



# Utility of an Assessment Center for Promotion of Police Sergeants

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## Facts:

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- Assessment centers predict managerial performance
- Assessment centers are expensive



# Controversy:

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- Do the economic benefits of an assessment center outweigh the costs?
- Is there economic utility of an AC as part of a promotional examination process?



# Utility Analysis

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- Systematic process of examining the economic gain to an organization from using a given HR program
- Yields an estimate of the dollar value of expending money on a specific program
- Shows the economic benefit of the program in comparison with other programs
- Utilities can be computed for payoff in comparison:
  - Per applicant
  - Per selectee



# Past Utility Research on Cognitive Tests

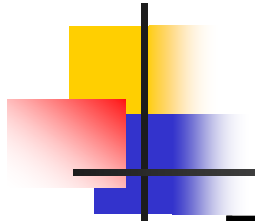
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- Computer programmers
- Steel workers
- Sales persons
- Park rangers



Previous Utility Studies of ACs vs Other Method for  
Managers (showing utility per selectee per year)

|                          |                            |                |        |  |
|--------------------------|----------------------------|----------------|--------|--|
| Cascio & Silbey,<br>1979 | Food sales                 | Inter-<br>view | \$616  |  |
| Cascio & Ramos,<br>1986  | Telephone<br>org<br>office | Inter-<br>view | \$2676 |  |



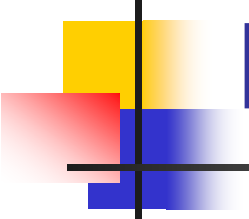
|                         |                 |            |            |  |
|-------------------------|-----------------|------------|------------|--|
| Burke & Frederick, 1986 | Mid Level Sales | Inter-view | \$3036     |  |
| Gerpott, 1990           | Chem industry   | Inter-view | DM<br>3329 |  |
| Tziner et al, 1994      | Israeli corp    |            | \$506      |  |



# One Utility Formula— among many!

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- $U = t N_s (r_1 - r_2) S D_y \text{ phi}/p - N_s (c_1 - c_2)/p$


$$U = t N_s (r_1 - r_2) S_{Dy} \phi/p - N_s (c_1 - c_2)/p$$

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- $t$  = time in position
- $N_s$  = number assessed
- $r$  validity of AC and alternative
- $S_{Dy}$  = standard deviation of performance in job in \$ terms
- $p$  = selection ratio (SR)
- $\phi$  = ordinate of normal curve at  $p$
- $c$  = costs of AC vs alternative



# SDy : Standard Deviation in performance in \$\$ terms

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- Cost accounting – not been used
- Estimates of subject matter experts
  - Value of average performer
  - Value of performer at 85 percentile
  - Value of performer at 35 percentile
- 40% of salary
- 70% of salary



# AC studied here

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- Police department in large city
- Promotion from officer to Sergeant (first level supervisor)
- Screening with test of knowledge
- Three day AC with three exercises
- Assessors from other jurisdictions
- Observation/rating/discussion/rating
- Statistical combination



# Values of elements of utility analysis

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- $t = 15$
- Number of assesses: 208
- Number selected:
  - Immediate: 22
  - After one year: 60
  - After 18 – 24 months: 70



## Other values:

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- Selection ratios (p):
  - $22/208 = .11$
  - $60/208 = .29$
  - $70/208 = .34$
- Validity of AC = .36



# Costs of Assessment Center

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- 49 assessors: \$13,688
- Airfare: 15,727
- Mileage: 958
- Hotel: 32,060
- Bus: 2200
- Total cost of external assessors:
  - \$64,634
- Facilities and meals: \$35,805
- SS Staff: \$40,679
- Consultant: \$18,800
- Total cost:
  - \$158,970
- Cost per assessee:
  - \$764



# Alternative screening procedure: Panel Interview

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- Most common method
- Validity = .32 (McDaniel, Whetzel, Schmidt, & Maurer, 1994)
- Cost per assessee in 1985
- Cost adjusted with cost of living adjustment for 2006 = \$568 (U.S Department of Labor)



# SDy estimates

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- Chiefs estimate of SDy: \$20,000
  - Value of “top performer” (85<sup>th</sup> percentile)
  - “average performer”
  - “poor performer” (35<sup>th</sup> percentile)
- 40% of salary: \$20,800
- 70% of salary: \$36,400



Utility:  $SR = 22/208 = .10577$

| SDy | Total \$<br>utility | Utility/<br>applicant | Utility/<br>Selectee<br>Over 15 yr |
|-----|---------------------|-----------------------|------------------------------------|
|     |                     |                       |                                    |
|     |                     |                       |                                    |
|     |                     |                       |                                    |



Utility:  $SR = 22/208 = .10577$

| SDy                    | Total \$ utility | Utility/ applicant | Utility/ Selectee over 15 year |
|------------------------|------------------|--------------------|--------------------------------|
| Chief est:<br>\$20,000 | \$414,943        | \$1995             | \$18,861                       |
|                        |                  |                    |                                |
|                        |                  |                    |                                |



Utility:  $SR = 22/208 = .10577$

| SDy                    | Total \$ utility | Utility/ applicant | Utility/ Selectee Over 15 yea |
|------------------------|------------------|--------------------|-------------------------------|
| Chief est:<br>\$20,000 | \$414,943        | \$1995             | \$18,861                      |
| 40% sal:<br>\$20,800   | \$433,174        | \$2082             | \$19,689                      |
|                        |                  |                    |                               |



Utility:  $SR = 22/208 = .10577$

| SDy                    | Total \$ utility | Utility/<br>applicant | Utility/<br>Selectee<br>Over 15 year |
|------------------------|------------------|-----------------------|--------------------------------------|
| Chief est:<br>\$20,000 | \$414,943        | \$1995                | \$18,861                             |
| 40% sal:<br>\$20,800   | \$433,174        | \$2082                | \$19,689                             |
| 70% sal:<br>\$36,000   | \$788,674        | \$3791                | \$35,848                             |



# Summary

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- Cost per applicant = \$764
- Utility per applicant = \$1995 to \$3791
- Utility in comparison with typical performers = \$18,861 to \$35,848
  
- "ROI" = 62 % to 80 %



# What is utility at different values of key variables?

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- Various validities of AC
- Various costs of AC
- Various SDy, i.e., levels of variation in performance of supervisors



# Utility at various **validities** of Assessment Center

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- Assume SR of  $22/208 = .11$ ;  $SDy = \$20,000$ ;  $r^2 = .32$  for panel
- Total utility when **AC validity** is:
  - .46: + \$1,554,367
  - .41: + \$984,655
  - .36: + \$414,943 \* shown earlier
  - .31: - \$154,768 loss
  - .26: - \$724,480 loss

# Utility at various **total costs** of AC



- Assume SR of 22/208 = .11; SDy = \$20,000; r1 = .36 for AC, r2 = .32 for panel
- **If total cost is ... total utility is:**
  - \$177k (2X consultant costs): \$396,142
  - \$168k \$405,541
  - \$158k \* shown earlier \$414,943
  - \$126k \$447,260
  - \$94k (internal assessors) = \$479,577

# Utility at various **selection ratios**



- Assume  $SDy = \$20,000$ ;  $r1 = .36$  for AC,  $r2 = .32$  for panel; cost = \$764
- When **SR** is... **utility per assessee:**
  - .11 (22/208) \* shown earlier: \$1,994
  - .29 (60/208) \$3,895
  - .34 (70/208) \$4,187



# Summary Regarding City of X Police Department

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- Assessment Center to assess 208 candidates was expensive:
  - Total cost was \$158,897
  - Cost per candidate was \$764
- Assessment Center has Utility

# Utility of City Assessment Center

|                    | Total Utility | Utility per assessee | Utility per selectee |
|--------------------|---------------|----------------------|----------------------|
| Year 1<br>SR: .11  | \$414,943     | \$1995               | \$18,861             |
| Year 2<br>SR = .29 | \$810,309     | \$3895               | \$13,505             |
| Year 3<br>SR = .34 | \$870,961     | \$4187               | \$12,442             |



# Summary Regarding Various Values of formula

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Higher utility comes from:

Higher validity of AC (vs alternative)

Lower cost of AC

Larger variation in job performance of current staff ( $SD_y$ )



# CONCLUSION

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- Assessment Centers are expensive but darn well worth it!