

# People Analytics

On

# Nursing home

# Case Background

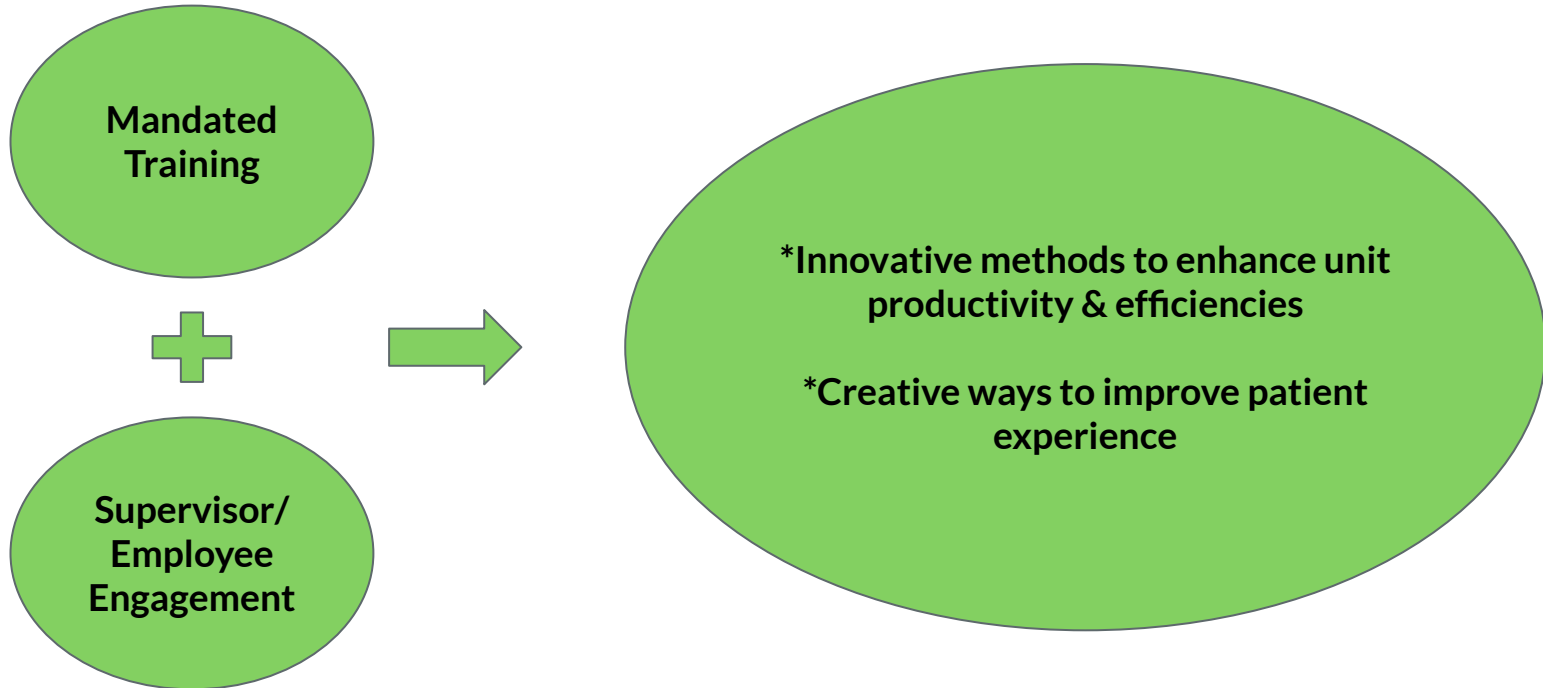
- All-Staff Survey was conducted at nursing home facility with:
  - *Therapists, Nurses, Social Workers, Admin Support, Managers and Business Support*
- Survey questions fall in to a particular pattern **(Construct)**
- Team objectives:
  - *Determine if survey questions (**variables**) are appropriate*
  - *Use Factor Analysis to determine:*
    - *Distinct **Creativity** and **HR Practice** factors*
    - *If **Creativity** and **HR Practice** factors are inherently different*
  - *Determine if/what HR Practices factors **enhance** Creativity*

# Initial Review

## Variable Changes:

- **Consistency:** Utilize EMP### Prefix or Remove
  - From TEMP to EMPTYPE
  - From LEVEL to EMPLEVEL
  - FROM HEXP & TEXP to EXPNH & EXPTOT
- **Subjective: Remove *TENURE* question**
- **Eliminate Redundancies in Job Titles:**
  - 2 Assistant Nurse Managers
  - Various Coordinators
  - Various Managers
- **Create Job Title Sub-Groups**
  - Admin, Nurses, Therapists, Social Workers, Coordinators, & Office Support

# Preliminary Assumptions



# Profile Samples

- Do Coordinators or Managers feel they are the most creative with implementing innovative business strategies?
- Do Front Line Employees or Managers feel they respond in creative ways to address patient needs?
- Which job titles/departments do supervisor/employee engage in meetings to discuss patient needs?
- Which employees sign up for unit productivity training versus enhancing medical care?

# Exploratory & Confirmatory Factor Analysis

- Exploratory Factor Analysis:
  - Use EFA to determine how many factors to extract
  - An **exploratory factor analysis** aims at exploring the relationships among the variables
- Use CFA to determine how
  - A **confirmatory factor analysis** assumes that you enter the factor analysis with a firm idea about the number of factors you will encounter, and about which variables will most likely load onto each factor.
  - Create sub-dimensions
  - Test our theories and hypothesis

Since we are exploring the relationships between the variables, We are implementing exploratory factor analysis for analytical design.

# Factor Analysis

## Creativity Factor Analysis

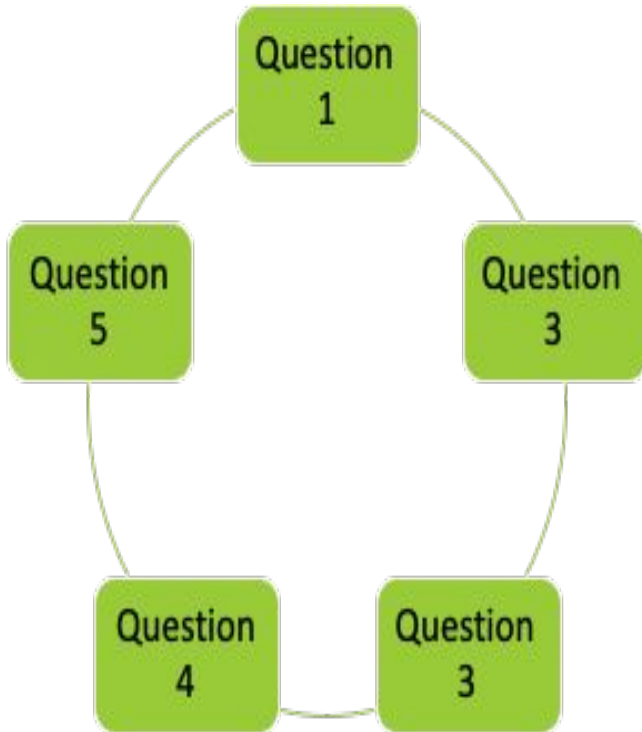
	Factor	
	1	2
Creat1	0.817	
Creat2	0.901	
Creat3	0.987	
Creat4	0.943	
Creat5	0.839	
Creat8		0.856
Creat9		0.949
Creat10		0.976

## HR Practices Factor Analysis

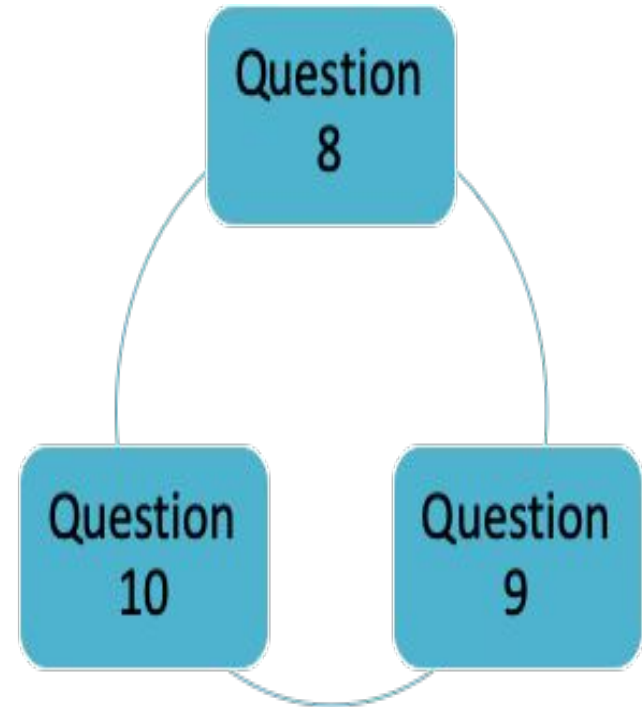
	Factor	
	1	2
HR1		0.649
HR2		0.773
HR3		0.953
HR4	0.911	
HR5	0.776	
HR6	0.906	
HR11	0.690	
HR12	0.716	

# Creativity Subdimensions

**Innovating Business Efficiencies**



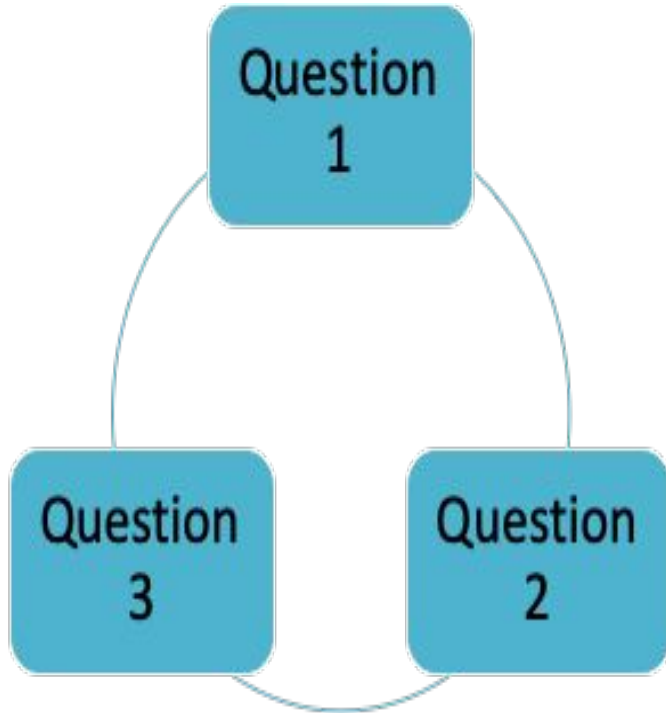
**Improve Patient Experience**



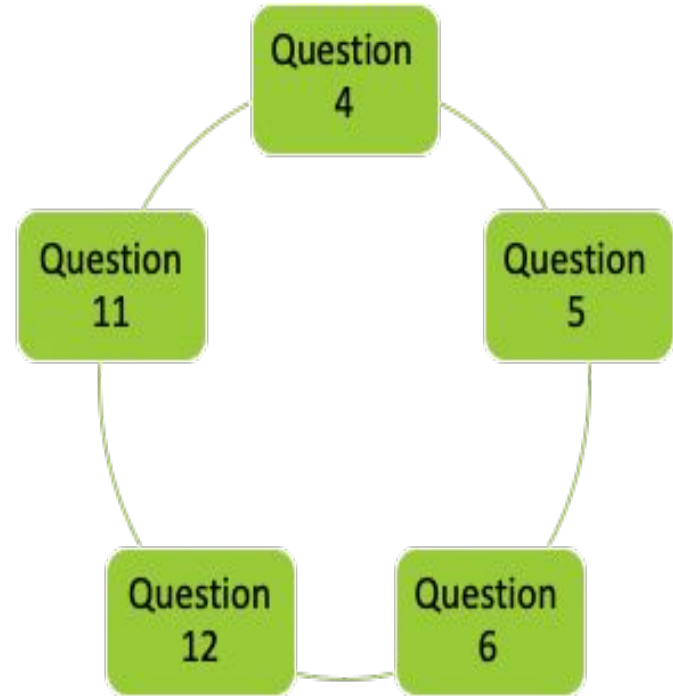


# HR Practice Subdimensions

## Unit Productivity Training



## Supervisor/Employee Engagement



# Convergence & Discriminative Validity Test

## Creativity Factor Analysis

	Factor	
	1	2
creat1	0.82	
creat2	0.90	
creat3	0.99	
creat4	0.94	
creat5	0.84	
creat8		0.86
creat9		0.95
creat10		0.98
Extraction Method: Principal Axis		
a. Rotation converged in 3		
Average	0.90	0.93
Average	0.90	0.93

Pattern Matrix

Factor	1	2
1	1.000	0.672
2	0.672	1.000

Correlation Matrix

- Most of the values are over 0.7 which makes them convergent.
- Since average variance extracted by both factors is higher than the variance shared between them, there is evidence of discriminant validity.
- Similarly, for HR practices factor analysis, there is evidence of discriminant validity.

$$\text{Avg Variance Shared} = 0.672 * 0.672 = \underline{\underline{0.452}}$$

# Conclusion based on factor analysis

- The factors that influence creativity are questions regarding innovating business efficiencies and improving patient experience.
- On the other hand, unit productivity training and supervisor/employee engagement influences Hr practises.

## **Suggestions:**

- Managers should guide employees on how they can do their tasks more efficiently.
- CEO's should optimize training programs which induces more productivity and efficiency. Also, by guiding the managers on the meetings with their respective employees working under them.
- Nursing home workers should focus on making sure the patients are comfortable and their basic needs are taken care of.
- Public policy officials can improve patient experience by keeping paperwork to a minimum.

# Hypothesis Test (Business Efficiencies)

- HR Factor 1 Null Hypothesis – **Unit Productivity Training** does not influence Business Efficiencies  
HR Factor 1 Research Hypothesis – Unit Productivity Training does influence Business Efficiencies.
- HR Factor 2 Null Hypothesis – **Supervisor/Employee Engagement** does not influence Business Efficiencies  
HR Factor 2 Research Hypothesis – Supervisor/Employee Engagement does influence Business Efficiencies.

# Hypothesis Test Result (BusinessEfficiencies)

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	12.463	2.177		5.724	.000
	UnitProductivityTraining	.179	.270	.057	.664	.507
	SupervisorEmployeeEng agment	.239	.139	.147	1.722	.087

a. Dependent Variable: BusinessEfficiencies

# Hypothesis Test (PatientExperience)

- HR Factor 1 Null Hypothesis – Unit Productivity Training does not influence Patient Experience.  
HR Factor 1 Research Hypothesis – Unit Productivity Training does influence Patient Experience.
- HR Factor 2 Null Hypothesis – Supervisor/Employee Engagement does not influence Patient Experience  
HR Factor 2 Research Hypothesis – Supervisor/Employee Engagement does influence Patient Experience

## Hypothesis Test Result (PatientExperience)

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	8.331	1.118		7.452	.000
	UnitProductivityTraining	.006	.139	.003	.041	.968
	SupervisorEmployeeEngagement	.169	.071	.202	2.381	.018

a. Dependent Variable: PatientExperience

# Conclusions

- Supervisor/Employee Engagement is significant factor ( $p=0.018<0.05$ ) impacting Patient Experience. The coefficient is positive (0.169) which would indicate that higher Supervisor/Employee Engagement makes Patient Experience better.
- Supervisor/Employee Engagement does not impact Business Efficiencies.  
(statistically insignificant  $p = 0.087>0.05$ )
- UnitProductivityTraining does not affect Patient Experience as well as Business Efficiencies.
- **Most Significant** HR Practices Factor :- SupervisorEmployeeEngagment



# Business Recommendations

## *For Managers*

- Managers and Supervisors should consider increasing meetings with employees to ensure improvement in patient experience.
  - Keep encouraging employees by giving them constructive feedbacks on their ideas and also empower them in implementing their ideas, which brings innovative practices to improve patient satisfaction.
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# Business Recommendations

*For CEO*

- Shift the focus of HR training onto improving mentorship skills for supervisors and improving communication between supervisors & employees.
  - Company should continue investing money on improving Supervisor's leadership and team management skills.
  - Should management insist on continuing training for unit productivity and cost control, we recommend seeking another training vendor.
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# Business Recommendations

## *For Nursing Home Workers*

- Nursing home workers should continue to come up with new creative ideas to improve patient experience.
- Management is receptive to their input and feedback to improve processes.

# Business Recommendations

## *For HR/Public Policy Officials*

- The training should not be mandatory for all employees
  - The HR training programs offered to employees do not enhance employee's creative ideas.
  - Supervisor meetings with employees does not help in increasing business productivity and efficiencies.
  - Managers meetings with employees are primarily focused on creating operational processes to improve patient care.
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*Thank you*