



**RUTGERS**

# **Developing Sustainable Models of Dementia Behavioral Interventions**

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**DISCLOSURE:** This work was previously presented at the International Association for Geriatrics and Gerontology (IAGG) San Francisco, 2017

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## What is COPE-CT?

- Care of Patients with Dementia in Connecticut (COPE-CT) is a 12-month in-home supportive behavioral intervention aimed at delaying nursing home admission through a set of services available as an add-on to the existing Connecticut Medicaid program
- Consists of occupational therapists and nurses working with the PwD and CG in the PwD's home over 4 months to increase the PwD's physical ability as well as teach the CG skills to manage the PwD's dementia symptoms
- COPE-CT RCT aims to determine whether adding these services improves the QOL of the PwD and the CG, and to evaluate their confidence in using these strategies
  - RCT includes a cost-benefit analysis from the Connecticut Medicaid (payer) perspective to determine if COPE-CT yields a net financial benefit to the Connecticut Medicaid program

# COPE –CT Cost Study: Part of a Larger Body of Rutgers HOPE Collaborative Work

<b>Dementia Behavioral Intervention</b>	<b>Study Type</b>	<b>Cost Analysis Type</b>	<b>Location(s)</b>	<b>Lead Behavioral Scientist(s)</b>
Tailored Activity Program (TAP)	Pilot	Post Hoc Intervention Costs	Philadelphia	Gitlin
Customized Activity Program (CAP)	Efficacy	Prospective Cost Effectiveness	Baltimore Sydney	Gitlin Clemson
Caring for Older Persons in their Environment (COPE)	Translational	Prospective Cost Benefit	Connecticut (statewide)	Fortinsky
Maximizing Independence (MInd) at Home	Efficacy	Prospective Cost Benefit	Baltimore	Samus
Adult Day Services Plus (ADS+)	Effectiveness	Prospective Cost Effectiveness	US (nationwide)	Gaugler and Gitlin (Co-PIs)

# What is “net financial benefit”?

- A measure in **cost benefit analysis**
- Net benefit = (b – c)
  - b is the total financial benefits of the treatment, in \$ vs. comparison group (incremental)
  - c is the total cost of the treatment, in \$, vs. comparison group (incremental)
  - Implement the treatment if net benefit > 0\$ AND purchaser is willing to pay (WTP) for it

$$\text{Net Benefit}_t = \sum_{t=1}^n \frac{b_i(t) - c_i(t)}{(1+r)^{t-1}}$$

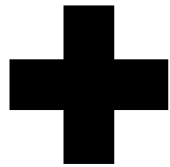
Where  $b_i(t)$  = benefits (in \$US) derived in COPE study year  $t$   
 $c_i(t)$  = costs (in \$US) during COPE study year  $t$   
 $1/(1+r)$  = discount factor at annual interest rate  $r$   
 $n$  = lifetime of the study

- Calculating b and c typically involves summation of many cost variables in both the treatment and control groups
- WTP is measured separately using contingent valuation method

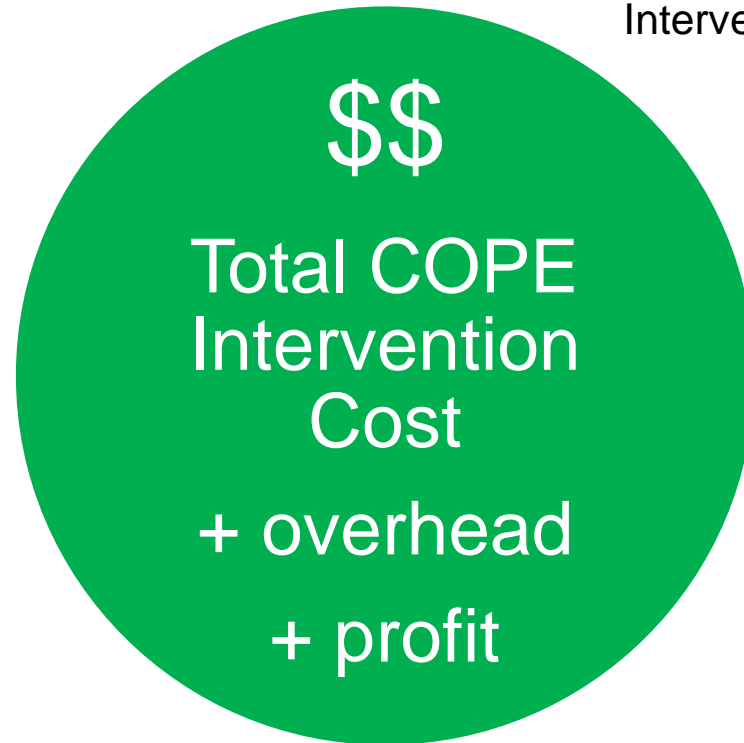
## OBJECTIVES OF PROJECT EXAMPLE

1. Share COPE intervention costs for occupational therapist (OT) and nurse (RN) components
2. Report willingness to pay (WTP) for a dementia support program at baseline
3. Explain linkage between intervention costs and WTP as components of a sustainable financing strategy

Objective 2:  
WTP



*Payers*



*Provider*

Objective 1:  
COPE  
Intervention Cost

# METHODS



# 1. COPE INTERVENTION COSTS

- Costs considered include:
  - One RN initial in-home assessment and follow-up telephone call
  - Up to 10 in-home OT visits per participant in the intervention arm
- Data sources:
  - RN and OT time records
  - Mileage reimbursement records
- Assumptions:
  - RN wage rate \$37.18/hr<sup>1</sup>
  - OT wage rate \$41.66/hr<sup>1</sup>
  - Fringe benefits rate 30.2%<sup>2</sup>
  - Travel speed assumed to be 50 miles per hour
  - Mileage reimbursement \$0.575/mile<sup>3</sup>
  - Costs are \$US 2015

<sup>1</sup> May 2015 State Occupational Employment and Wage Estimates, Connecticut. Bureau of Labor Statistics website. US Department of Labor website. [https://www.bls.gov/oes/2015/may/oes\\_ct.htm#29-0000](https://www.bls.gov/oes/2015/may/oes_ct.htm#29-0000). Accessed June 05, 2017.

<sup>2</sup> Employer Costs for Employee Compensation – December 2015. Bureau of Labor Statistics. US Department of Labor website. [https://www.bls.gov/news.release/archives/ecec\\_03102016.pdf](https://www.bls.gov/news.release/archives/ecec_03102016.pdf). Accessed June 08, 2017.

<sup>3</sup> Revenue Procedure Notice 2014-79. Administrative, Procedural, and Miscellaneous. Internal Revenue Service website. <https://www.irs.gov/pub/irs-drop/n-14-79.pdf>. Updated December 29, 2014. Accessed June 08, 2017.

## 2. WILLINGNESS TO PAY

- WTP was asked of caregiver using a contingent valuation method
- WTP scenario was developed with investigator input
- Baseline sample
  - Date of data cut: 06/22/2017
  - Available sample: 220 caregivers at baseline
- Data analyzed for the full sample as well as by Connecticut Home Care Program for the Elderly (CHCPE) category

- \$0/session
- \$25/session
- \$50/session
- \$75/session
- \$100/session
- \$125/session
- \$150/session
- \$175/session
- \$200/session
- Other price/session: \_\_\_\_\_

# RESULTS

# 1. COPE INTERVENTION COSTS

- Available sample = 85 participants
- 12 interventionists (3 RN, 9 OT)
- Overall results (comprising RN and OT visits):

	Mean	SD	Min	Max	Total
Total visit time (hours)	11.02	5.81	0.58	24.92	936.93
Total visit cost	\$590.27	\$314.58	\$28.24	\$1,338.87	\$50,173.14
Total round-trip mileage	241.97	180.26	14.00	1157.60	20567.20
Total mileage cost	\$139.13	\$103.65	\$8.05	\$665.62	\$11,826.14
Total travel time (hours)	4.84	3.61	0.28	23.15	411.34
Total travel time cost	\$257.39	\$194.98	\$13.55	\$1,253.74	\$21,878.23
<b>Total intervention cost</b>	<b>\$986.79</b>	<b>\$538.77</b>	<b>\$55.71</b>	<b>\$2,530.29</b>	<b>\$83,877.51</b>

## 2. WILLINGNESS TO PAY

- Baseline WTP per session, comprising all CHCPE categories:

	n	Mean <sup>a</sup>	SD	Min	Max
<b>Baseline</b>	220	\$56.05	\$55.13	\$0	\$200

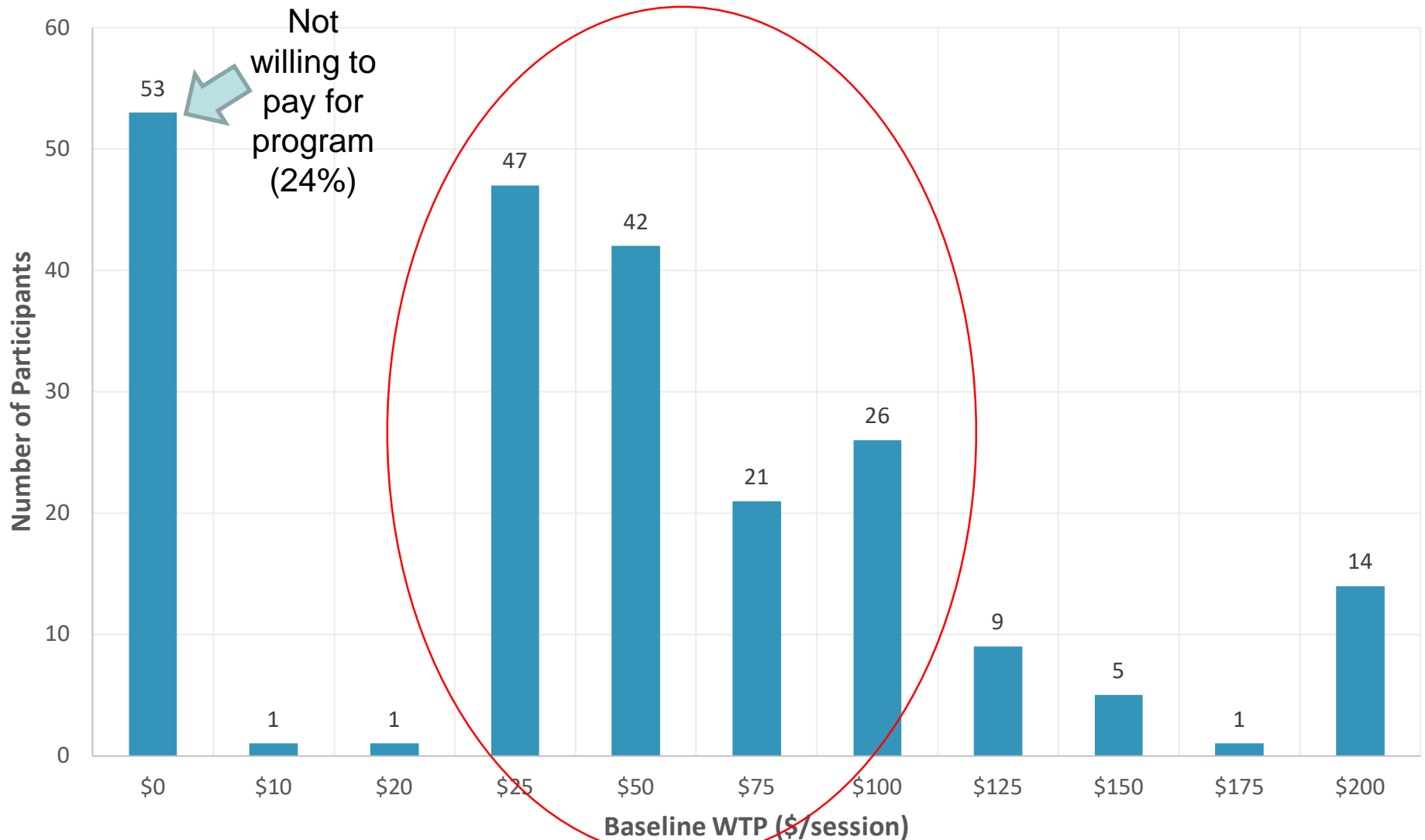
- Baseline WTP per session, by CHCPE category:

CHCPE					
Category	n	Mean <sup>b</sup>	SD	Min	Max
1	4	\$87.50	\$25.00	\$50	\$100
2	66	\$57.58	\$56.50	\$0	\$200
3	150	\$54.53	\$55.07	\$0	\$200

Pairwise differences in means not statistically significant at BL ( $p > 0.05$  for all three pairs)

## 2. WILLINGNESS TO PAY, continued

### Distribution of Baseline WTP (n=220)



# KEY LEARNINGS SO FAR

## 1. Intervention costs:

- Intervention delivery accounts for 60% of total costs
- Travel (mileage reimbursement + travel time) accounts for 40% of total costs
  - There is an opportunity to increase efficiency

## 2. WTP:

- 24% not WTP but 76% are WTP
- Mean WTP/session = \$56
- No detectable difference in WTP by CHCPE category

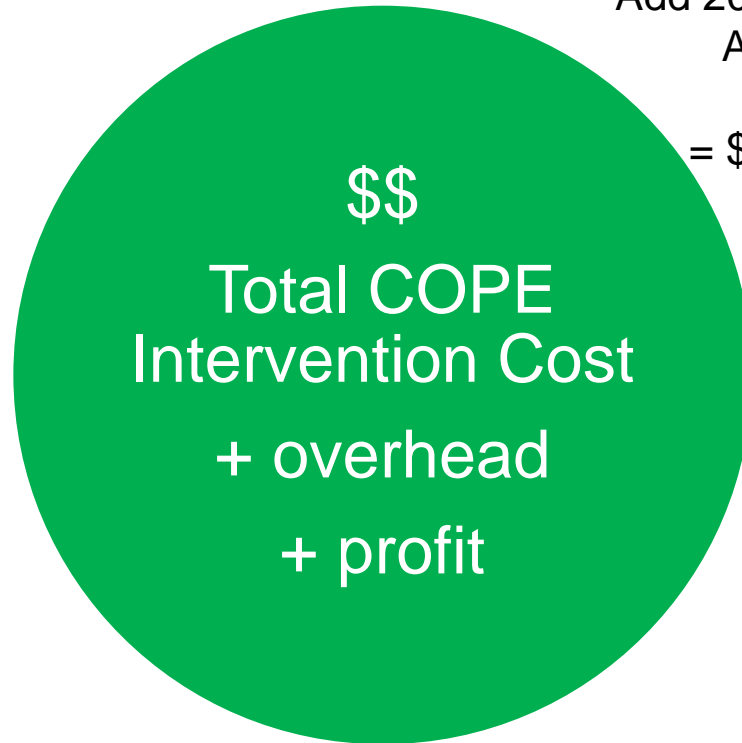
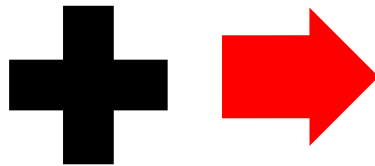


# LIMITATIONS

1. Intervention costs do not yet include:
  - Time cost of OT telephone calls
  - Telephone charges
  - Supply costs (e.g., activity supplies, documentation forms)
  - Program supervision / fidelity monitoring
2. WTP:
  - May change after receiving COPE
  - “Willingness” to pay does not necessarily equate to ability to pay or affordability
  - Group assignment was not considered in this analysis

# WE ARE STARTING TO PAINT A PICTURE...

IF WTP =  
\$56/session



IF Total COPE Intervention Cost  
= \$987/10 sessions  
= \$98/session  
Add 20% overhead  
Add 5% profit  
TOTAL  
= \$123/session

THEN other funding  
would need to be  
= \$67/session

**CAUTION:**  
**THESE NUMBERS ARE FOR**  
**ILLUSTRATION PURPOSES ONLY**

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