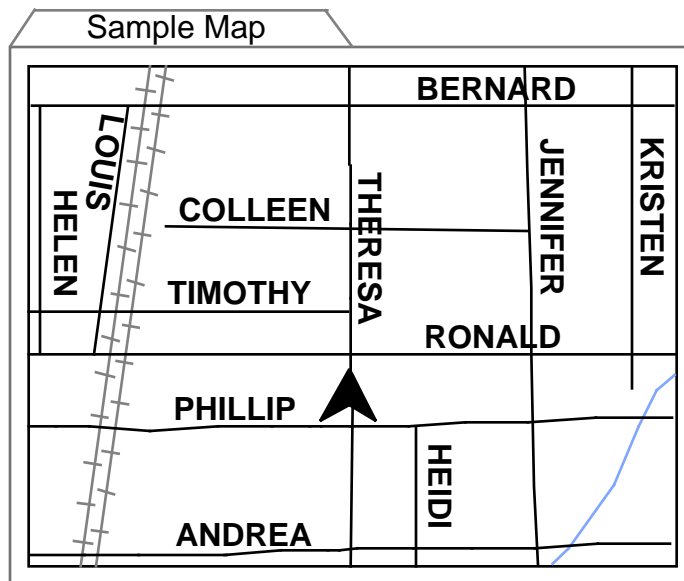


## 1 ISSUES

1. How many streets should be shown on an in-vehicle map display?
2. What size text should be used for the street labels?
3. What orientation should be used for street names on an in-vehicle map display?

## 2 MAP TASKS



(12 point, 12 streets, vertical text, grid map)  
(80% of actual size)

### Task 1 - On-Street

**What street are you on?**  
*Subject Finds:* Theresa  
*Responds:* female ( 3 key )

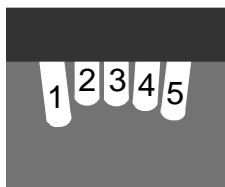
### Task 2 - Cross Street

**What is the 1st Cross Street?**  
*Subject Finds:* Ronald  
*Responds:* male ( 2 key )

**What is the 3rd Cross Street?**  
*Subject Finds:* Colleen  
*Responds:* female ( 3 key )

**What is the 6th Cross Street?**  
*Subject Finds:* only 4 streets  
*Responds:* not there ( 1 key )

### Keypad Responses



**Note:**  
 only necessary response keys were visible during each task

#### Task 1 - On-Street

2 = male  
 3 = female

#### Task 2 - Cross Street

1 = not there  
 2 = male  
 3 = female

#### Task 3 - Where is?

1 = not there  
 2 = ahead    4 = left  
 3 = behind   5 = right

### Task 3 - Where is?

**Where is Bernard?**  
*Response:* ahead ( 2 key )

**Where is Andrea?**  
*Response:* behind ( 3 key )

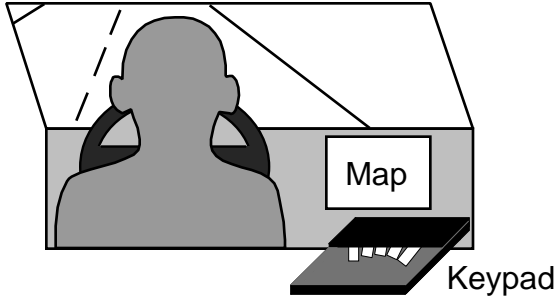
**Where is Helen?**  
*Response:* left ( 4 key )

**Where is Jennifer?**  
*Response:* right ( 5 key )

**Where is Douglas?**  
*Response:* not there ( 1 key )

### 3 METHOD

#### Simulator Driving Scenario

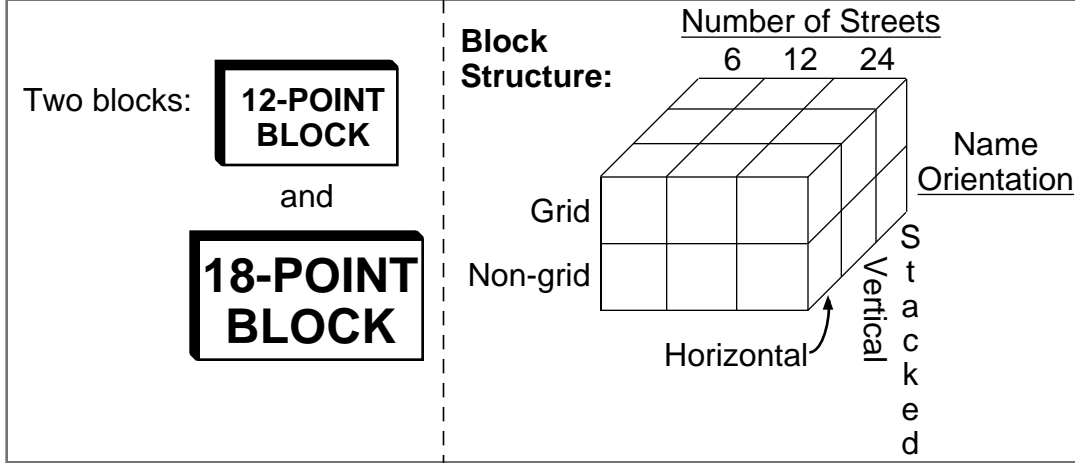


Subjects (n = 20)

Block Order	Young		Older	
	Men	Women	Men	Women
12pt → 18pt	3	2	3	2
18pt → 12pt	2	3	2	3

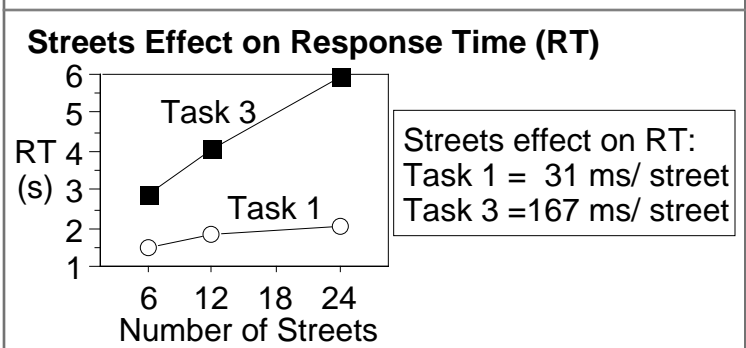
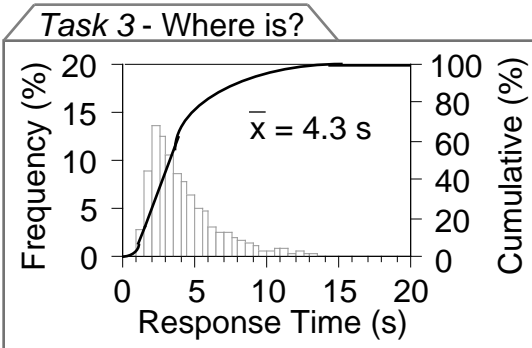
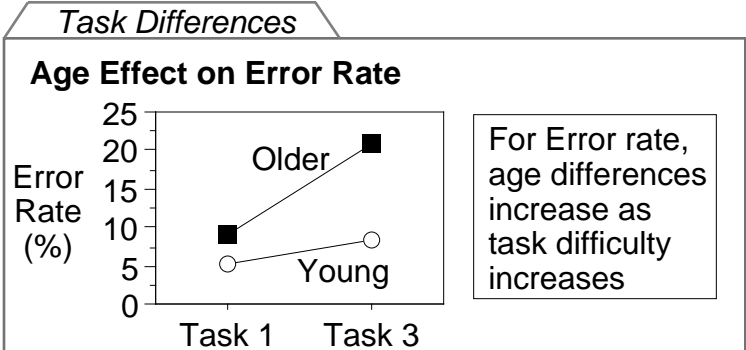
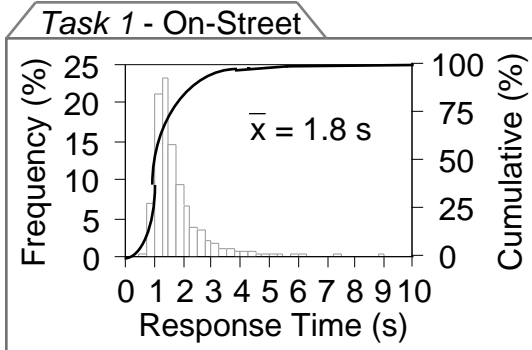
Subjects were shown either the 12-point or 18-point block first, balanced over age and gender.

#### Main Test Conditions



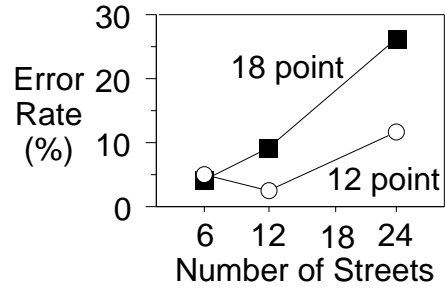
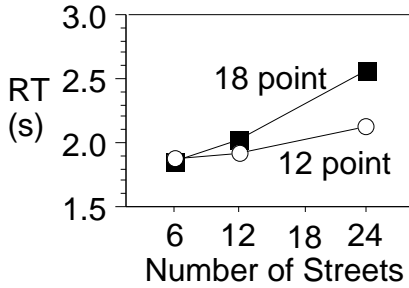
### 4 RESULTS and CONCLUSIONS

#### Response Time (RT) and Error Rate

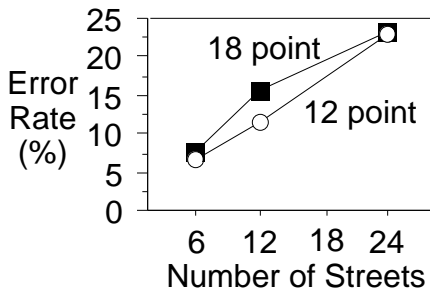


**Issue 1 - How many streets to display?  
and Issue 2 - What size text to use?**

**Task 2: Streets by Point Size Effects (1st cross-street only)**



**Task 1: Streets by Point Size Effects**

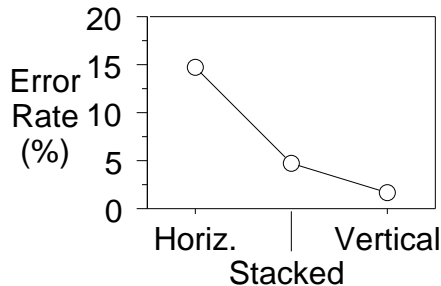
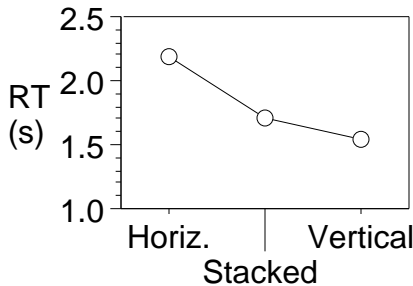


**Recommendations:**

1. Display 12 labeled streets
2. Only use 18 point with very few labeled streets (6 or less); otherwise use 12 point (when only 12 and 18 point are available)

**Issue 3 - What street name orientation to use?**

**Task 1: Name Orientation Effects**



**Recommendations:**

1. Use vertical, if possible
2. Do not use horizontal to label vertical streets (RT longer, error rate higher)

**Response Time Regression Equations**

<b>Task 1: On-Street</b>	$RT (ms) = 1334 + 264*(A) + 31*(S) + 378*(Or) + 168*(A)*(Or) + 35*(S - 14)*(Or)$
<b>Task 3: Where is?</b>	$RT (ms) = [ 2850 + 572*(A) + 116*(S) - 44*(P) + 5*(A + 0.5)*(S - 9)*(15 - P) ] * SR$

**Terms for Regression Equations**

A = Age	-1 if Young +1 if Older	S = Number of Streets (S - 1)
SR = Search Result	1.0 if found $\frac{10+S}{12+0.5*(S)}$ if not found	P = Point Size (12 P 18) +1 for horizontal -1 for vertical
		Or = Name Orientation -.28 for stacked -.72 for vertical