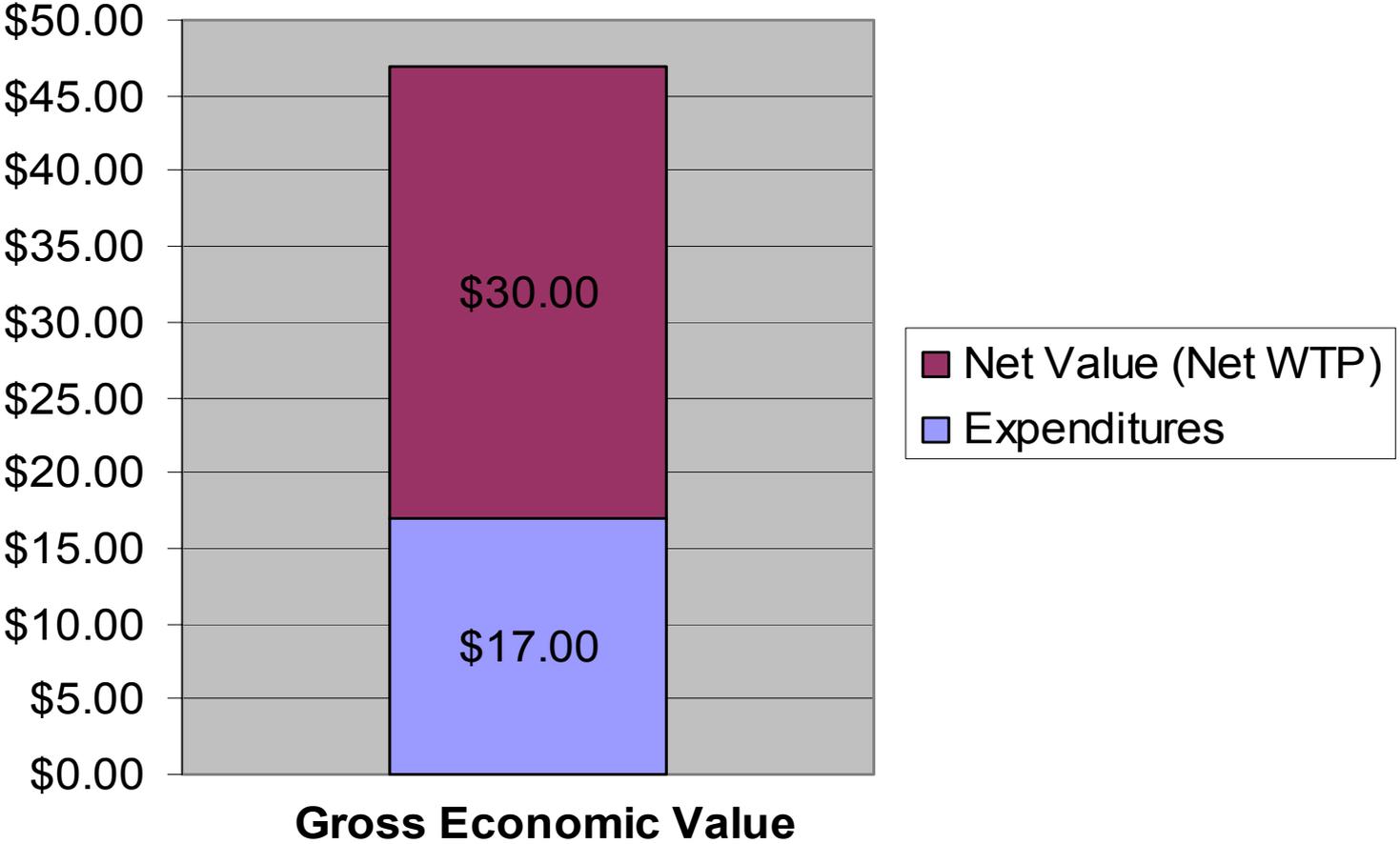
## Grayson and Washington Counties

Local Resident Expenditures Per Person  
Per Day Trip (example: \$10 average)



Nonlocal Resident Expenditures Per Person  
Per Day Trip (example: \$17 average)

# Gross Economic Value and Expenditures





# Regional Economic Impact Analysis

## ❖ **Basic steps:**

### ❖ **Estimate Use**

❖ **Estimate recreation expenditures per person per trip by nonlocals for major expenditure categories**

### ❖ **Define Local Impact Region**

❖ **Allocate Local Impact Region expenditures to economic sectors in the Local Impact Region**

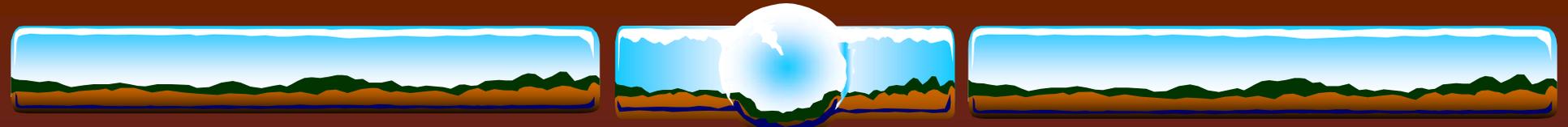
❖ **Use IMPLAN model to estimate output, jobs and income in the Local Impact Region supported by nonlocal resident expenditures.**



# Overview of IMPLAN

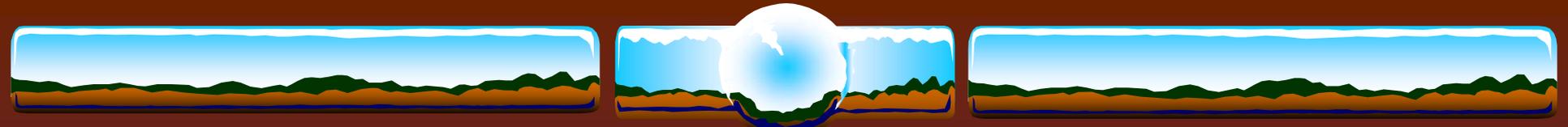
## Impact Modeling for PLANning

- ❖ Computer-based, input-output economic model
- ❖ Designed for regional economic impact analysis
- ❖ Developed by the U.S.D.A. Forest Service
- ❖ Provides comprehensive, science-based system for estimating economic impacts of natural resource related projects
- ❖ Since 1979, it has been used in a multitude of private and public sector applications to estimate the economic impacts of natural resource related and non-natural resource related projects on regional economies



# Overview of IMPLAN

- ❖ **IMPLAN has two major components:**
- ❖ **Nationwide database describing county-level economic activity and a computer model for constructing regional input-output models and estimating economic impacts from changes in economic activity.**
- ❖ **The model is based on input-output accounting and analysis procedures used by the U.S. Bureau of Economic Analysis and recommended by the United Nations**



# Nonlocal Spending & Impacts

- ❖ **Detailed Survey NLB**

- ❖ Group expenditures whole trip

- ❖ Group expenditures Washington & Grayson

- ❖ Spending party size

- ❖ Per-person trip expenditures

- ❖ **IMPLAN Model**

- ❖ Economic Impacts per 1,000 person-trips



# Primary Purpose Day User Exp Profile

Ave Spending Party Size = 3.34

	<b>Whole trip</b>	<b>25 miles VCT</b>	<b>VCT person/trp</b>
<b>Priv. Lodg</b>	<b>14.69</b>	<b>0.00</b>	<b>0.00</b>
<b>Pub. Lodg</b>	<b>0.09</b>	<b>0.00</b>	<b>0.00</b>
<b>Food In</b>	<b>38.13</b>	<b>21.29</b>	<b>6.37</b>
<b>Food Out</b>	<b>6.49</b>	<b>2.65</b>	<b>0.79</b>
<b>Prim. Trans.</b>	<b>18.68</b>	<b>11.42</b>	<b>3.39</b>
<b>Other Tran.</b>	<b>0.06</b>	<b>0.06</b>	<b>0.02</b>
<b>Bike Rent</b>	<b>12.98</b>	<b>11.68</b>	<b>3.50</b>
<b>Shuttle</b>	<b>10.51</b>	<b>9.17</b>	<b>2.75</b>
<b>Use Fees</b>	<b>0.14</b>	<b>0.14</b>	<b>0.42</b>
<b>Other</b>	<b>1.42</b>	<b>0.89</b>	<b>0.27</b>
<b>Total</b>	<b>103.19</b>	<b>57.30</b>	<b>17.16</b>



# Primary Purpose Overnight Exp Profile

Ave Spending Party Size = 4.5

	<b>Whole trip</b>	<b>25 miles VCT</b>	<b>VCT person/trp</b>
<b>Priv. Lodg</b>	<b>211.86</b>	<b>126.95</b>	<b>28.21</b>
<b>Pub. Lodg</b>	<b>29.30</b>	<b>22.29</b>	<b>4.95</b>
<b>Food In</b>	<b>137.02</b>	<b>99.71</b>	<b>22.16</b>
<b>Food Out</b>	<b>40.02</b>	<b>28.23</b>	<b>6.27</b>
<b>Prim. Trans.</b>	<b>61.50</b>	<b>36.32</b>	<b>8.07</b>
<b>Other Tran.</b>	<b>1.90</b>	<b>1.85</b>	<b>0.41</b>
<b>Bike Rent</b>	<b>18.44</b>	<b>17.28</b>	<b>3.84</b>
<b>Shuttle</b>	<b>20.96</b>	<b>19.26</b>	<b>4.28</b>
<b>Use Fees</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Other</b>	<b>18.32</b>	<b>17.57</b>	<b>4.39</b>
<b>Total</b>	<b>539.32</b>	<b>369.46</b>	<b>82.10</b>



# Non-primary Purpose Day Use Exp Profile

Ave Spending Party Size = 4.3 Time Share = .193

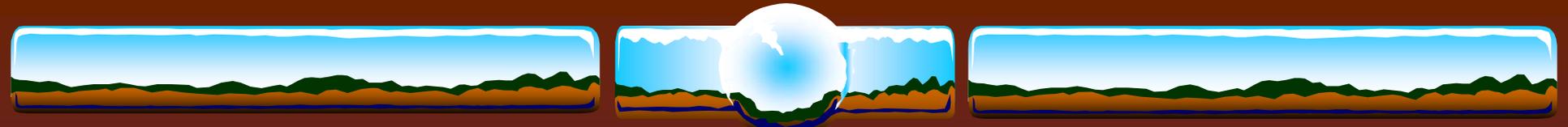
	<b>Whole trip</b>	<b>25 miles VCT</b>	<b>VCT person/trp</b>
<b>Priv. Lodg</b>	165.13	0.00	0.00
<b>Pub. Lodg</b>	31.18	0.00	0.00
<b>Food In</b>	154.18	51.00	3.51
<b>Food Out</b>	23.63	5.90	0.10
<b>Prim. Trans.</b>	82.18	59.00	3.98
<b>Other Tran.</b>	72.72	0.00	0.00
<b>Bike Rent</b>	47.13	47.13	2.66
<b>Shuttle</b>	3.09	3.09	0.14
<b>Use Fees</b>	0.18	0.00	0.00
<b>Other</b>	100.95	54.81	0.70
<b>Total</b>	<b>680.37</b>	<b>161.93</b>	<b>11.11</b>



# Non-primary Purpose Overnight Exp Profile

Ave Spending Party Size = 3.40 Time Share = .04

	<b>Whole trip</b>	<b>25 miles VCT</b>	<b>VCT person/trp</b>
<b>Priv. Lodg</b>	<b>175.53</b>	<b>125.17</b>	<b>1.74</b>
<b>Pub. Lodg</b>	<b>47.89</b>	<b>46.19</b>	<b>0.20</b>
<b>Food In</b>	<b>120.51</b>	<b>97.32</b>	<b>1.31</b>
<b>Food Out</b>	<b>28.19</b>	<b>17.23</b>	<b>0.13</b>
<b>Prim. Trans.</b>	<b>100.51</b>	<b>44.73</b>	<b>0.56</b>
<b>Other Tran.</b>	<b>29.19</b>	<b>6.80</b>	<b>0.01</b>
<b>Bike Rent</b>	<b>17.59</b>	<b>17.25</b>	<b>0.35</b>
<b>Shuttle</b>	<b>9.03</b>	<b>8.50</b>	<b>0.15</b>
<b>Use</b>	<b>1.06</b>	<b>0.00</b>	<b>0.00</b>
<b>Other</b>	<b>3.93</b>	<b>3.40</b>	<b>0.10</b>
<b>Total</b>	<b>533.43</b>	<b>366.59</b>	<b>4.55</b>



# Nonlocal Expenditures per Person-trip by User Type

- ❖ **PPDU**- \$ 31 total → \$ 17 in local area
- ❖ **PPON**- \$ 120 total → \$ 82 in local area
- ❖ **NPDU**- \$ VCT share → \$ 11 in local area
- ❖ **NPON**- \$ VCT share → \$ 4 in local area

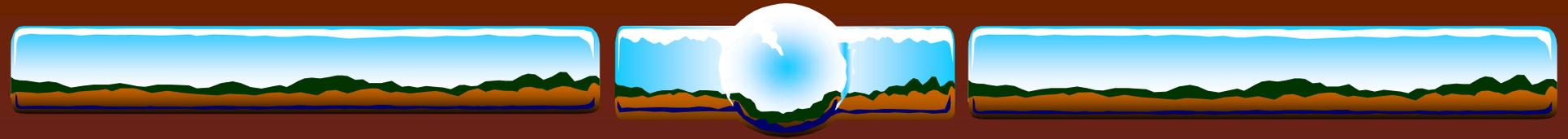
\*These numbers have been trimmed for outliers



# Creeper Impacts

**Economic Impacts Per 1,000 Person Trips of VCT Use in Grayson & Washington Counties, VA, 2003 dollars**

<b>Economic Impact Indicators</b>	<b>Economic Impacts Per 1,000 Person Trips</b>			
	<b>Primary Day Use</b>	<b>Primary Overnight</b>	<b>Non Prim Day Use</b>	<b>Non Prim Overnight</b>
<b>Output</b>	<b>\$23,606</b>	<b>\$114,398</b>	<b>\$14,968</b>	<b>\$6,411</b>
<b>Employment</b>	<b>0.4</b>	<b>2.1</b>	<b>0.2</b>	<b>0.1</b>
<b>Total Income</b>	<b>\$10,270</b>	<b>\$45,944</b>	<b>\$6,014</b>	<b>\$3,200</b>

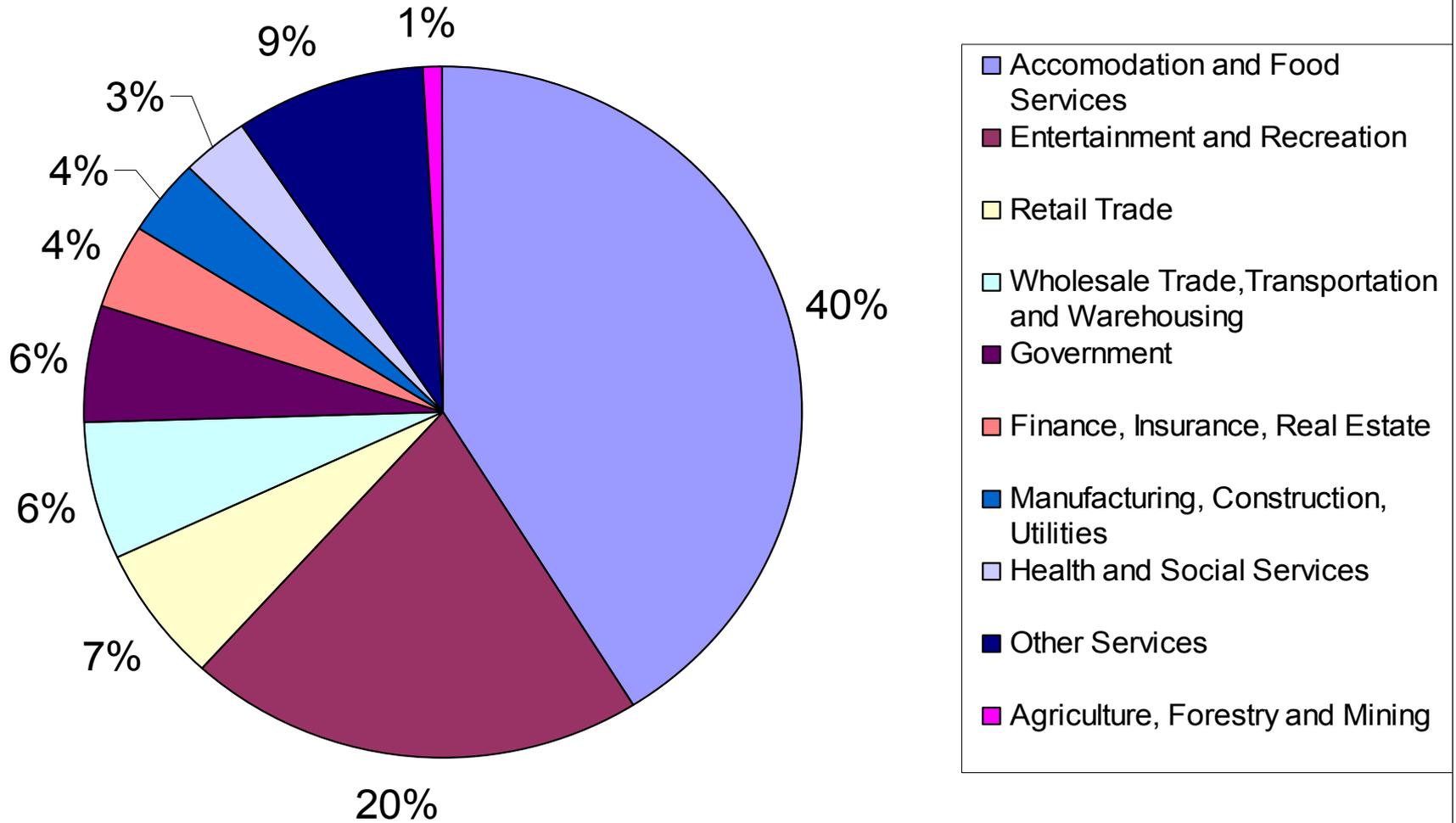


# Nonlocal Economic Impacts

Combined Local Economic Impacts of Nonlocal VCT Use  
Grayson & Washington Counties, VA, 2003 dollars

<b>Economic Impact Indicators</b>	<b>Total Economic Impact</b>
<b>Output</b>	<b>\$1,600,000</b>
<b>Employment</b>	<b>30</b>
<b>Total Income</b>	<b>\$670,000</b>

# Distribution of Creeper Output Impacts





# VCT Users





# VCT User Demographics

	<u>Locals</u>	<u>Nonlocals</u>
Household size	2.6	2.9
College education %	60	66
Respondent age	47	47
Full-time employ %	58	77
House Income \$1000	59	80.5
Gender % Male	61	65
Race % White	99	99



# VCT Market

## Nonlocal travel one-way miles

**Ave**                      **260.5**

**Max**                      **2747**

## Nonlocal nights per trip

**Ave**                      **2.95**

**Max**                      **73**

## Nonlocal spending party

**Ave**                      **3.79**

**Max**                      **45**



# Primary Activities

## Locals    %

**Walking**    **52**

**Biking**    **26**

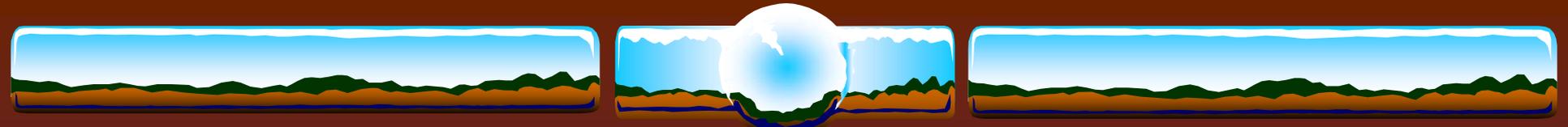
**Jogging**    **13**

## Nonlocals    %

**Biking**    **74**

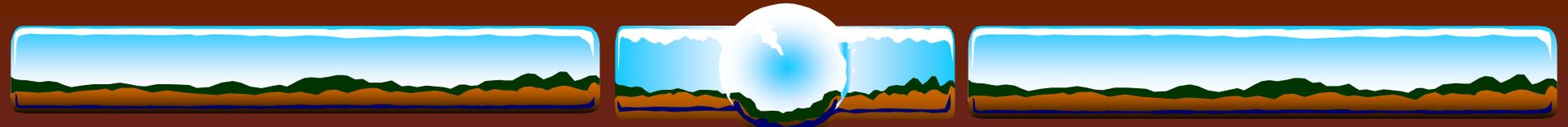
**Walking**    **20**

**Jogging**    **2**



# On Trail Time & Distance

	<u>Locals</u>	<u>Nonlocals</u>
Time on Trail	80 min	176 min
Distance Traveled	5.5 mi	16.7 mi



# Group Size & Trips

	<u>Locals</u>	<u>Nonlocals</u>
<b>Group Size</b>		
ave	1.9	3.6
max	30	45
<b>Trips per year</b>		
ave	141	6
max	606	300



# Trail Benefits

	<u>Locals</u>	<u>Nonlocals</u>
<b>Health</b>	<b>3.87</b>	<b>3.64</b>
<b>Nature</b>	<b>3.82</b>	<b>3.70</b>
<b>Pets</b>	<b>2.31</b>	<b>2.00</b>
<b>Community</b>	<b>3.41</b>	<b>2.94</b>

High=4, Med=3, Low=2, None=1



# Trail Attributes for Locals

	<u>Importance</u>	<u>Condition</u>
<b>Safety</b>	3.75	3.42
<b>Scenery</b>	3.83	3.67
<b>Surface</b>	3.59	3.19
<b>Structure</b>	3.72	3.40

High=4, Med=3, Low=2, None=1



# Trail Attributes for Nonlocals

	<u>Importance</u>	<u>Condition</u>
<b>Safety</b>	<b>3.79</b>	<b>3.54</b>
<b>Scenery</b>	<b>3.86</b>	<b>3.76</b>
<b>Surface</b>	<b>3.51</b>	<b>3.44</b>
<b>Structure</b>	<b>3.55</b>	<b>3.60</b>

High=4, Med=3, Low=2, None=1



# Policy Questions

	<u>Locals</u>	<u>Nonlocals</u>
Maintenance attract visitors	99	99
User fee for maintenance	32	60
Local taxes for maintenance	89	71
Volunteers for maintenance	61	62
Crowding affects trips neg.	40	33
Paving trail	6.5	13

percent 'strongly agree' or 'agree'



# Management Issues

	<u>Locals</u>		<u>Nonlocals</u>	
	All	Disabled	All	Disabled
Electric golf carts	3	44	<1	14
Gas golf carts	1	12	<1	12
Motorized bicycles	3	12	2	9
Horse carts	11	9	12	10
ATV's	1	2	1	2

percent 'strongly agree' or 'agree' type of use  
is allowed on VCT

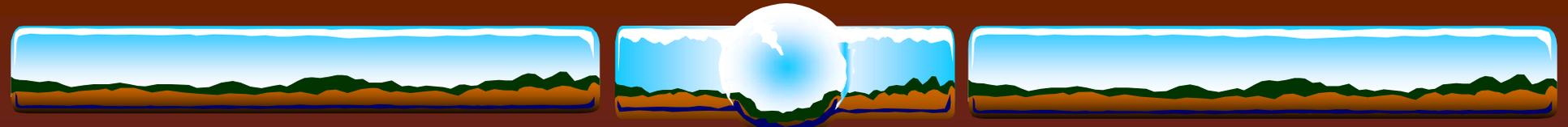
# Some Conclusions





## Trail Use

- ❖ **Over 130,000 visits annually**
- ❖ **Over 50,000 nonlocal person-trips**
- ❖ **Majority of nonlocals are day users**
- ❖ **Primary purpose over nighters**
  - ❖ **15% of primary purpose nonlocal trips**
  - ❖ **11% of all nonlocal trips**



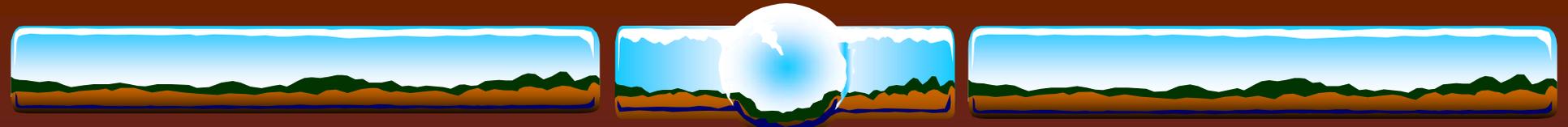
# Economic Impact of Nonlocal Spending

## ❖ Nonlocal spending supports

- ❖ \$1.6 million local economic output
- ❖ 30 local jobs
- ❖ \$670 thousand local income
- ❖ 40% to accommodation & food service sector
- ❖ 20% to recreation & entertainment sector

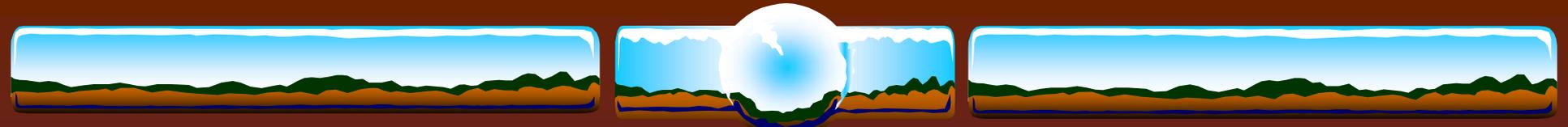
## ❖ To increase economic impacts

- ❖ Increase share of primary purpose overnights
- ❖ Induce them to stay another night



# Trail Users

- ❖ **Predominantly white**
- ❖ **Majority male**
- ❖ **Above average household incomes**
- ❖ **Average 1+ to 3 hours per VCT visit**
- ❖ **Health & nature most important benefits**
- ❖ **Safety & scenery most important attributes**
- ❖ **Surface & safety biggest impt-cond difference**



# Trail Users

- ❖ **Maintenance important to attract visitors**
- ❖ **Locals favor taxes to fund maintenance**
- ❖ **Locals don't support user fees**
- ❖ **Nonlocals support taxes, fees, volunteers**
- ❖ **Alternative uses of VCT have very low support**
- ❖ **But... Locals support elect golf carts for disabled**
- ❖ **Don't even think about paving the VCT**



**Stay tuned for the estimated economic benefits of taking a trip to the VCT**

