

## Ci3 India – **CONSULTANTS'** ROUNDTABLE -October 18, 2016

### ***Action Item 5 - 'Human Capital (including Labour, Technical & Managerial, and Skills Development) and Productivity'***

#### **ACTION TEAM MEMBERS:**

Prof. K N Satyanarayana (IITM)  
Mr. Kalyan Chakravarthy (PanIIT)  
Dr. Sivakumar Palaniappan (IITM)  
Dr. Venkata Delhi (IITB)  
Mr. Santhosh Loganathan (IITM)  
Prof. Cyrus Dordi (IITB)

Mr. Mahalingam (TCS)  
Mr. Prakash Patil (TRIL)  
Mr. Chitty Babu (Akshaya)  
Mr. P P Srinivasan (CPWD)  
Ms. Anita Rajan (Tata Strive)

# Introduction



- First objective of Ci3 *India* - **19** current and imminent critical issues were identified, verified & validated – two regional Roundtables
- Identified issues were then converted into Action Items & Action Teams
- **Action Team 5**, i.e. “Human Capital (including Labour, Technical & Managerial, and Skills Development) and Productivity” was formulated to study the following **six issues**
  - Low productivity
  - Acute shortage of skilled workmen
  - Lack of proper facilities for workers
  - Need for up-skilling construction professionals
  - Inadequate quality
  - Lack of productivity benchmarks and standards

# Methodology



- An initial literature survey - to understand Indian conditions & international practices
- An exploratory survey was also conducted in 15 construction projects across the country to better understand the management of construction workers - present scenario
- Joint brainstorming through Conference-calls to propose the various Action Agendas
- The detailed the methodological approach will be elaborated further in the forthcoming White Paper

## Exploratory survey - Findings



- Among the numerous factors that influence the outcome of a construction project, productivity is one of the major factors.
- Since many of the construction activities are labor-intensive, construction productivity is influenced by effective and efficient use of labor resources.
- Poor labour productivity has been identified as a major factor causing delay in Indian construction projects (Doloi et al. 2012)
- A report of the National Commission on Labour, Govt. of India also reported that the industry functions at low productivity because of lack of skills, poor workmanship, low levels of mechanization and technology adoption.

# Exploratory survey - Findings



[REDACTED]

The following table shows the requirement of [REDACTED] as per approach plan 2012 by National skill development council.

Category	Percentage of Employment	Total Employment
Unskilled workers	83%	25.6 million
[REDACTED]	10%	[REDACTED]
Engineers	3%	0.8 million
Technicians and foremen	2%	0.6 million
Clerical	2%	0.7 million

Table-2

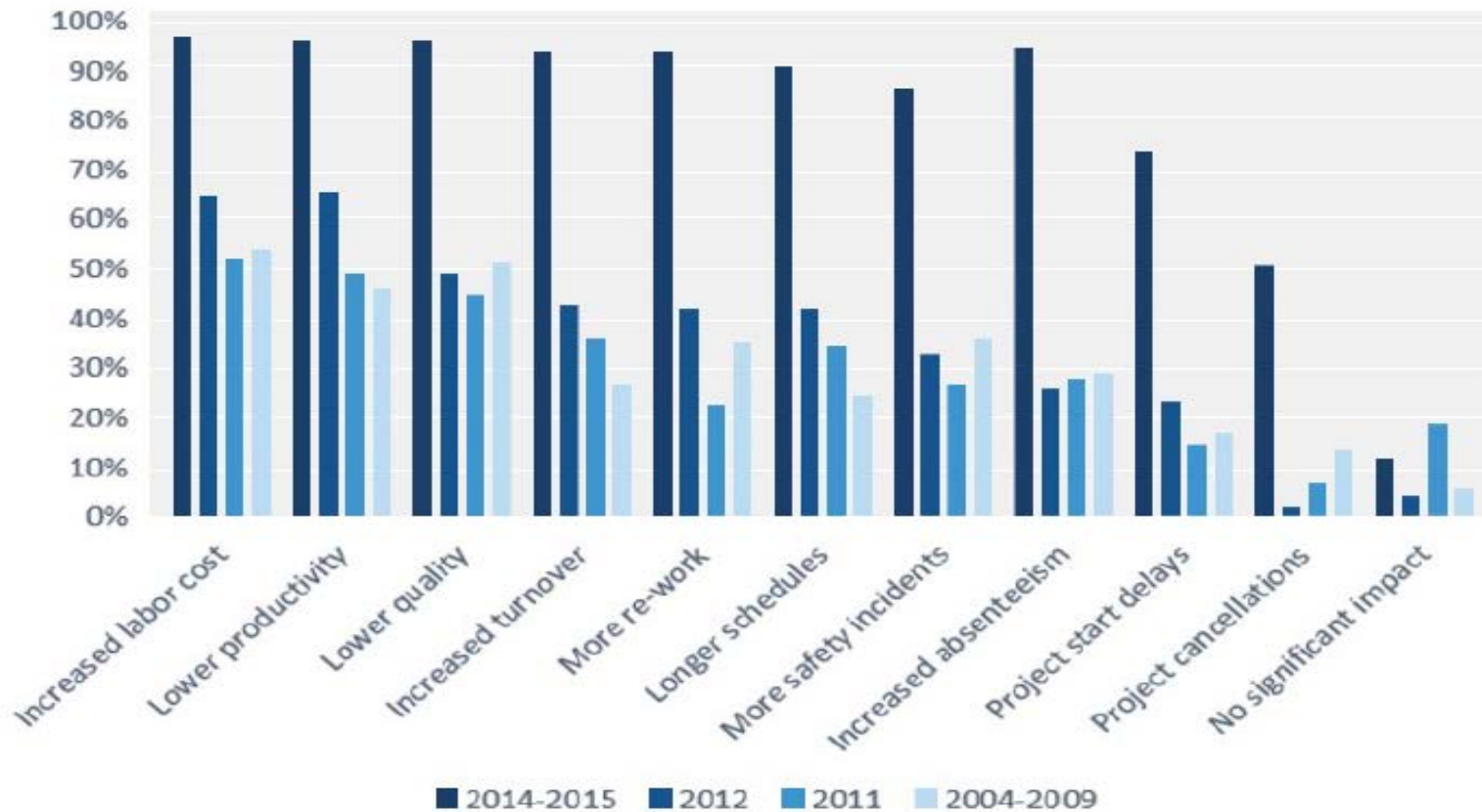
Type of Manpower	Required man years
1.Engineer	3.72 million man years
2.Technician	4.32 million man years
3. Support staff	3.65 million man years
4. [REDACTED]	[REDACTED]
5.Unskilled/ semi-skilled worker	56.96 million man years
<b>TOTAL MANPOWER</b>	<b>92 million man years</b>

Skilled labour - 7 fold increase in next 5 years

# Impact of skilled labour shortages on projects – in the US Construction market

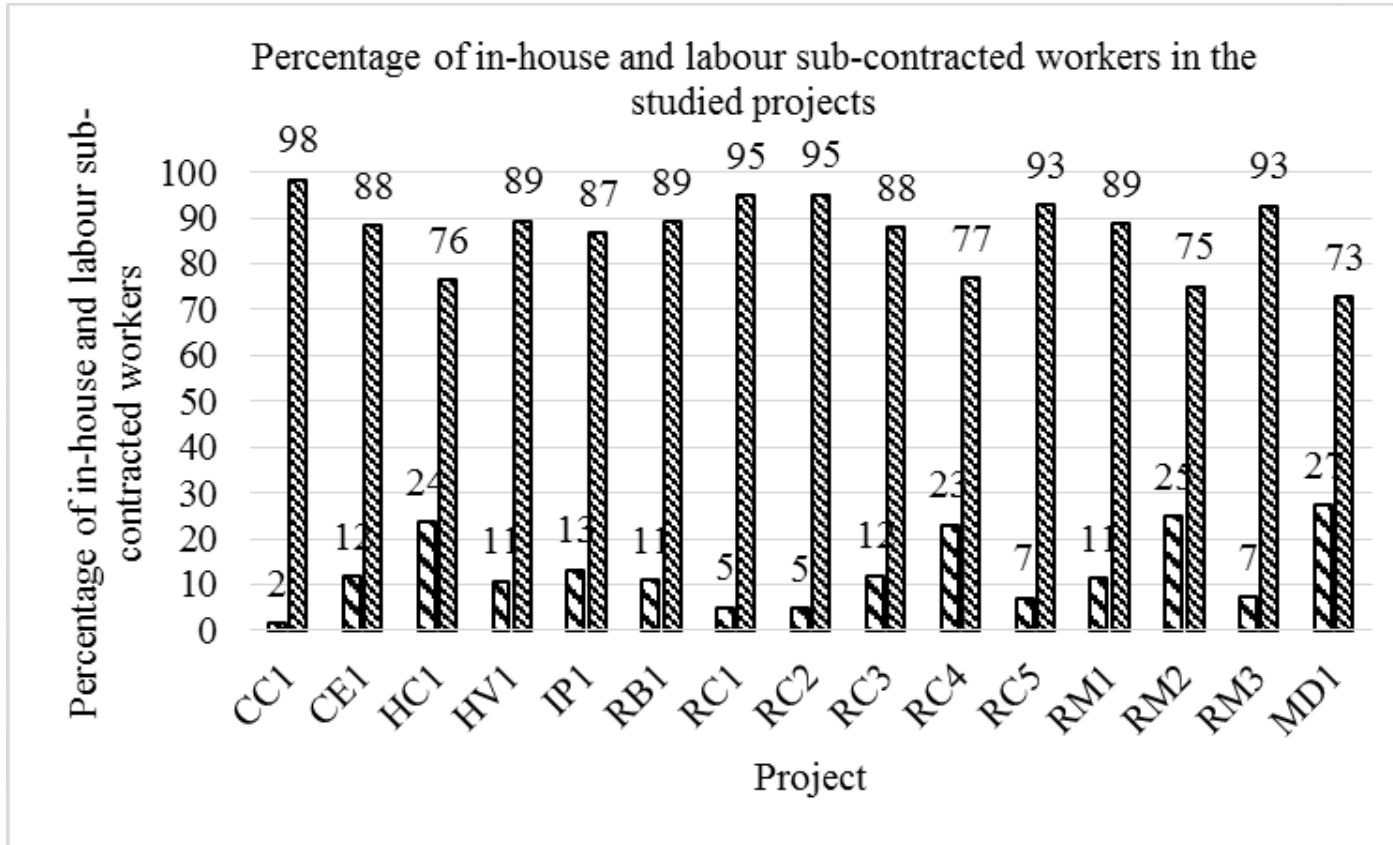


**Q: What was the impact of the skilled labor shortages/challenges on your project(s)?**



S. No	Project code	Project type	Project location	Project duration (in months)	Project cost (in million INR)	No. of in-house workers at site on date of survey	No. of sub-contract workers at site on date of survey
1	CC1	Commercial	Chennai	24	1680	20	1180
2	CE1	Commercial	Erode, Tamil Nadu	24	1400	20	150
3	HC1	Hospital	Chennai	18	200	20	65
4	HV1	Hospital	Vadnagar, Gujarat	18	1030	30	250
5	IP1	Institutional	Pondicherry	24	1000	35	230
6	RB1	Residential	Bangalore	26	1040	80	650
7	RC1	Residential	Chennai	30	2500	50	950
8	RC2	Residential	Chennai	21	747.5	57	1100
9	RC3	Residential	Chennai	20	580	45	330
10	RC4	Residential	Chennai	24	600	45	150
11	RC5	Residential	Chennai	36	1250	50	650
12	RM1	Residential	Mumbai	48	6000	102	800
13	RM2	Residential	Mumbai	27	7000	500	1500
14	RM3	Residential	Mumbai	27	600	20	250
15	MD1	Metro	Delhi	27	4100	600	1600

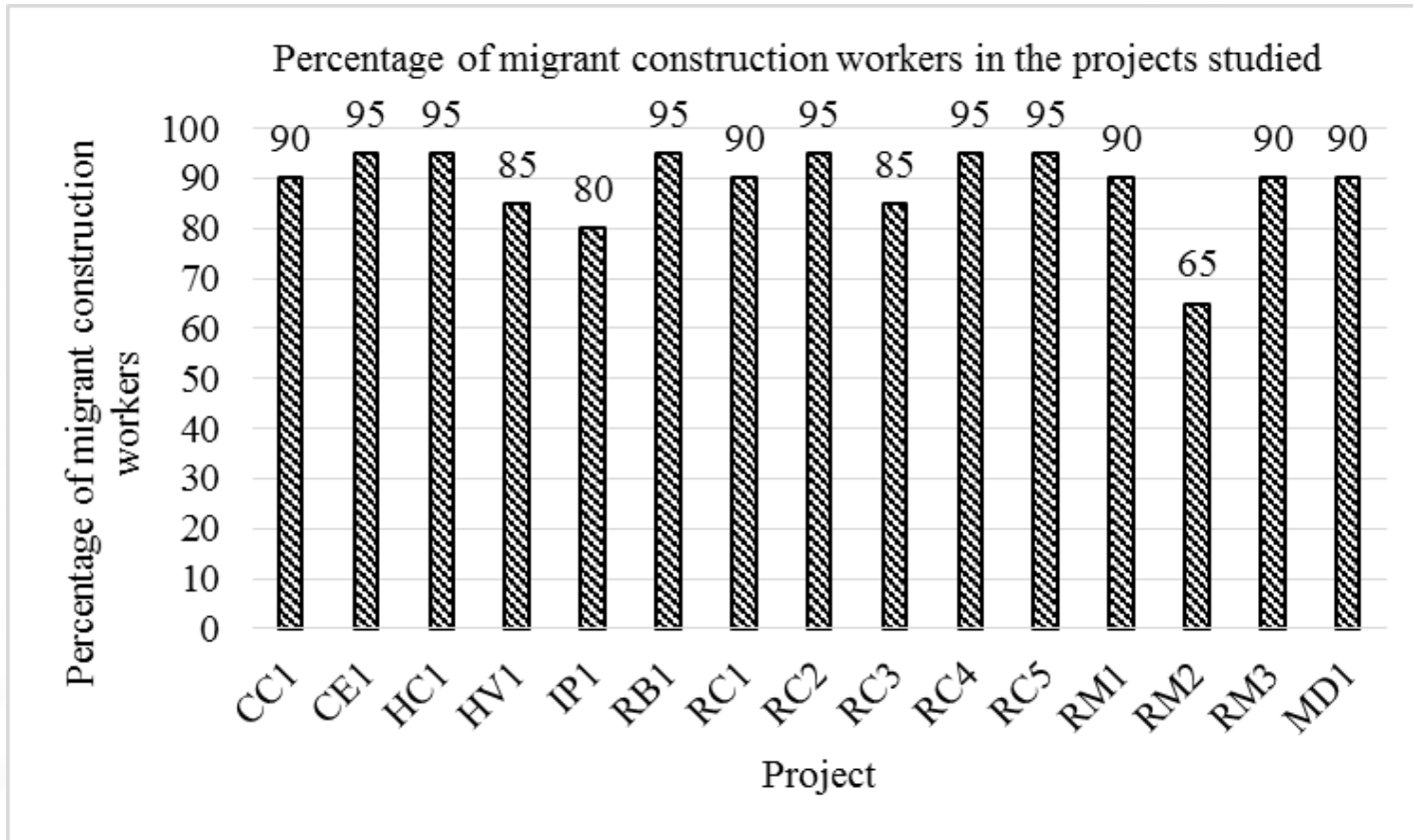
## Percentage of labour sub-contractor and in-house workers in the studied projects



The percentage of labour sub-contract and in-house workers engaged is about 87% and 13% respectively



## Percentage of migrant construction workers in the projects studied



65% to 95% of the total construction workforce is migrant construction workers - an average of 89% of migrant workforce

Most of the migrant workers were from Bihar, Odisha, West Bengal, Jharkhand, Uttar Pradesh, Andhra Pradesh & Telangana, Assam.

➤ From the projects studied, it was observed that the age of construction workforce range from 18 to 60 years

➤ Fig. shows age distribution of 1200 workers from five projects studied

➤ **Average age of construction worker is 28 years**

➤ Also, it was found that about

➤ 16% of the workers are under 20 years,

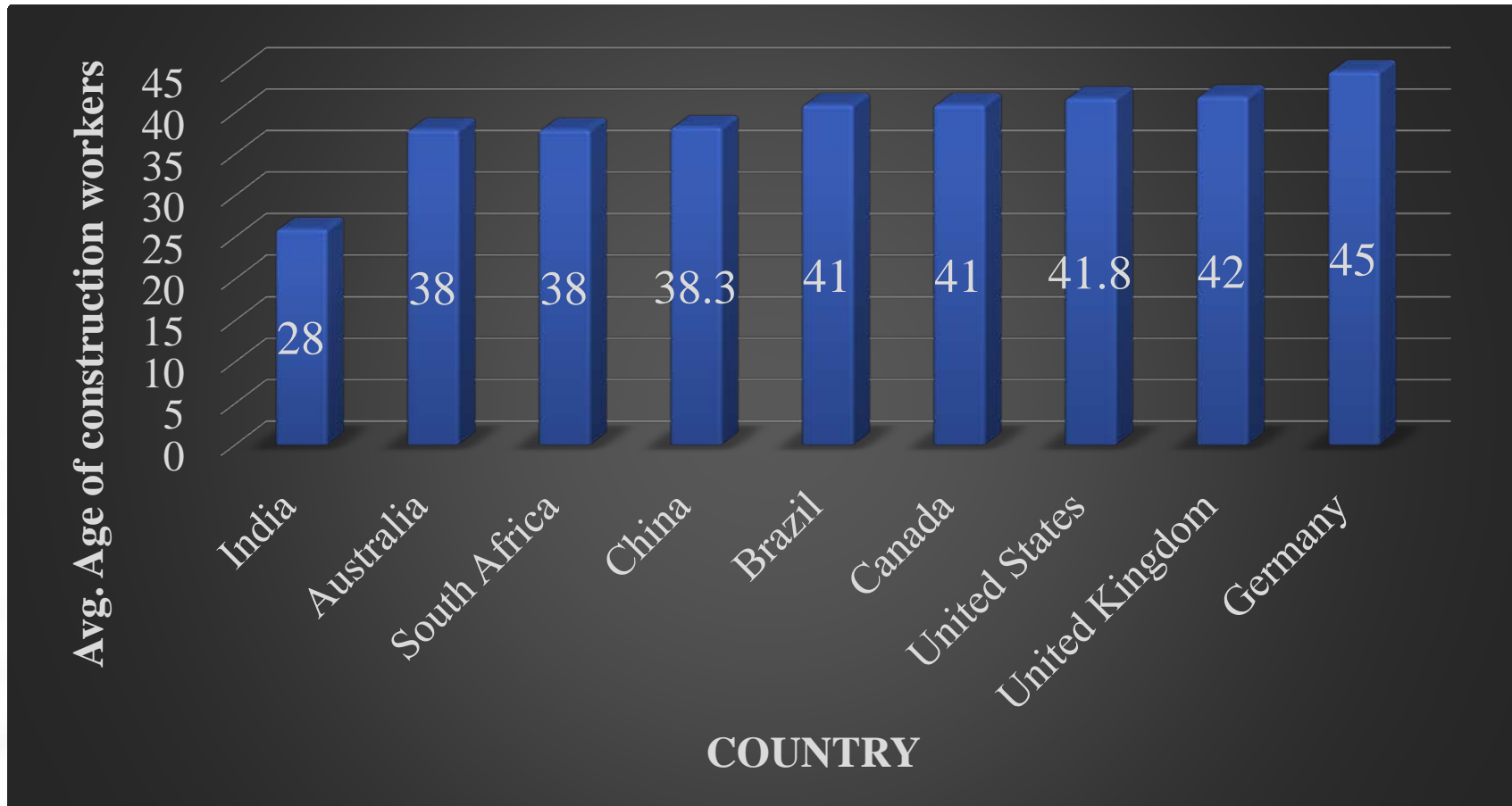
➤ 51% are under 25 years,

➤ 69% are under 30 years, and **81% are under 35 years of age**

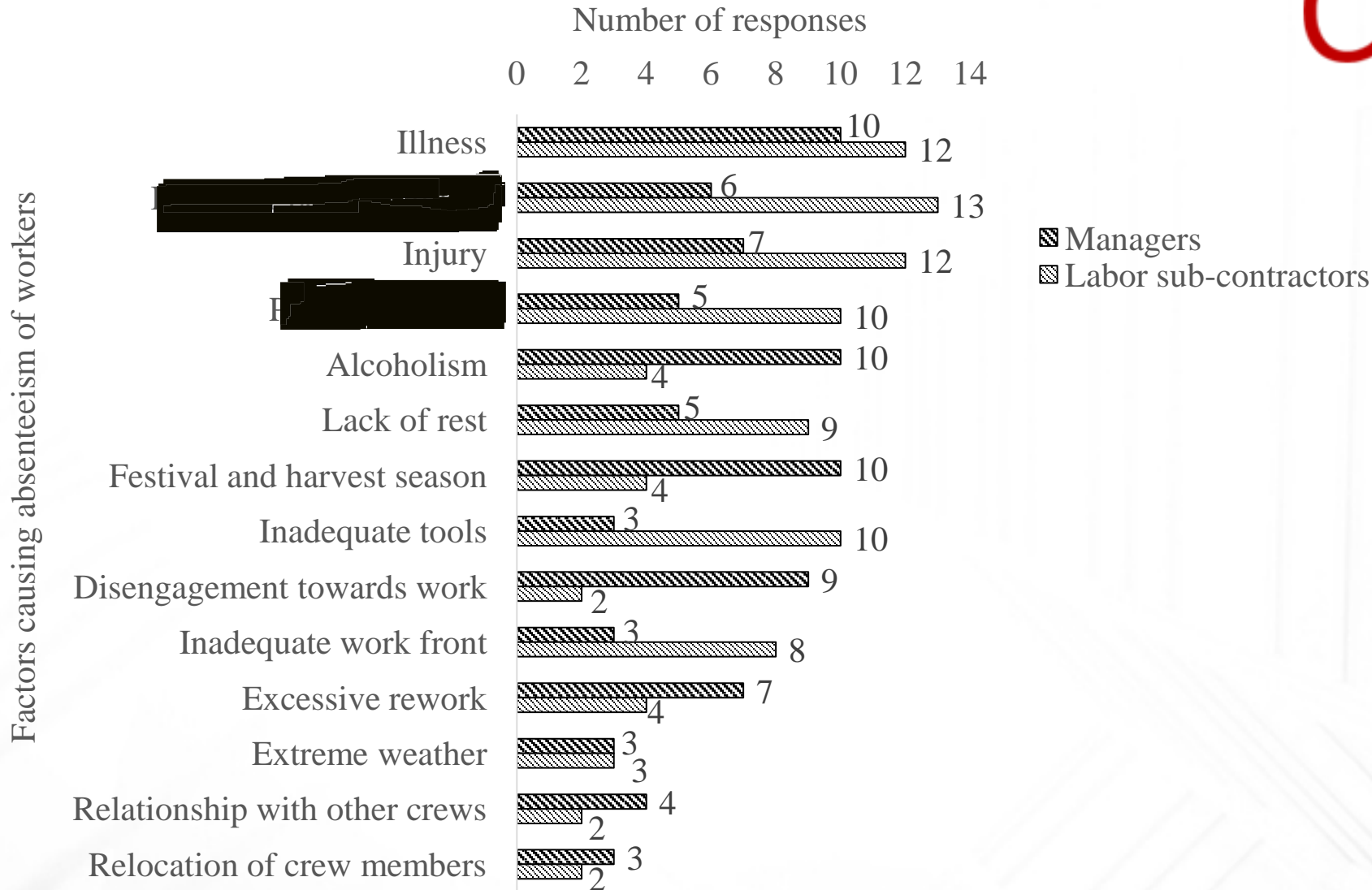


Age distribution of workers (1200 workers) – from five of the surveyed projects

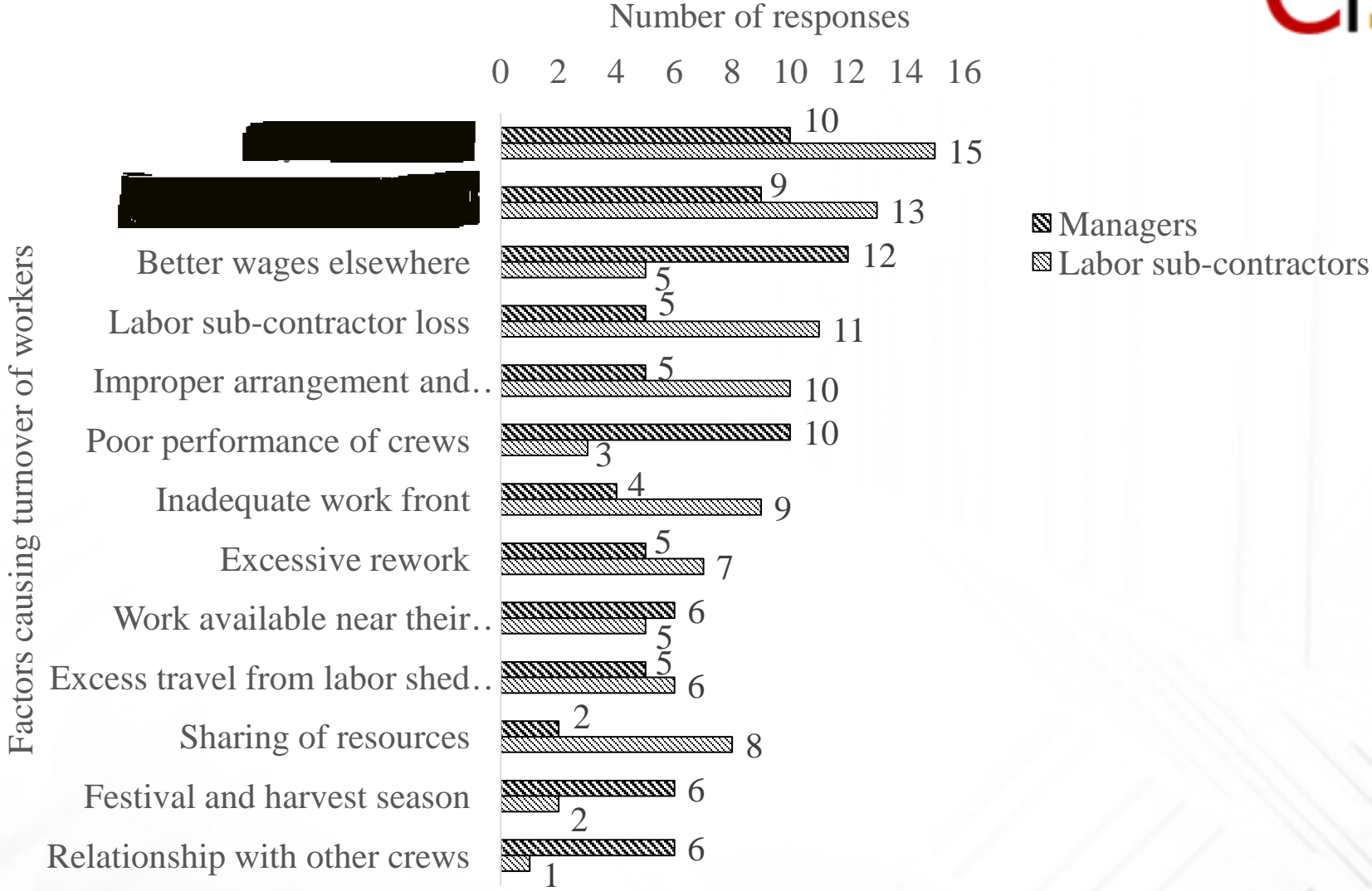
## A comparison of average age of construction workers in different countries



# Factors causing absenteeism of workers



# Factors causing turnover of workers





**Labor camp**



**Sunday market near Labor camp**



**Drinking water facilities**



**Toilet facilities**



**Bathing facilities**

## Discussions & Action Agendas



- *Business case for Quasi-Formalization of workforce*
  - *Mandatory digital bank account wage- payments for monitoring actual wages to last-mile-sub-contracted workers* - this will also ensure timely disbursement of wages thus fulfilling labor laws' mandate for Principal employer.
  - *Provision of 'Site-id' with access control-based attendance to digitally log attendance to be used for time-sheeting of wage/OT calculations* - this will enable in actual head count and fair Wage/Overtime calculations without 'inflated' headcount claims from sub-contractors.

## *Discussions & Action Agendas*



- *Making construction sector 'aspirational' for workers*
  - *Uniforms like 'over-alls' for all site-workers (to be issued along with helmets, shoes) to ensure a 'factory-like' environment at construction site*
  - *Weather-resistant accommodation (using pre-fab materials like Bison boards), along with on-site canteen, Entertainment, bus-travel facility (to be provided if need be on deductible basis) like in the Middle East.*



## Discussions & Action Agendas

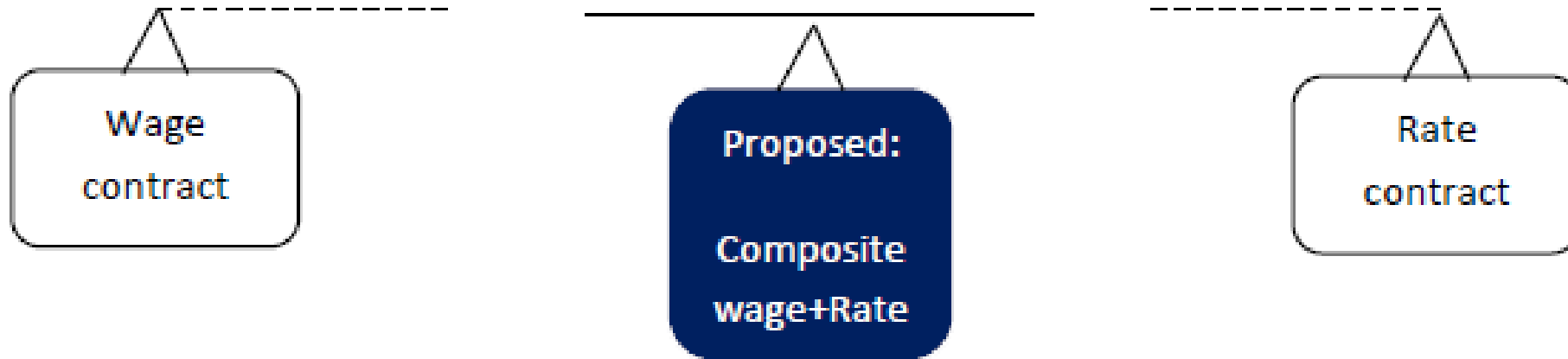


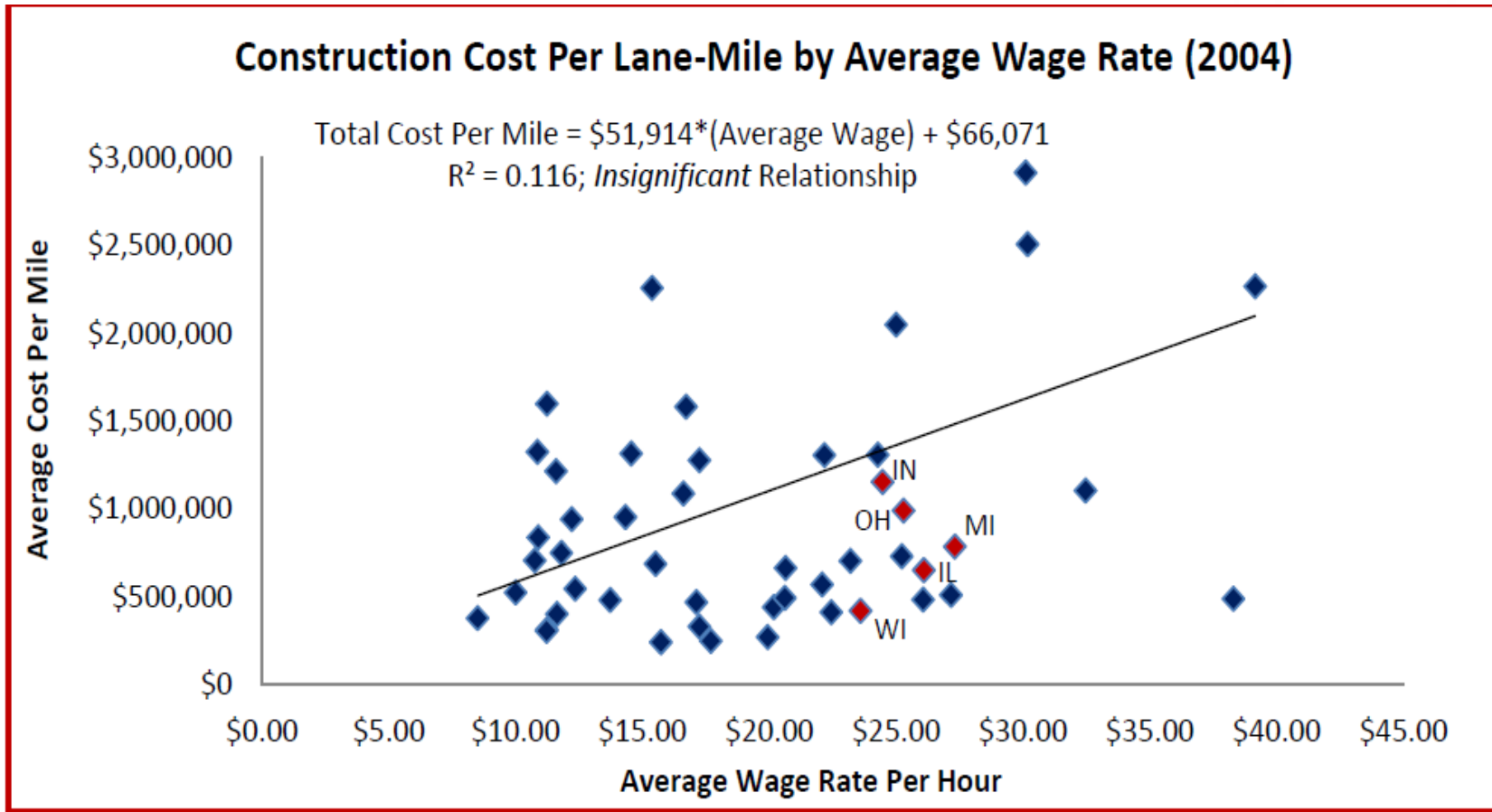
- *Formally trained and certified workforce to be mandated, measure at least for semi-skilled and skilled jobs to understand impact on productivity over time. Up-skilling of professionals on advanced technologies is also proposed.*
- *Monitoring of productivity-wages-paid based on skill levels to ensure premium over minimum wages is paid to semi-skilled/skilled workers for ensuring their retention and also understand RoI in terms of productivity for the same.*
- *Formal training to ensure entry of 'semi-skilled' assistants instead of unskilled helpers.*
- *'Finishing school' for professionals with up-skilling on latest technologies.*

## Discussions & Action Agendas



- *Productivity-linked wages as against government-set minimum wages*





Source(s): Poupore (2004), "The Impact of Wages on Highway Construction Costs: Updated Analysis," The Construction Labor Research Council.

## Discussions & Action Agendas



- Research study needs to be done for:
  - Determining a productivity-linked-payment system with both fixed and variable components for both rate and wage contract.
  - Usage of technologies like pre-cast to understand their RoI from a scientific manner in terms of wage-productivity-investment-RoI calculations.

## *Summary of Proposed Action points:*



### ➤ Demo-site

- *Mandatory digital bank account wage- payments*
- *Provision of 'Site-id' with access control-based attendance*
- *Skill testing of all workers and Formal training to ensure entry of 'semi-skilled' assistants instead of unskilled helpers.*
- *Monitoring of productivity-wages-paid based on skill levels to ensure premium*
- *'Finishing school' for professionals with up-skilling on latest technologies.*
- *Uniforms like 'over-alls' for all site-workers*
- *Weather-resistant accommodation along with on-site canteen, bus-travel facility like in Middle East.*

### ➤ Research study

- *Research study for productivity-linked-payment system for sub-contractors merging aspects of rate and wage-contracts for optimization at the whole project level*

## Structure & Expected Contents of Action Team 5 White Paper- due 10 Dec. 2016

- *Based on Working Paper + .....?*
- *Suggestions solicited TODAY + any more before 25 Oct. 2016 please*
- *Then we will formulate a Specific Activities List with a Time-line*



*Thank you all...*