

Improving Performance through Evaluation

# **COMMUTER ASSISTANCE PROGRAM**

# PURPOSE

---

- ✘ Roll-up commuter assistance program results to the state level
- ✘ Reduce the cost of evaluation to CAPs and Districts by having Central Office fund
- ✘ Focus on improving performance

# METHODOLOGY

---

- ✘ Literature review
  - + National and international
- ✘ Interviews with FDOT and CAP personnel
- ✘ Selection of key measures
- ✘ Prepare sampling plan
- ✘ Carry out plan (Phase 2)

# CURRENT PERFORMANCE MEASURES

- ✘ Number of commuters requesting assistance
- ✘ Number of commuters switching modes
- ✘ Number of vans in service (where applicable)
- ✘ Number of vehicle trips (VT) eliminated
- ✘ Number of vehicle miles of travel (VMT) eliminated
- ✘ Employer contacts
- ✘ Parking spots saved/parking needs reduced
- ✘ Commuter costs saved
- ✘ Major accomplishments

# TAKEAWAYS FROM INTERVIEWS

- ✘ Take into account difference between districts and weight performance measures appropriately.
  - + This could mean that some districts emphasize passenger trips provided (mobility) over vehicle trips reduced (congestion)
- ✘ Focus on quantitative performance measures including cost/benefit information to better communicate the value of TDM
- ✘ Maximize use of software and technology to automate quantitative performance measure calculation when possible
- ✘ Provide qualitative evaluation of specific focal areas to improve performance
- ✘ Be accompanied with training and technical assistance for using the results for developing annual and strategic, long range work plans
- ✘ FDOT should support the development of standard TDM performance measures (e.g., definitions, data collection procedures, etc.) at the national level to allow to benchmark performance with peers

# TDM PERFORMANCE MEASURES AND EVALUATION FRAMEWORKS

# EXAMPLES OF MEASURES OF EFFECTIVENESS

- × Awareness
- × Participation
- × Utilization
- × Satisfaction
- × Mode Split
- × Mode Shift
- × Composite Measures (e.g., alternate mode usage, average vehicle occupancy)
- × Vehicle trip reduction
- × Vehicle miles of travel reduced
- × Emission reduction
- × Energy reduction
- × Cost per unit of reduction
- × Commuter cost savings

# CANADA'S RECOMMENDED FRAMEWORK

Assessment Levels		Level	Measure	Evaluation Method	Before Study	After Study
A	Awareness and Attitude	Soft	Awareness of problems	Regional transportation survey	*	*
			Awareness of solutions			
			Attitude toward problems	Regional employer survey		
			Attitude toward solutions			
P	Participation	Medium	Website activity	Regional transportation survey		*
			Info phone line use			
			Employer/commuter requests	Regional employer survey		
			Rideshare database			
			Incentive program participation	Employer surveys of employees		
			Discount transit passes sold			
			Workplace participation			
U	Utilization	Medium	Carpool utilization	Regional rideshare survey	*	*
			Carpool utilization			
			Carpool utilization	Employer survey of employee travel		
			Bike/walk			
			Teleworking	Car-/vanpool rider survey		
			Compressed work weeks	Discount transit pass user survey		
E	Emissions Reduction	Hard	Vehicle miles traveled	Regional travel survey	*	*
			Emissions reduction	Employer surveys of employees		
			Travel time			

# ATLANTA TDM FRAMEWORK

---

- ✘ Increase Awareness
  - + Inform commuters and other target populations of problems related to driving alone, solutions to the problems (alternative modes), and resources and services available to assist in making travel choices.
- ✘ Change Attitudes
  - + Encourage a sense of personal responsibility toward solving problems, promote more positive attitudes about alternative modes, and create a desire to consider/try options.
- ✘ Encourage Program Participation/Facilitate Arrangements
  - + Encourage commuters to participate in activities and services that will facilitate their use of alternative modes (seek information and participate in the programs and services supporting the Atlanta TDM Framework).
- ✘ Ensure Satisfaction
  - + Ensure that commuters, employers and property managers who programs and services supporting the Atlanta TDM Framework are satisfied with those services and that needed improvements are identified and implemented.
- ✘ Encourage Alternative Mode Utilization/Maximize Alternative Mode Use
  - + Encourage commuters to try alternative modes and to shift to alternative modes on a continued, permanent basis.
- ✘ Generate Travel and Emission Impacts
  - + Reduce vehicle trips, VMT, and emissions in a cost-effective manner.

# NATIONAL TRANSPORTATION OPERATIONS COALITION (NTOC) CONGESTION MEASURES

Measure	Definition	Sample Units of Measurement
Customer satisfaction	A qualitative measure of customers opinions related to the roadway management and operations services provided in a specified region	Very satisfied, Somewhat satisfied, Neutral, Somewhat dissatisfied, Very dissatisfied, Don't know/not applicable
Extent of congestion - spatial	Miles of roadway within a predefined area and time period for which average travel times are 30% longer than unconstrained travel times	Lane miles of congested conditions of percent of congested roadways. Calculated as a ratio =100% x (Congested lane miles)/(total lane miles)
Extent of congestion - temporal	The time duration during which more than 20% of the roadway sections in a predefined area are congested as defined by the extent of congestion	Hours of congestion
Incident duration	The time elapsed from the notification of an incident until evidence of the incident has been removed from the incident scene	Median minutes per incident
Non-recurring delay	Vehicle delays in excess of recurring delay for the current time-of-day, day-of-week, and day type	Vehicle-hours
Recurring delay	Vehicle delays that are repeatable for the current time-of-day, day-of-week and day-type	Vehicle hours

# NTOC CONGESTION MEASURES

Measure	Definition	Sample Units of Measurement
Speed	The average speed of vehicles measured in a single lane for a single direction of flow at a specific location on the roadway	Miles per hour, feet per second or km per hour
Throughput - person	Number of persons including vehicle occupants, pedestrians, and bicyclists traversing a roadway section in one direction per unit time. May also be the number of persons traversing a screen line in one direction per unit time	Persons per hour
Throughput - vehicle	Number of vehicles traversing a roadway section in one direction per unit time. May also be the number of vehicles traversing a screen line in one direction per unit time	Vehicles per hour
Travel time-link	The average time required to traverse a section of roadway in a single direction	Minutes per trip
Travel time – reliability (buffer time)	The buffer time is the additional time added to a trip (measured as defined by travel time-trip) to ensure that travelers making the trip will arrive at their destination at, or before, the intended time 95% of the time	Minutes. This measure may also be expressed as a percent of total trip time or as an index
Travel time - trip	The average time required to travel from an origin to a destination on a trip that might include multiple modes of travel	Minutes per trip

# COMPARATIVE ASSESSMENT AND FINDINGS

- ✘ Focusing the evaluation on measuring fulfillment of stated objectives, be they quantitative or qualitative.
- ✘ Taking steps to assure the methodologies are rigorous and transparent.
- ✘ Taking into consideration “output” and “outcome” performance measures, to assess the offer of commuter services and then relate the causal impact of those services on commute travel behavior.
- ✘ Use a consistent approach to evaluating program elements and means to avoid double counting.
- ✘ Make an attempt to estimate all relevant measurement factors with recent, local data, rather than relying on national defaults or case studies
- ✘ Include relevant behaviors that can affect program outcomes.
- ✘ Recognize the importance of customer retention to overall growth.
- ✘ Plan for changes in data availability, evaluation method, and advances in tools.
- ✘ Understand the limitations of the evaluation and the trade-offs required between precision and costs.

# PRINCIPLES

---

- ✘ A successful performance measurement system
  - + comprises a balanced set of a limited few vital measures,
  - + produces timely and useful reports at a reasonable cost,
  - + displays and makes readily available information that is shared, understood, and used by an organization, and
  - + supports the organization's values and the relationship the organization has with customers, suppliers, and stakeholders.

# OUTPUTS AND OUTCOMES

---

- ✘ **Output** means a CAP activity and/or associated product or service related to progress toward the CAP goals and objectives
  - + Number of commuters requesting assistance, employer contacts and number of vans in service
- ✘ **Outcome** means the result, effect, or consequence that will occur from carrying out a CAP program or activity that is related to the CAP goals and objectives
  - + vehicle trips eliminated and emissions reduced
- ✘ When aggregated, outputs can create the desired outcomes

# OVERALL STRUCTURE

---

- ✘ Outputs

  - + Reach-Acquisition-Conversion-Retention-Loyalty

- ✘ Outcomes

# FLORIDA PERFORMANCE MEASURES – OUTPUTS

## REACH

Performance Measure	What It Will Be Used to Measure	Collected by
<b>REACH</b>		
Share of commuters aware of brand identity (brand to be determined by CAP to be CAP name or call to action (phone/web))	Commuter services awareness	General Public survey
Profiles of TDM elements for each employer-client (See Table 9 for data needs)	Employer outreach effectiveness (quantity/market penetration)  Data will be used by CUTR to estimate cost/benefit of employer outreach program element using TRIMMS	CAP
Number of employers with telework programs and total number of employee-trips reduced by teleworking	Employer outreach effectiveness (quality)	CAP
Number of employers with compressed work week and total number of employee-days not traveling to work due to CWW for each of these types of CWW programs: 4/40, 9/80 and other	Employer outreach effectiveness (quality)	CAP

# FLORIDA PM – OUTPUTS – ACQUISITION

<b>Performance Measure</b>	<b>What It Will Be Used to Measure</b>	<b>Collected by</b>
<b>ACQUISITION</b>		
Number of individuals requesting assistance	Interest in commuter services	CAP logs
Number of total requests for assistance (i.e., capture repeat customers)	Level of effort in maintaining in commuter services	CAP

# FLORIDA PM – OUTPUTS – CONVERSION

Performance Measure	What It Will Be Used to Measure	Collected by
<b>CONVERSION</b>		
Percent of drive alone commuters shifting to a commute alternative	Effectiveness of commuter services in changing travel behavior	Database (DB) survey and General Public (GP) survey
Percent of commuters who currently use a commute alternative shifting to another alternative mode (e.g., from carpool to transit)	Effectiveness of commuter services in increasing higher occupancy customers	DB survey and GP survey
Percent of commuters who currently use a commute alternative increasing their weekly frequency of commute alternative use	Effectiveness of commuter services in increasing frequency of use	DB survey and GP survey
Number of vanpool passenger trips (directly operated and purchased transportation)	Vanpool program effectiveness	NTD report
Number of vans operated in maximum service	Vanpool program effectiveness	NTD report
Actions to incorporate TDM into the land development process (see Incorporating TDM Into the Land Development)	Establishing supportive environment for converting commuters	Specific actions TBD by District and CAP

# FLORIDA PM – OUTPUTS – RETENTION AND LOYALTY

Performance Measure	What It Will Be Used to Measure	Collected by
<b>RETENTION</b>		
Avoidable customer turnover	Measure of program growth	CAP
Percent of non-SOV commuters who revert to SOV	Effectiveness of commuter services in retaining customers	Database survey and General Public survey
<b>LOYALTY</b>		
Overall customer satisfaction (with emphasis on quality, willingness to use services again and willingness to refer a friend)	Customer satisfaction	Database survey

# FLORIDA PM – OUTCOMES

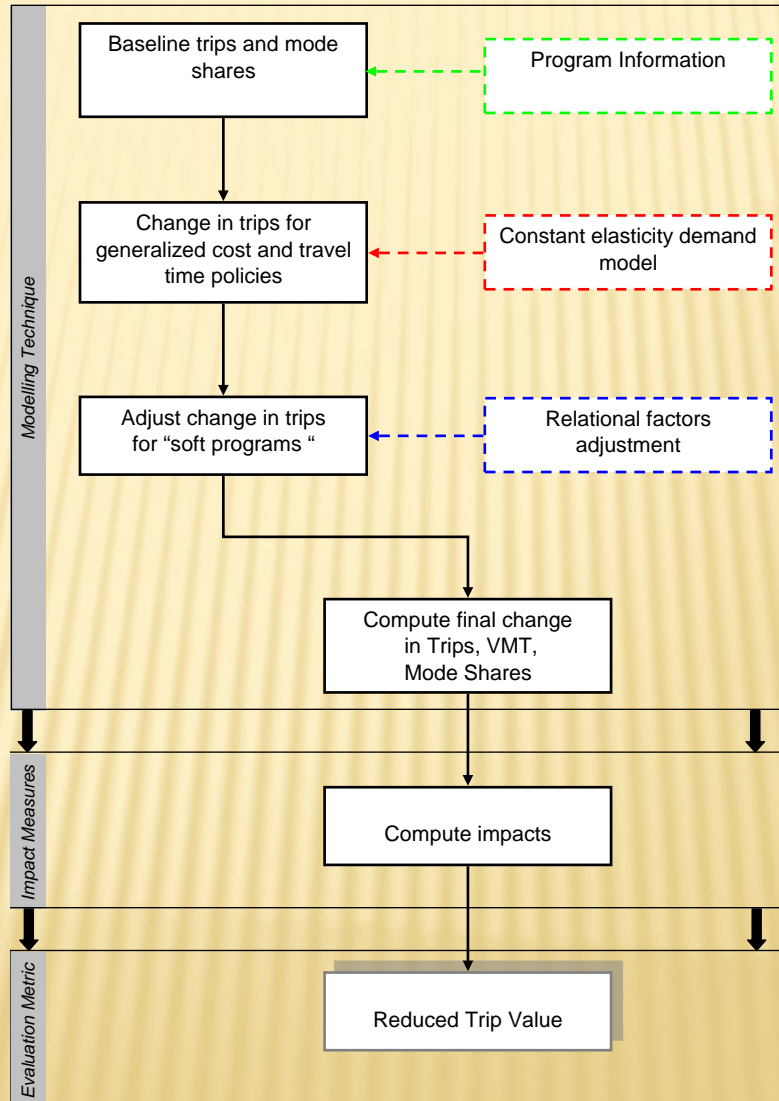
<b>Performance Measure</b>	<b>What It Will Be Used to Measure</b>	<b>Collected by</b>
Vehicle trip rate per 100 commuters (peak periods and total)	Effectiveness of reducing congestion by reducing vehicles on the road	Database survey
Vehicle miles of travel (peak periods and total) per person		Database survey
Total and per-person unlinked passenger trips	Accessibility	Database survey and NTD
Total and per-person passenger miles of travel	Accessibility	Database survey and NTD
Customer satisfaction	Overall satisfaction with the CAP programs and products	Database survey
Emissions reduced	Environmental impacts	Database survey
Energy reduced	Energy impacts	Database survey
Total and per-person commuter savings	Commuter impacts	Database survey
Duration of non-SOV mode	Effectiveness of retention efforts and impact on life cycle costs	Database survey
Benefit/Cost Ratio	Total costs and benefits from the employer outreach program	TRIMMS model
Cost-Effectiveness	Outcomes by cost over the useful life of the program	

Measuring Cost and Benefits of the TDM Program

**TRIMMS**

---

# TRIMMS COST BENEFIT APPROACH



# COSTS

<b>Costs</b>	<b>Description</b>	<b>Type</b>
Vehicle Ownership	Vehicle purchase, insurance and other charges	Internal-Fixed
Vehicle Operation	Maintenance and repair costs	Internal-Variable
Travel Time	Value of travel time based on prevailing wage rate	Internal-Variable
Internal Crash	Direct user property damage, personal injury, death	Internal-Variable
External Crash	Property damage, personal injury, death imposed on others	External
Internal Parking	Average car parking cost	Internal-Fixed
External Parking	Land use, capital costs	External
Congestion	Incremental travel time delay and increased fuel consumption	External
Air Pollution	Cost of major pollutants: hydrocarbons (VOC), carbon monoxide (CO) and nitrogen oxides (NO <sub>x</sub> )	External
Other Pollution	Includes noise, water and waste (vehicle parts disposal)	External
Land Use	Opportunity cost of land devoted to roads	External
Other Externalities	Includes costs related to barrier effects, equity, diversity, and other resource externalities	External

# MODEL INTERFACE

**1 Analysis Year** 2006

**2 Description** Transit Pricing Subsidy

Agency	My Agency
Analyst	Sisinnio Concas
Area Type	Urban

**3 Program Details**

Total Cost	\$ 34,000
Program Duration (Years)	3
Discount Rate	6.0%

**4 Employment Information**

Full Time Employees	3,000
Part-time Employees	3,000

**5 Current mode share (%)**

Auto-Drive Alone	78.3%
Auto-Rideshare	12.1%
Vanpool	0.5%
Public Transport	4.9%
Cycling	0.4%
Walking	3.0%
Other	0.8%

**6 Trip Length (miles)**

Auto-Drive Alone	11.85
Auto-Rideshare	12.21
Vanpool	20.40
Public Transport	11.42
Cycling	2.90
Walking	0.90
Other	11.42



Financial Incentives    Modify Model Parameters

Travel Time Improvements    Toggle Help

**Instructions**

- 1) Enter information following steps 1 through 9.
- 2) Select the "Financial Incentives" or "Travel Time Improvements" buttons to move through sheets to conduct the analysis.
- 3) If you wish to modify the default model parameters, select the "Modify Parameters" button.

# MODEL OUTPUT

	A	B	C	D	E	F	G	H	I	J	K
1											
2											
3	<b>ANALYSIS INFORMATION</b>						<b>POLICY EVALUATED</b>				
4								<input type="checkbox"/>			
5	Description	Transit Pricing Subsidy									
6	Performing Agency	My Agency									
7	Analyst	Sisinnio Concas									
8	Area Name										
9	Total Employment	6,000									
10	Program Total Cost	\$ 34,000									
11											
12	<b>MODE SHARE IMPACTS</b>						<b>TRAVEL IMPACTS</b>				
13											
14	<b>Mode</b>	<b>Baseline</b>	<b>Final</b>	<b>% Change</b>				<b>Unit</b>	<b>Peak</b>	<b>Off-Peak</b>	<b>Total</b>
15	Auto-Drive Alone	78.3%	78.2%	-0.1%				Baseline Trips	6,136	2,045	8,181
16	Auto-Rideshare	12.1%	12.1%	-0.0%				Final Trips	6,106	2,035	8,141
17	Vanpool	0.5%	0.5%	-0.0%				Trip Reduction	30	10	40
18	Public Transport	4.9%	5.0%	+0.1%				% Trip Reduction	0.5%	0.5%	0.5%
19	Cycling	0.4%	0.4%	+0.0%							
20	Walking	3.0%	3.0%	+0.0%				Baseline VMT	73,291	24,430	97,722
21	Other	0.8%	0.8%	+0.0%				Final VMT	72,932	24,311	97,242
22	Total	100.0%	100.0%	-				VMT Reduction	360	120	480
23								% VMT Reduction	0.5%	0.5%	0.5%
24											
25											
26	<b>VALUE OF TRIP REMOVED</b>						<b>Model Reset</b>		<b>Back to Introduction</b>		
27											
28		<b>Peak</b>	<b>Off-Peak</b>								
29	Per Trip--Annual Benefits	\$ 931	\$ 343								
30	Per Trip--Annualized Cost	\$ 490	\$ 1,471								
31	Per Trip--Net Value	\$ 440	\$ (1,129)								
32	Per Trip--Benefit to Cost Ratio	1.9	0.2								
33											

Model Reset

Back to Introduction

Chart Mode Share Impact

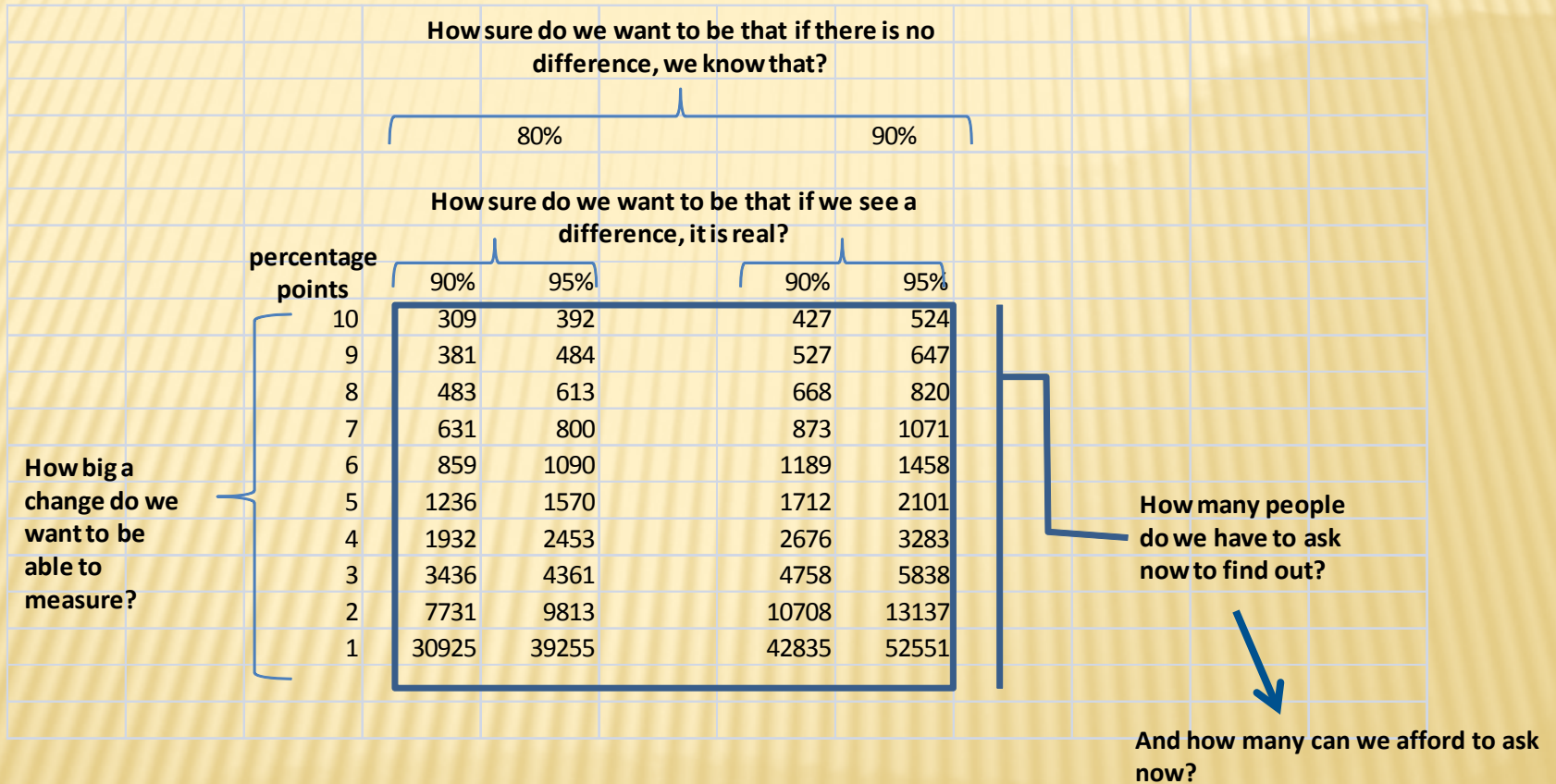
Chart VMT Impacts

# WHAT DO WE WANT TO BE ABLE TO MEASURE?

- ✘ For the upcoming evaluation
  - + Outputs
  - + Outcomes
- ✘ In future evaluations
  - + Outputs and *changes* in outputs
  - + Outcomes and *changes* in outcomes
- ✘ We want to do this for each program
- ✘ We need to lay groundwork in the upcoming evaluation so we can measure future changes

# SURVEY DESIGN CONSIDERATIONS

Looking ahead to future evaluations . . .



# OTHER CONSIDERATIONS

---

- ✘ The number we need to ask varies depending on the type of change we want to measure
  - + % of database using alternative modes is easier than average vehicle trips per 100 employees
  - + VMT per employee is much harder to measure than either
    - ✘ Blame it on “extreme commuters” (but we DO want you to serve them)

# EVALUATION PLAN

---

- ✘ Biennial evaluation cycle
  - + Survey approximately 375 database registrants per program (all if registration is less)
  - + Survey approximately 310 households among the general population served by each program
  - + These are the numbers we want answers from
- ✘ Collect and begin analysis this fiscal year
- ✘ Complete analysis, report, and provide feedback/advice to programs next fiscal year (by June 2010)
- ✘ Repeat in following biennium to measure changes

# NEXT STEPS

---

- ✘ Finalize scope of work and cost of surveying
- ✘ Review and revise past survey instruments
- ✘ Contract for surveying
- ✘ Proceed with surveys
- ✘ Concurrently, work with programs to begin acquiring data about what employers are doing

Ed Hillsman, PhD  
Senior Research Associate, CUTR  
hillsman@cutr.usf.edu  
813.974.2977

# CONTACT INFORMATION

---