

---

# Economic Evaluation of NPCR

**Fran Michaud, BS, MT, CTR  
CDC**

**Maggie Cole Beebe, PhD and Diana Trebino, BA  
RTI International**

North American Association of Central Cancer Registries  
Annual Meeting

June 21, 2011 – Louisville, KY



National Center for Chronic Disease Prevention and Health Promotion  
Division of Cancer Prevention and Control



# Outline

---

- **Introduction/Background – Fran Michaud**
- **Findings: Factors Affecting Registry Operations – Diana Trebino**
- **Findings: Cost per Case – Maggie Cole Beebe**

---

# Introduction and Background

# Economic Evaluation Team

---

## ■ CDC

- Florence Tangka, PhD
- Fran Michaud, BS, MT, CTR
- Linh Duong, MPH
- Jean Ewing, MSW, MSHyg
- Renita Blake, MBA
- Donatus Ekwueme, PhD

## ■ RTI International

- Sujha Subramanian, PhD
- Maggie Cole Beebe, PhD
- Diana Trebino, BA

## Acknowledgements

---

- **CSB Program consultants**
- **Registries that hosted site visits**
- **Registries that pilot tested the CAT**
- **Registries that provided feedback and suggestions**
- **All NPCR registries for participating in the reporting and validation of Rounds 1 & 2 data**

## **Goals of Economic Analysis**

---

- **Estimate true economic costs of operating a cancer registry**
- **Evaluate the factors that may affect the efficiency of registry operations**
- **Identify costs associated with registry activities**
- **Assess cost-effectiveness of registry operations**

## **Economic Analysis of NPCR**

---

- **Initiated by CDC in 2005**
- **Conducted site visits to 4 registries**
  - **Assess feasibility of collecting cost data**
  - Data collection infrastructure
  - Types of activities performed
  - Other factors that should be assessed
- **Developed Cost Assessment Tool (CAT)**
  - Pilot-tested with registries reporting data for FY05

# Economic Analysis of NPCR

---

## ■ Three manuscripts in the Journal of Registry Management:

- Economic assessment of central cancer registry operations.
  - Part I: Methods and conceptual framework.
    - Subramanian, S., Green, J.C., Tangka, F., Weir, H., Michaud, F., & Ekwueme, D. (2007).
  - Part II: Developing and testing a cost assessment tool.
    - Subramanian, S., Tangka, F., Green, J.L., Weir, H., & Michaud, F. (2009).
  - Part III: Results from five programs.
    - Tangka, F., Subramanian, S., Cole Beebe, M.E., Trebino, D.J., & Michaud, F. (2010).



## Cost Assessment Tool (CAT)

---

- **Use web-based CAT to collect 3 years of data, including:**
  - All funding sources
  - In-kind contributions
  - Actual (not budgeted) expenditures
  - Resources allocated to specific registry activities
  - Factors affecting registry operations costs
- **We have collected 2 rounds of data**
  - Round 1 findings presented today
  - Round 2 data currently being cleaned and analyzed
  - Round 3 collection to begin in early 2012

## Methods: Analysis

---

- **Allocate expenditures to specific registry activities**
- **Identify distribution of costs**
  - Among Core and Advanced activities
  - Among individual activities
- **Calculate average cost per case**
  - Overall and for each activity

## Factors Affecting Registry Operations

---

- **Subramanian, S., Green, J.C., Tangka, F., Weir, H., Michaud, F., & Ekwueme, D. (2007).**
  - Database management software
  - Consolidation effort
  - Number of CTRs in hospital-based registries
  - Quality of facility reporting

---

# **Factors Affecting Registry Operations**

## Round 1 Data

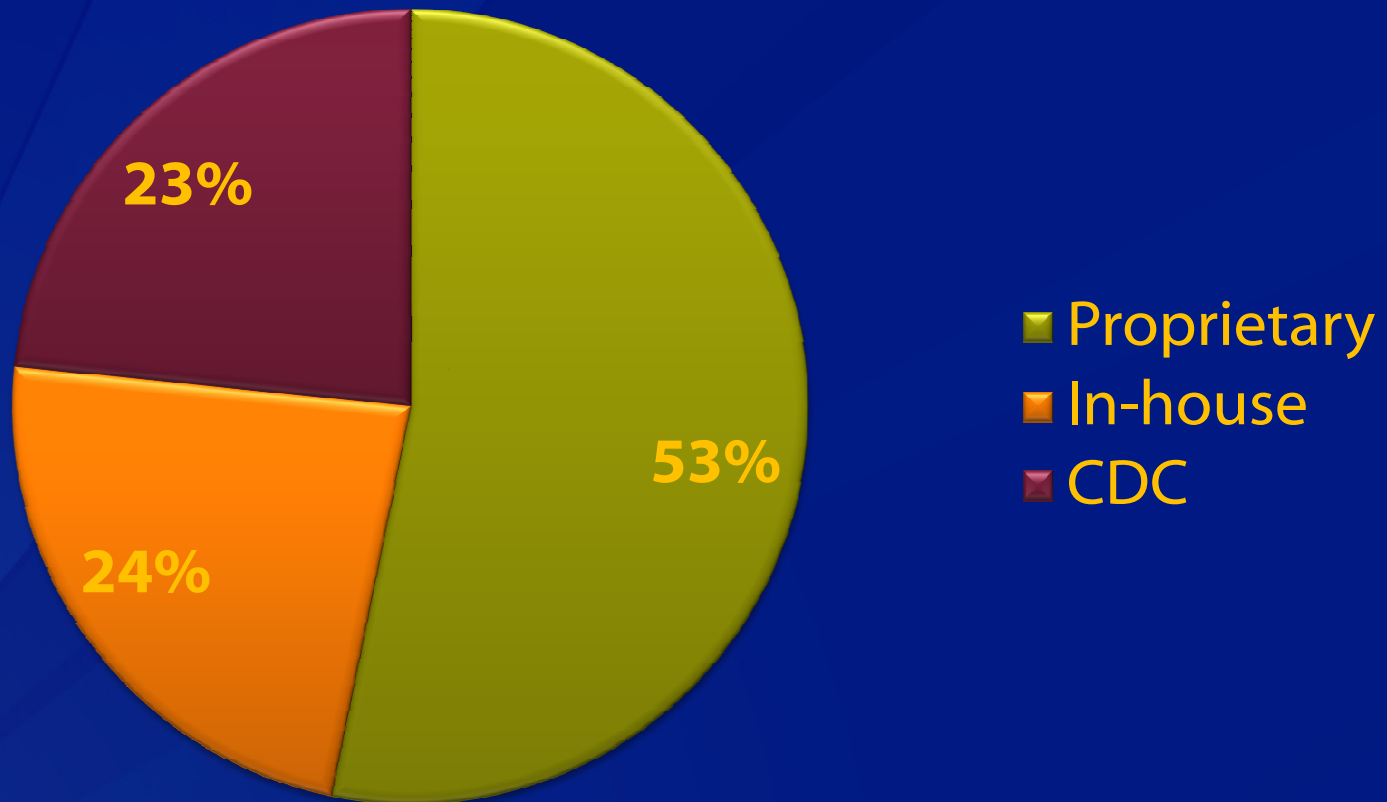
---

### ■ The findings presented here are based on:

- Cost data reported for the period June 30, 2008 to June 29, 2009
  - In-kind funding is excluded from the cost estimates
- Cases diagnosed in 2006
  - Incident cases are defined by in-state resident at time of diagnosis; unduplicated patient and tumor; invasive stage only for all cancers except bladder where in-situ cases are included
  - Other reportable cases for in-state residents

# Database Management Software

---



## Consolidation Effort

---

- **Record abstracts versus incident cases**
- **Consolidation effort is the effort required to identify an incident case from the records received**
  - $1 - (\text{incidence cases} / \text{records received})$
- **The larger the difference between records received and cases reported, the greater the consolidation effort**
  - **Higher effort = Greater resource use = Higher cost**

## Consolidation Effort

Level of Effort	Consolidation Required
Low	0–23%
Medium	24–36%
High	37–89%
Average	31%
Median	29%

\*Based on data reported by 45 registries (1 registry did not report cases diagnosed in 2006; 2 registries did not report number of records received).



## CTRs at Hospital Reporting Facilities

Range	Number of CTRs
Low	0–20
Medium	21–66
High	67–570
Average	78
Median	48

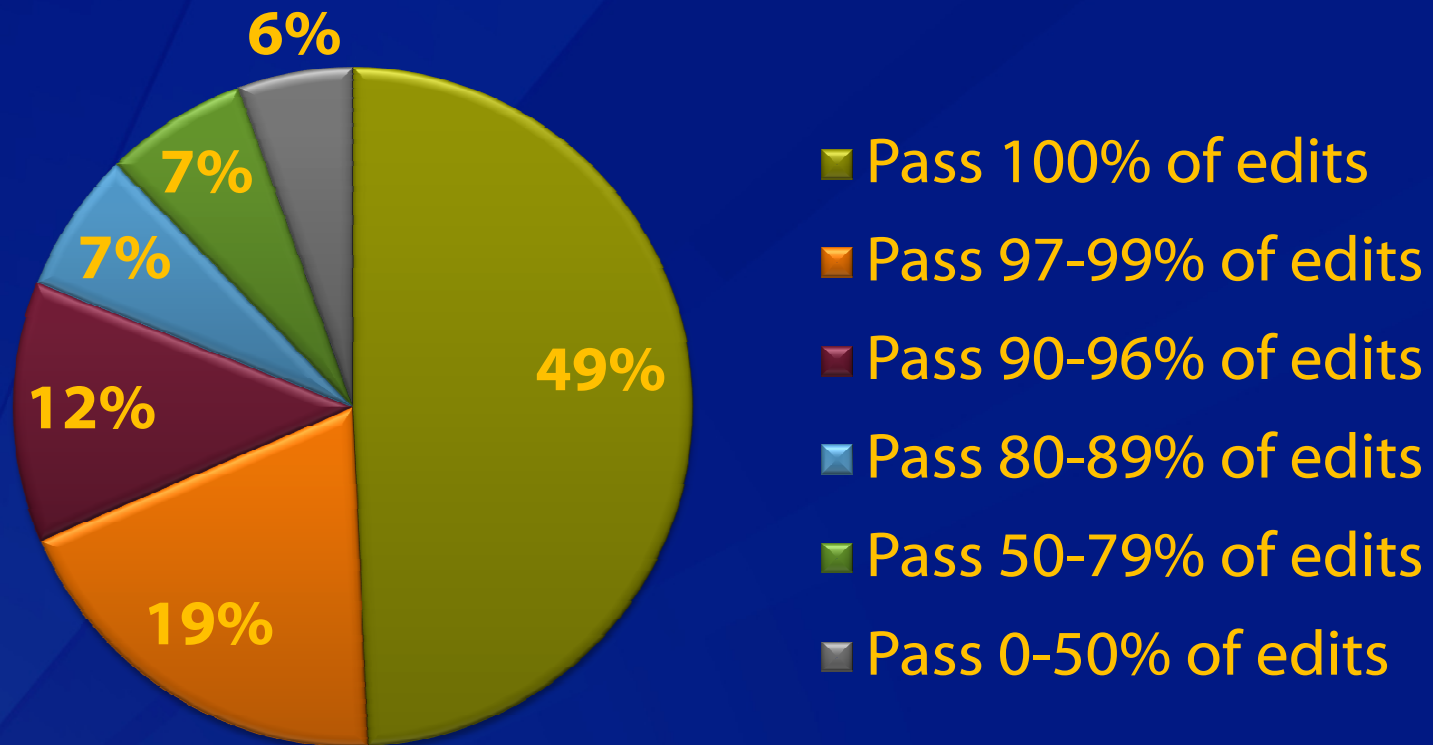
\*Based on data reported by 47 registries (1 registry did not report cases diagnosed in 2006).

## Quality of Facility Reporting

---

- **21 registries require facilities to meet an acceptable error threshold before submitting records**
- **On average, 80% of facilities pass 90–100% of edits at the time of acceptance**

## Average Mix of Facilities Passing Edits



---

## **Cost Per Case**

**(Value of In-Kind contributions not included)**

## Cost per Case

Cost per Case Reported	NPCR Registries
Minimum	\$18.30
Maximum	\$184.19
Average	\$58.01
Median	\$49.21

\*Based on data reported by 47 registries (1 registry did not report cases diagnosed in 2006).

## Database Management Software

Cost per Case Reported	Database Management Software		
	CDC (n=11)	Proprietary (n=25)	In-house (n=11)
Total Cost			
Average	\$49.90	\$60.32	\$60.87
Median	\$42.76	\$52.62	\$53.00
IT Cost			
Average	\$2.49	\$1.98	\$6.79
Median	\$2.09	\$0.78	\$4.71

\*Based on data reported by 47 registries (1 registry did not report cases diagnosed in 2006).

## Consolidation Effort

Cost per Case Reported	Consolidation Effort		
	Low	Med	High
Average	\$69.77	\$44.70	\$62.23
Median	\$52.62	\$34.31	\$52.71

\*Based on data reported by 45 registries (1 registry did not report cases diagnosed in 2006; 2 registries did not report number of records received).

## CTRs at Hospital Reporting Facilities

Cost per Case Reported	# CTRs at Hospital Facilities		
	Low	Med	High
Average	\$75.28	\$58.66	\$37.02
Median	\$60.74	\$46.47	\$30.56

\*Based on data reported by 47 registries (1 registry did not report cases diagnosed in 2006).



## Quality of Facility Reporting

Cost per Case Reported	Acceptable Error Threshold Requirement	
	Yes (n=21)	No (n=26)
Average	\$58.55	\$57.58
Median	\$48.20	\$52.67

\*Based on data reported by 47 registries (1 registry did not report cases diagnosed in 2006).

## **Next Steps**

---

- **Analyze round 2 data**
- **Produce reports for CDC and registries**
- **Update webCAT as needed based on comments received**
- **Collect round 3 data**
- **Analyze 3 years of data**
- **Share findings (presentations and publications)**

## References

---

- **Subramanian, S., Green, J.C., Tangka, F., Weir, H., Michaud, F., & Ekwueme, D.. (2007). Economic Assessment of Central Cancer Registry Operations. Part 1: Methods and Conceptual Framework. *J Registry Manag.*, 34(3), 75-80.**
- **Subramanian, S., Tangka, F., Green, J.L., Weir, H., & Michaud, F.. (2009). Economic assessment of central cancer registry operations. Part II: developing and testing a cost assessment tool. *J Registry Manag.*, 36(2), 47-52.**
- **Tangka, F., Subramanian, S., Cole Beebe, M.E., Trebino, D.J., & Michaud, F.. (2010). Assessment of Central Cancer Registry Operations. Part III: Results from Five Programs. *J Registry Manag.*, 37(4), 152-155.**

---

**The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention**

## Questions/Comments?

---

Fran Michaud  
[fmichaud@cdc.gov](mailto:fmichaud@cdc.gov)  
770-488-4378

Maggie Cole Beebe  
[mbeebe@rti.org](mailto:mbeebe@rti.org)  
781-434-1728

Diana Trebino  
[dtrebino@rti.org](mailto:dtrebino@rti.org)  
781-434-1780



Division of Cancer Prevention and Control  
National Center for Chronic Disease Prevention and Health Promotion

