

# Analysis and Visualization of Timing and Tracking Data: Examples From ~~Two Exhibit Evaluations~~ One Exhibit Evaluation

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INSTITUTE FOR LEARNING INNOVATION

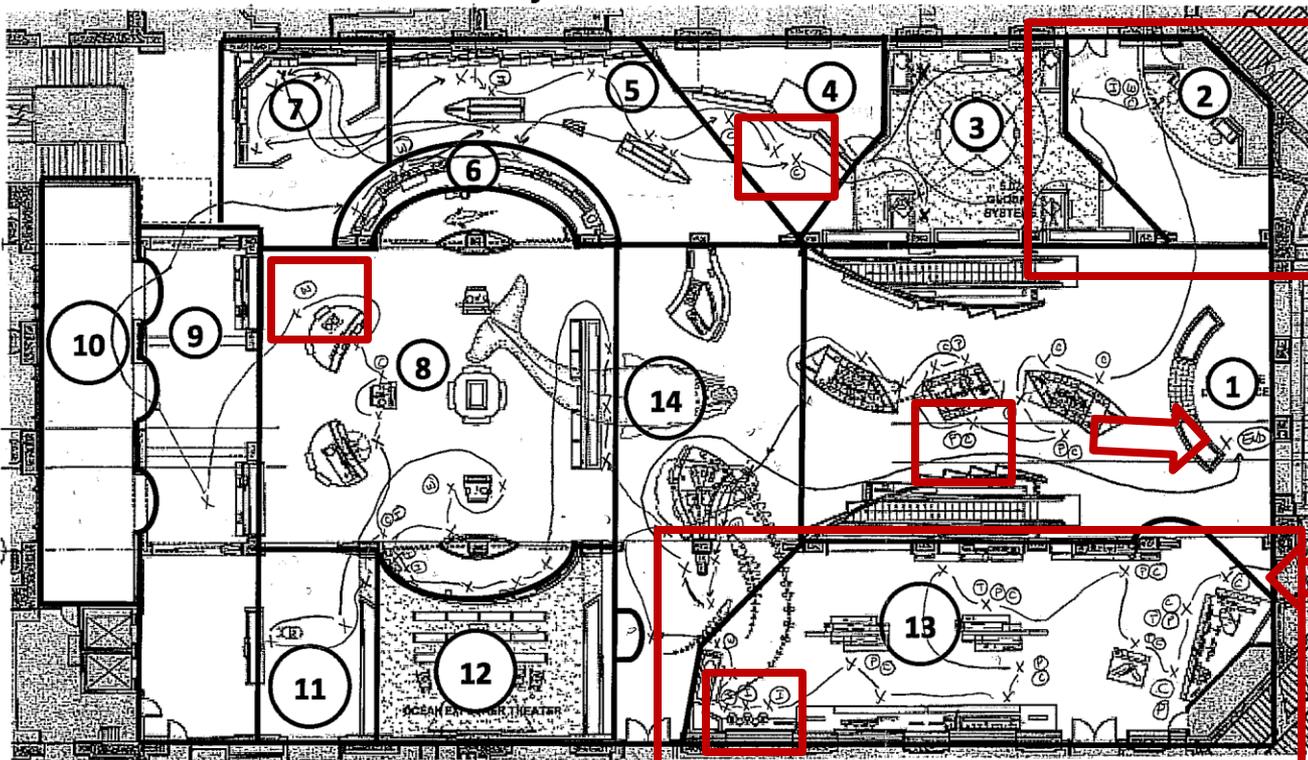
American Evaluation Association

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# What I'll cover today

- More about what's possible to report, than a discussion of evaluation results.
- Analysis: common ways to represent timing/tracking data
  - Most/least frequently visited areas
  - Time spent
  - Visitor behavior
- Data Visualization: two ways to visualize timing/tracking data
  - “Heat” Maps
  - Paths

# National Museum of Natural History's Ocean Hall Evaluation



TIMING & TRACKING		
DATE:	1/29/2003	
RESEARCHER/ ID:	CF35	
	START	STOP
TIME OF DAY	3:12	4:08
SITE TIME	00:00	55:48
	TIME IN	TIME OUT
1 Biodiversity	54:48	55:48
2 Ocean Systems / Ocean News	40:42	45:31
3 Global Systems	38:11	40:42
4 Coral Reefs	33:50	34:54
	37:09	38:11
5 Shores to Shallows	29:37	29:50
	31:50	32:50
	34:54	35:50
6 Collections Wall	26:36	29:37
7 Poles	29:50	31:50
	35:50	36:26
8 Open Ocean	14:40	20:30
	21:48	25:40
9 Living on an Ocean Planet	25:40	26:10
	26:20	26:36
10 Changing Exhibit	26:10	26:20
11 Deep Ocean Exploration	20:30	21:30
12 Ocean Explorer Theater	21:30	21:48
13 Journey Through Time	0:00	12:30
14 Whales	2:30	14:40
	50:41	54:48

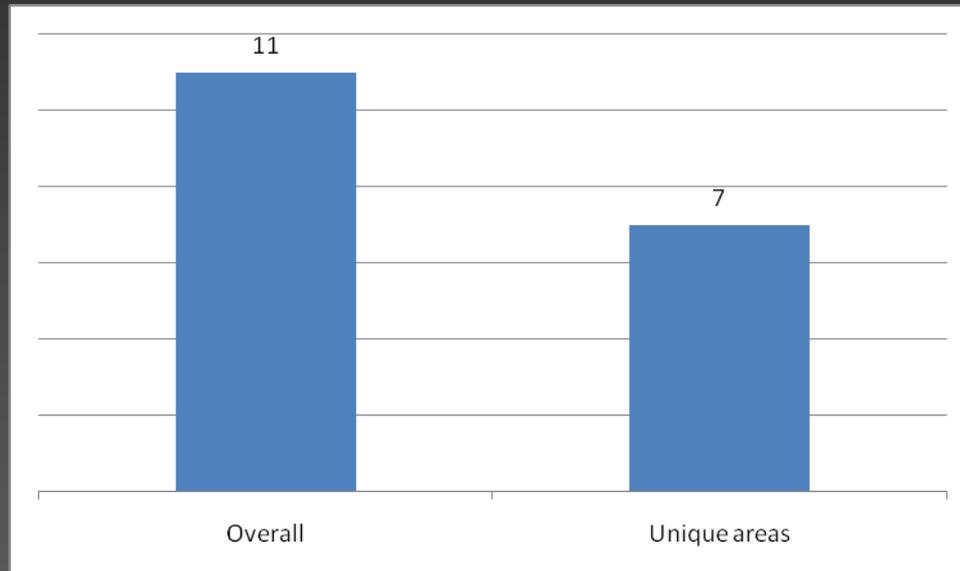
**Crowd Density:**  
 1 = Empty  
 2 = Sparsely visited  
 3 = Moderately crowded  
 4 = Very crowded

**Interactions:**  
 I ..... Interactive (active)  
 W ..... Watch video / media (passive)  
 T ..... Touch  
 P ..... Point Object  
 C ..... Group conversation  
 N ..... "Navigator" conversation  
 D ..... Downtime / rest

**Notes:**  
 Mitigating Factors: [Tour, temperature, IMAX, Family Guide, etc.]

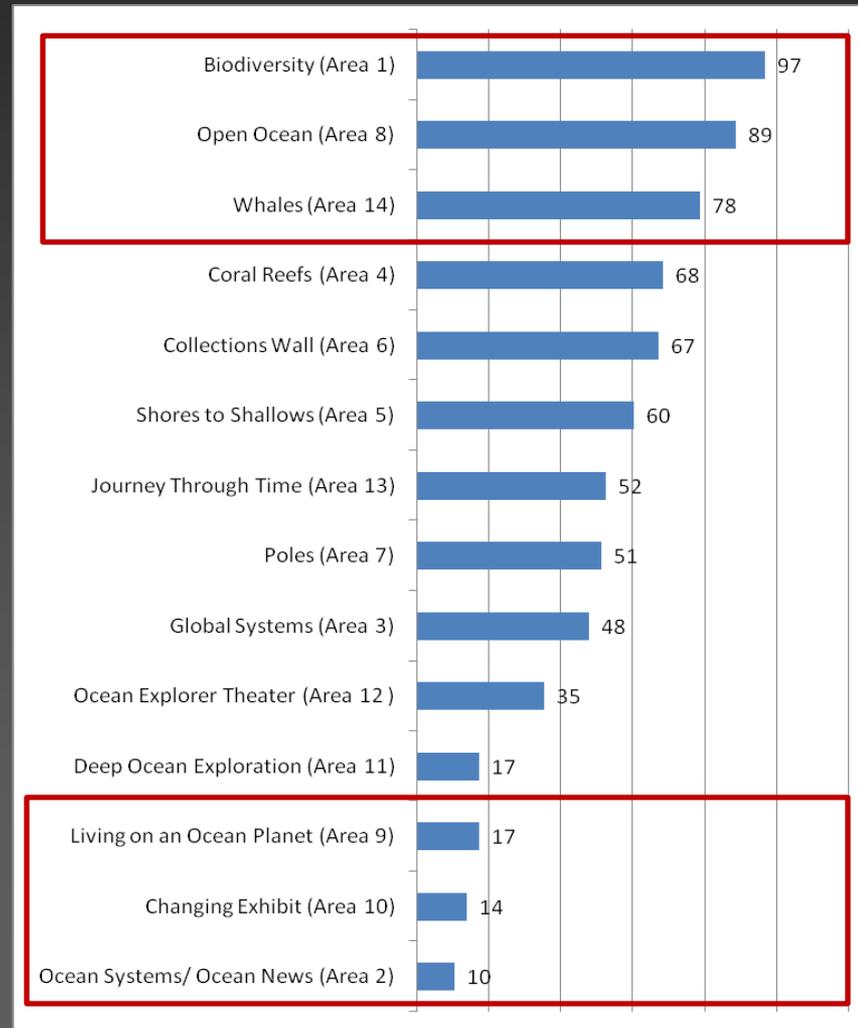
*Most/Least Frequently  
Visited Areas*

# Data can be presented as an aggregate (median number of areas visited overall)...



Number of areas visited in  
Sant Ocean Hall: overall vs.  
unique areas

... or the number of visits to each specific area.



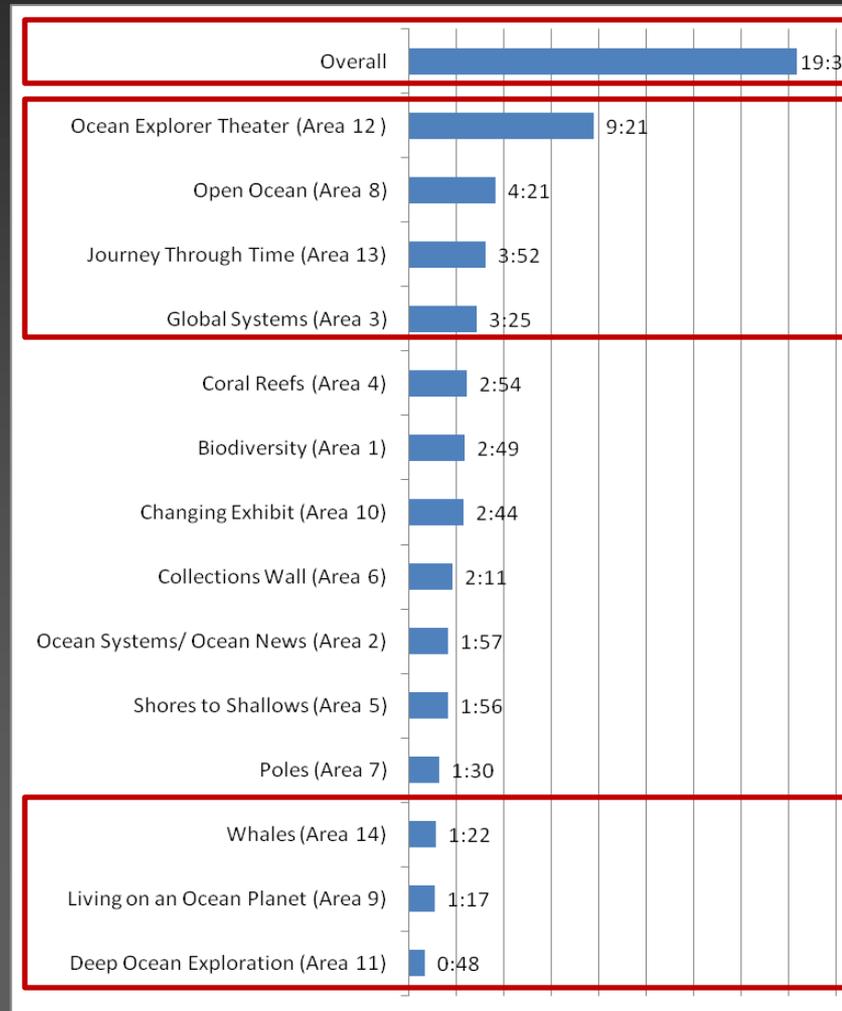
*Most Frequently Visited*

*Least Frequently Visited*

Percentage of visitors in each area of the Sant Ocean Hall (n=88)

*Time Spent*

# Similarly, time spent can be presented overall or for each specific area.



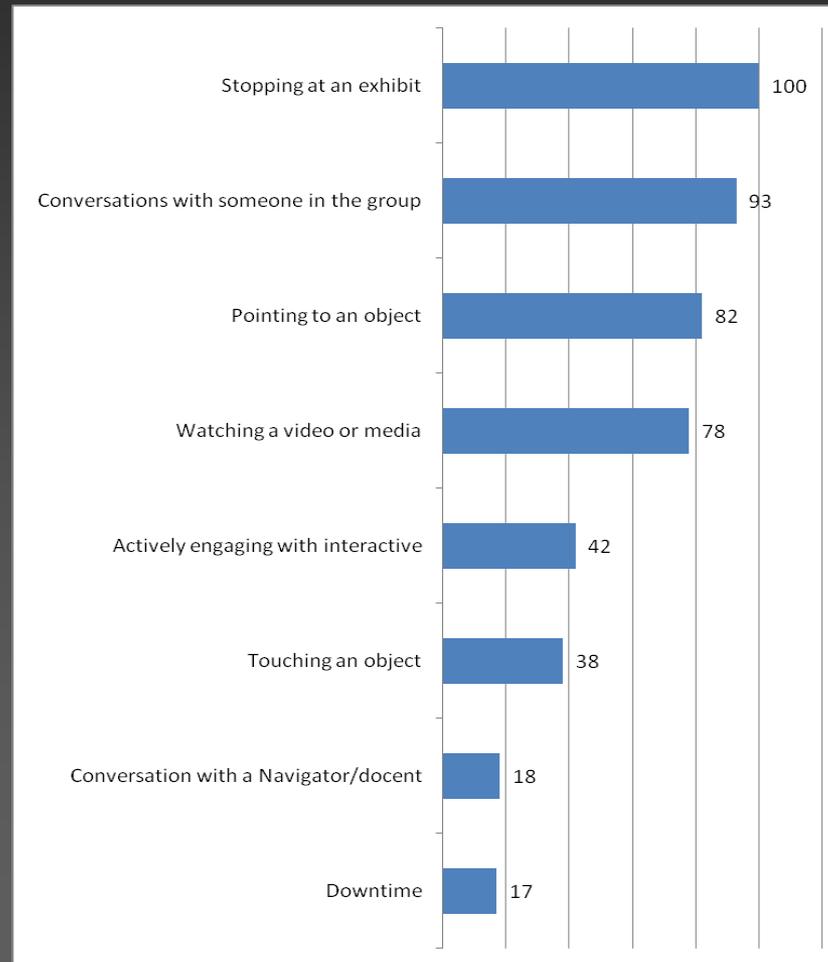
*Most Time Spent*

*Least Time Spent*

**Time spent in Sant Ocean Hall:  
overall vs. unique areas (in  
minutes:seconds, median)**

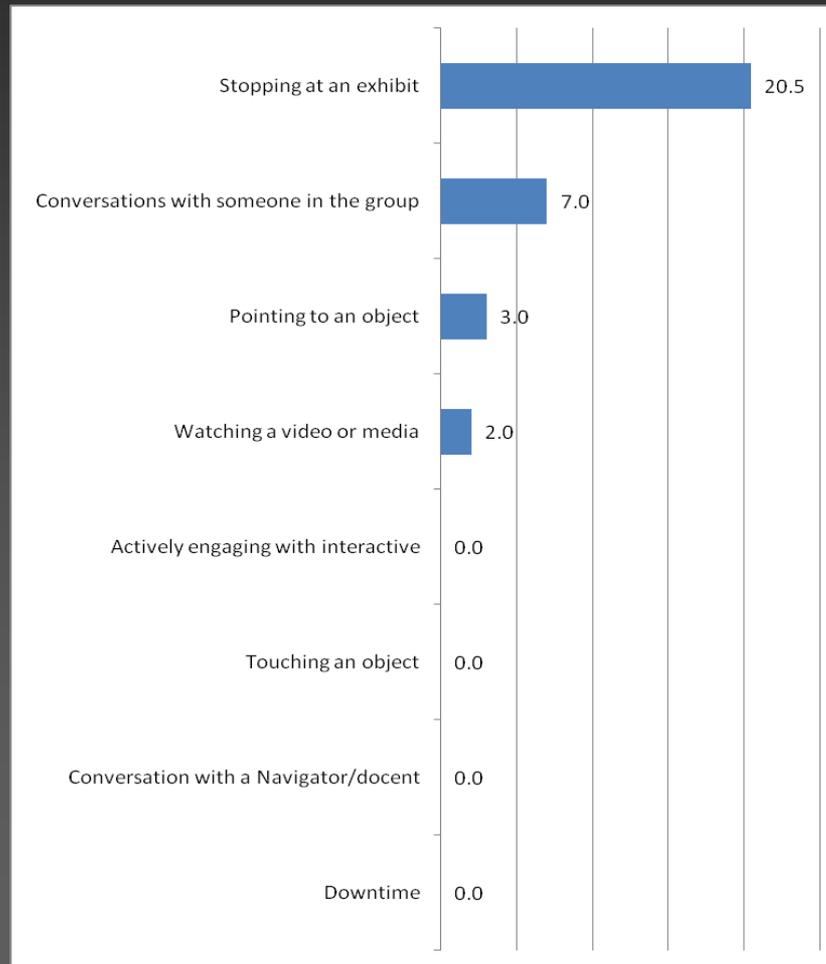
# *Visitor Behavior*

# Visitor behavior data can be presented as percentage of visitors engaging in each behavior...



Percentage of visitors demonstrating selected behaviors in the Sant Ocean Hall (n=88)

... or as the number of times a behavior happens.

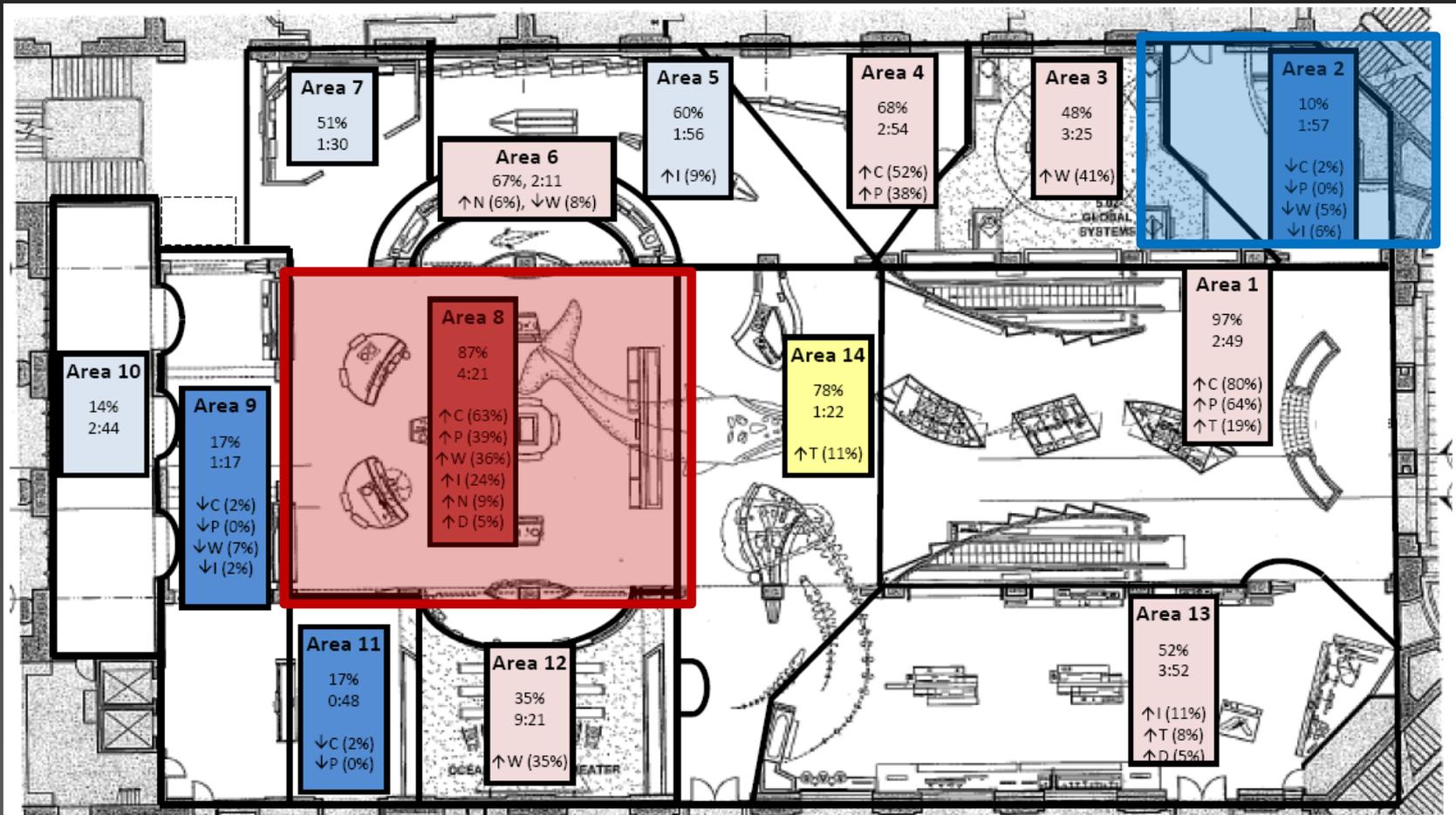


Number of occurrences of selected behaviors in the Sant Ocean Hall (median) (n=88)

# *“Heat” Maps*

*Can be for one variable or  
a combination of variables*

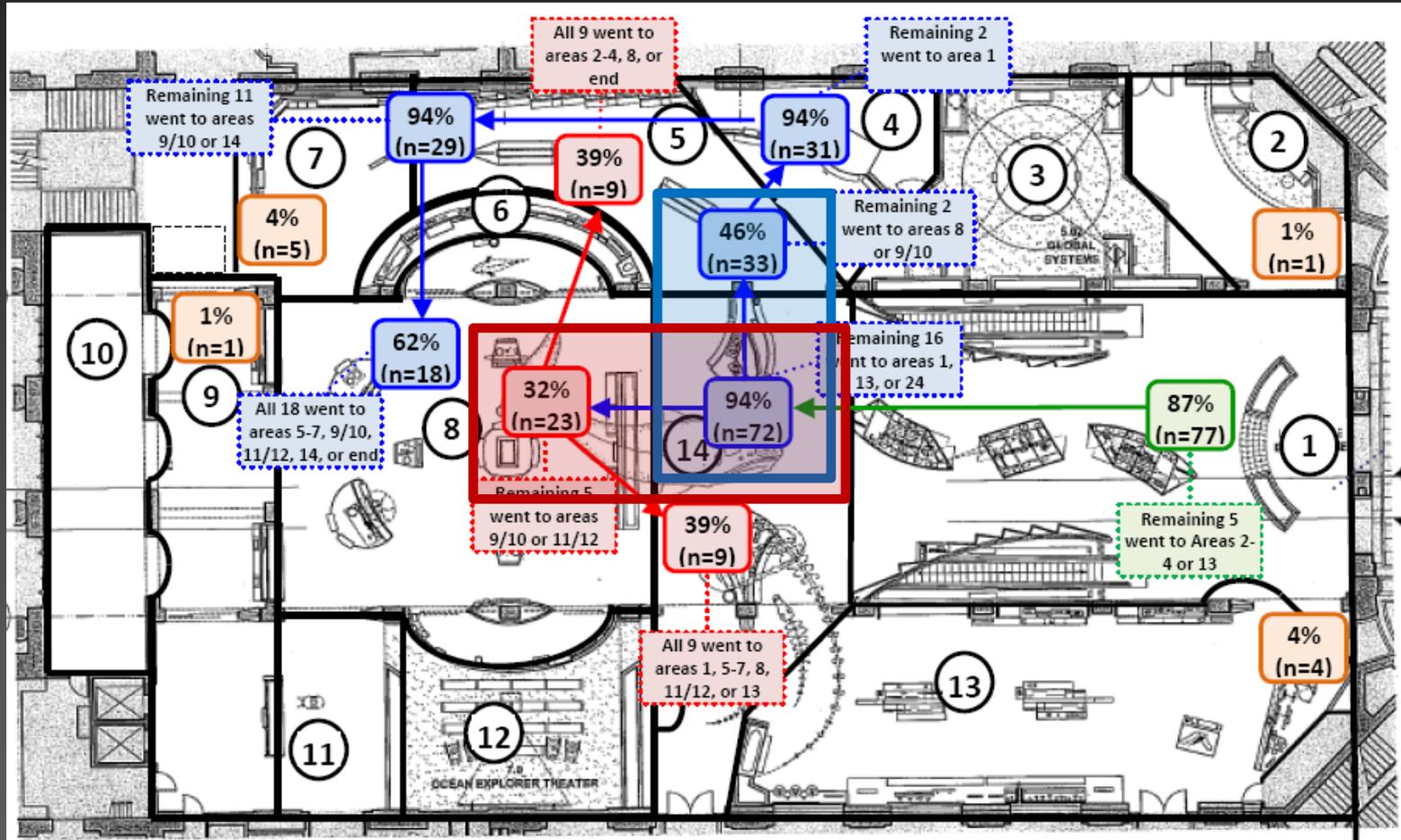
# Combination: visitation and time spent, with some behavior as well.



Interactions: ↓(Lowest), ↑(Highest)	Areas		
I..... Interactive (active)	Area 1 - Biodiversity	Area 8 - Open Ocean	Low visitation and little time spent
W..... Watch video / media (passive)	Area 2 - Ocean Systems/ Ocean News	Area 9 - Living on an Ocean Planet	Moderate visitation and little time spent OR
T..... Touch	Area 3 - Global Systems	Area 10 - Changing Exhibit	Little visitation and moderate time spent
P..... Point Object	Area 4 - Coral Reefs	Area 11 - Deep Ocean Exploration	High visitation and little time spent
C..... Group conversation	Area 5 - Shores to Shallows	Area 12 - Ocean Explorer Theater	High visitation and moderate time spent OR
N..... "Navigator" conversation	Area 6 - Collections Wall	Area 13 - Journey Through Time	Moderate visitation and little time spent
D..... Downtime / rest	Area 7 - Poles	Area 14 - Whales	High visitation and high time spent

# *Paths Taken*

# Two paths in these data: “right turn” and “straight ahead”



Areas				Key
Area 1 - Biodiversity Combined 2-4:	Combined 5-7:	Combined 9/10:	Combined 11/12:	<span style="background-color: #90EE90; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Primary entry point
Area 2 - Ocean Systems/ Ocean News	Area 5 - Shores to Shallows	Area 9 - Living on an Ocean Planet	Area 11 - Deep Ocean Exploration	<span style="background-color: #FFDAB9; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Other entry points
Area 3 - Global Systems	Area 6 - Collections Wall	Area 10 - Changing Exhibit	Area 12 - Ocean Explorer Theater	<span style="background-color: #ADD8E6; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Right turn path
Area 4 - Coral Reefs	Area 7 - Poles		Area 13 - Journey Through Time	<span style="background-color: #FF6347; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Straight ahead path
	Area 8 - Open Ocean		Area 14 - Whales	

# Conclusions

- There is a lot you can do with timing and tracking data!
- Besides descriptive information, you can explore your data more comparatively.
  - Comparisons among groups based on group demographics (*e.g., groups with kids vs. without kids*)
  - Comparisons among groups based on timing/tracking characteristics (*e.g., groups on “right turn” vs “straight ahead” or long vs. short visit groups*)

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