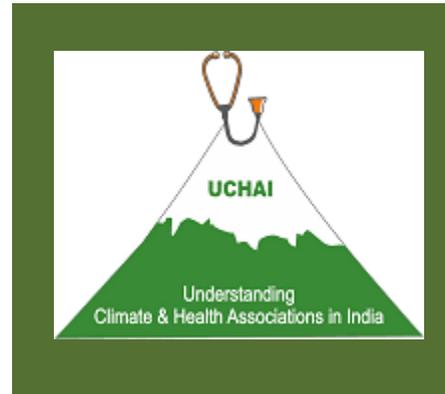


The science and politics of Promoting Physical Activity in urban spaces



Cross-Cultural Perspectives on Urban Sustainability and Health: Smart Solutions for Smart Cities in India

NIEHS Global Environmental Health Program

Webinar, 30th September 2019

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What affects our decision to Walk?

- Major Factors
 - Availability of Walking spaces (Density domain)
 - Accessibility of Walking spaces (Safety Domain)
 - Awareness of need for PA (Knowledge domain)
 - Affordability (Time) for doing PA (Economic domain)
- Physical Environment
 - **Pavement:** Width and height of Pavement, Obstructions, Continuity, Integration with other levels
 - **Parks** – Cleanliness , Safety, **Air-pollution**

Tools for measuring environment



Walkability Score – An environmental assessment tool

Domain	Sub-domain	Variable	0	1	2
Street	Foot path	Presence	Absent	Present	-
		Type	Mud	Bricked	Tiled/cemented
		Status	Discontinuous	Continuous	-
		Obstructions	Complete	Partial	Absent
	Street lights	Presence	Absent	Present	-
		Nature	Discontinuous	Continuous	-
		Condition	Majority not working	Majority working	-
	Zebra crossing		Absent	Present	-
	Fast running vehicles		Present	Absent	-
	Cleanliness	Garbage disposal	Disposed openly everywhere	Disposed in a restricted area	Disposed in dustbins/No open disposal
Transport	Bus stop	> 1km	< 1km	-	
	Auto stop	> 1km	< 1km	-	
	Other transport	> 1km	< 1km	-	
Access to Facility	School	Outside the community	Within the community	-	
	General store			-	
	Parks			-	
	Recreational centers			-	
	Gym			-	
	Play ground			-	

Neighborhood environment Audit of Ballabgarh

- **Community Audit:** A process of direct observation in which the researcher directly goes into the community to measure its various attributes.
- 10 colonies in Ballabgarh (Haryana) were studied.
- Key results :
 - Density of PA sites – 6.9 per square kilometer
 - Median (95% CI) community walkability score: 9.8 (7.5-10.5)
 - Proportion physically inactive : 56%
 - Proportion indulging in leisure time physical activity: 28%
 - Mean Hours spent in recreation-related physical activities/ week (mean) 1 .3 (1.0-1.7)

Community Audit - Indore

- 90 clusters from 30 randomly chosen wards from Indore (Madhya Pradesh)

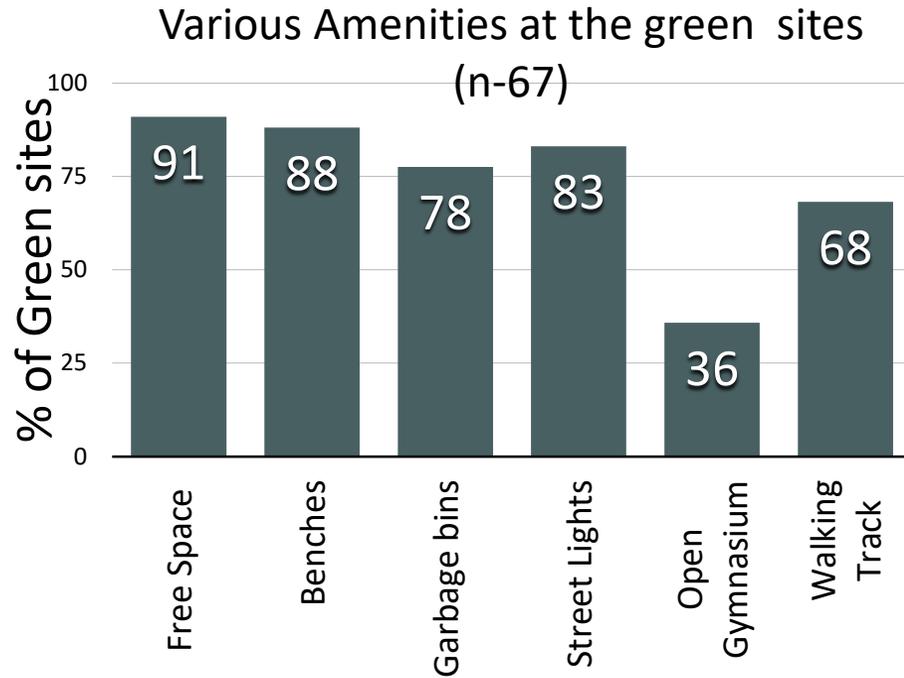
Domain	Indicator	Indore (2018)
Neighborhood Environment	Median Number of parks per colony	1 (0-1)
	Median Community walkability Score	8.5 (8-10)
Physical Activity	Proportion physically inactive (%)	24 (22-26)
	Hours spent in travel-related physical activities/week (mean)	5 (4-6)
	Hours spent in recreation-related physical activities/ week (mean)	<1 (0-0)
Overweight	Body mass index (Kg/M2) (mean)	26 (26-26)
	Overweight or obese (WHO cut-off) (%)	54 (50-59)



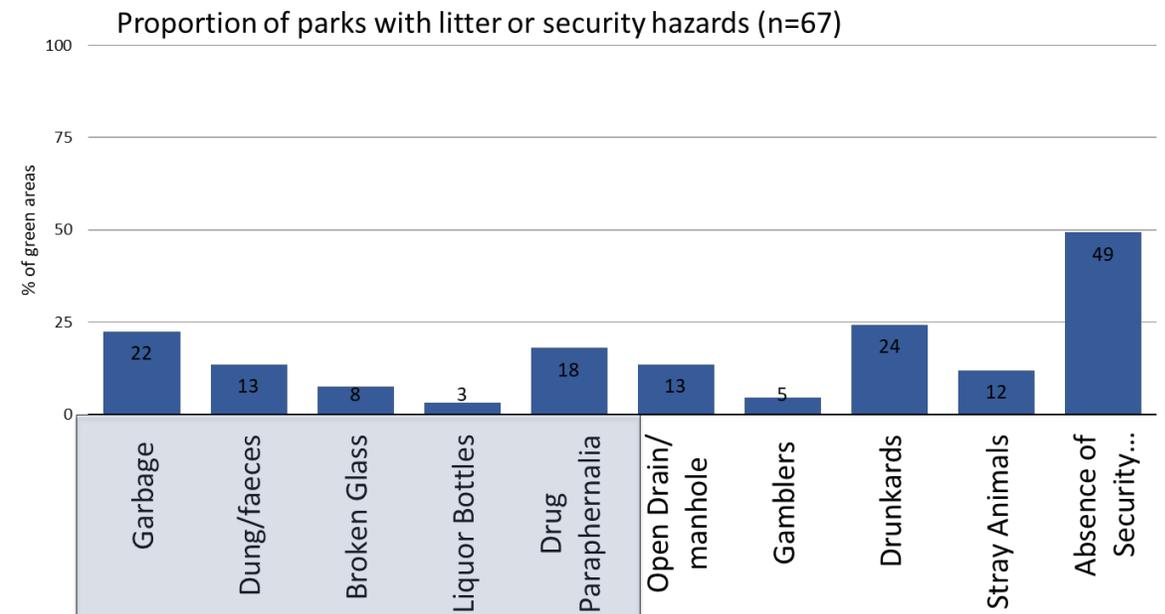
BUILDING HEALTHY CITIES



Quality of Parks in Indore



Of the 67 PA sites, 77% had free access, 37% were restricted for use by children



Chennai Experience – Community empowerment works

The Chennai Urban Population Study [CUPS] Physical activity using a validated tool was collected among 479 individuals at baseline (1998) in Asiad colony and among 705 people after seven years (2004)

Intervention: Education regarding the benefits of physical activity provided by mass awareness programs like public lectures and video clippings. In response to the awareness programs, the colony residents constructed a public park with their own funds.



RESULTS: The number of subjects who walked more than three times a week increased from 13.8% at baseline to 52.1% during follow-up [$p < 0.001$].

CONCLUSION: This study is a demonstration of how community empowerment can lead to increased physical activity.

Delhi Experience : Bus Rapid Transit (BRT) Corridor

- An open BRT system from Ambedkar Nagar to Moolchand flyover (5.8 km.) since April 2008.
- Traffic segregated into bus lanes (PT), motorized vehicle (MV) lanes and Non-motorized transport (NMT; cycles and pedestrians)
- Integrated Automatic Signaling system minimizes conflicts.
- Cyclists move on 2.5 m wide segregated outer lanes on both the sides of the corridor. Features to reduce vehicular and ensure safety included.
- Continuous & wide footpaths provided on both sides of the road to support existing pedestrian flows.



Impact of BRT Corridor in Delhi

Domain	Indicator		Non-Motorized Transport	Public Transport	Personal Motor Vehicle
Speed	Average speed of vehicle (kmph)	Mixed Traffic	Walk - 4 Cycle - 8	12	16
		BRT	Walk - 4 Cycle - 12	17	14
Time	Total time saved (%) if travel the entire stretch	Vehicle users	2500	12369	11790
		Mean time saved per user* N of users	33%	33%	-14.3%
Safety	Probability of meeting a fatal accident per 100,000 total users of the system/mode	Pre-BRT	0.095	0.000	0.006
		Post BRT	0.002	0.000	0.000

Fate of BRT in Delhi and rest of India

- Delhi BRT was disbanded in 2016 being branded as a “FAILURE”.
- Major reasons
 - Motorists in Delhi wealthier than bus passengers/ cyclists and walkers.
 - “Too little, Too Late” -
 - Poor implementation – covered a short stretch, traffic management of feeder roads were not planned appropriately.
 - Carving out bus lanes from existing overcrowded 3 lane roads, with leftmost lane used by hawkers/parking/stuck trucks.
- Other Cities adopting the BRT concept
 - Ahmedabad (Janmarg system 45 km long). Surat and Indore are building complete systems as well, and Pune-Pimpri-Chinchwad, Naya Raipur, Hubli-Dharwad, and Bangalore, among others, are planning full systems.

Air-Pollution – a new consideration in urban transport decisions

- Move towards improved public transport and clean vehicles/fuels



How successful was odd-even really? After all, Delhi's PM 2.5 levels rose 15% during trial period

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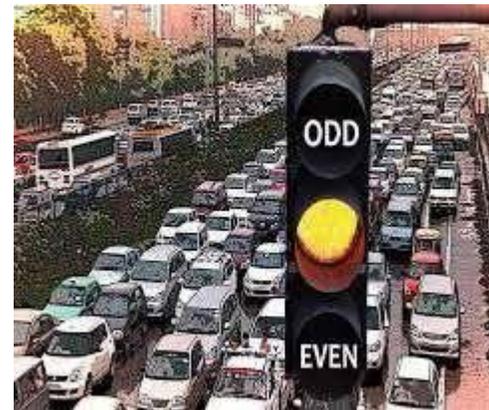
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Editor's Note: This copy was originally published in January. It is being republished in light of the Delhi government's decision to reintroduce the odd-even car rule from 13 to 17 November.

By IndiaSpend Team

Air-pollution levels in Delhi rose 15 percent during the 15-day period (January 1 to 15, 2016) of the state government's odd-even measure over the previous 15 days (December 17 to 31, 2015), according to an analysis PM (particulate matter) 2.5 data, generated by IndiaSpend's #Breathe air-quality monitoring devices.

The increase in PM 2.5 level indicates the need to understand deeper the impact of policy changes, such as the even measure, on Delhi's air, as IndiaSpend reported, and, with four-wheeled vehicles accounting for no more 10% of the city's overall vehicular pollution load, according to a new Indian Institute of Technology (IIT) study need for other measures is obvious.



AAP govt brings odd-even back, to run from Nov 4 to 15

CM: Curbs Will Improve Air In Crop-Fire Period

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New Delhi: The Delhi government announced on Friday that the odd-even vehicle rationing plan will be rolled out again in the capital from November 4 to 15, a period when air quality generally at its worst, as part of a seven-point action plan against pollution this winter.

Chief minister Arvind Kejriwal said the odd-even plan was an emergency measure being announced in advance keeping in mind the likely spike in pollution during this period, owing to Diwali and stubble burning.

"Studies have shown that odd-even had led to a reduction

FULL COVERAGE: P 4 & 5

in pollution by 10-13%. Pollution is at its peak during this period due to stubble burning and the aftermath of Diwali. The details of its implementation and the exemptions will be announced in a few days," said Kejriwal.

Under the odd-even plan, only vehicles with registration numbers ending with an even number are allowed to run on even dates, and those with odd numbers are permitted on odd dates. The CM said details on exemptions will be announced later.

The seven-point action plan also includes distribution of free N-95 masks, which Kejriwal said could start by October. "We are in the process of acquiring these masks and

THE COMING WAR ON POLLUTION

Return Of Odd-Even Scheme...

When: Nov 4 to 15 (10 weekdays)

Why: Anticipating peak of stubble burning and post-Diwali effect

Past: Two odd-evens implemented in 2016 (Jan 1-15 & Apr 15-30)

And: One odd-even attempted in 2017 (November 13-17). Abandoned after NGT banned exemptions

Exemption: Two-wheelers, women drivers, CNG, hybrid and electric vehicles, VVIP and embassy vehicles were exempted in the past

This year: No clarity if exemptions will be allowed

Fine: ₹2,000 per offence was the fine in past

...And Six Other Measures

1 Govt to distribute N-95 category masks free of cost from October

2 A free laser show to be held on Diwali eve to encourage people to not burst crackers

3 Frequent water sprinkling and mechanised sweeping of roads

5 Two environment marshals in each ward to work with RWAs to cut burning of waste

4 Area-specific action plans for 12 pollution hotspots

6 Delhi Tree Challenge campaign where people can SMS/call for home delivery of saplings

There is no need for odd-even scheme. The new ring expressway is helping reduce pollution...we are pursuing road works of about ₹50,000cr... other works are on. Delhi will be pollution-free in 2 years

Every November...Delhi turns into a gas chamber due to smoke from Punjab and Haryana. Centre and states are trying to prevent it. But...we must take steps to protect ourselves

Did 2016 rollouts help? Studies split

Delhi Pollution Control Committee and University of Chicago studies said pollution levels dipped in the two phases of the odd-even scheme in 2016, but The Energy and Resources Institute as well as CPCB maintained that the impact had been insignificant. P 4

Fewer buses but more cabs this time

Unlike in 2016, public transport is more robust this time. Though DTC's fleet of buses has shrunk, the Metro and app-based cabs have revved up public transport. Experts feel the Metro will absorb a large number of commuters, as will 2.4 lakh app-based cabs. P 4

CPCB praises move, many RWAs slam it

The odd-even scheme in November has thrown up mixed reactions from experts and residents. Terming it a "good move", the Central Pollution Control Board said exemptions needed to be minimised. However, RWAs said the 2016 schemes had little impact on pollution. P 4 & 5

will be distributing these free of cost before smoke from stubble burning starts reaching Delhi."

The CM said the third component of the action plan centres around Diwali. The government will encourage people

not to burst firecrackers and obey the Supreme Court order in this regard. To encourage a cracker-free Diwali, Kejriwal said Delhi government will hold a free "mega laser show" a day before Diwali. "Instead of bursting firecrackers,

we request you to come with your family and enjoy the laser show by Delhi government at a public spot. There will be no entry charge. It will be a public spectacle," said Kejriwal.

► 12 pollution hotspots, P 4

Conclusions

- Urban Environment including green spaces, public transport is key to promote physical activity of the population.
- We need to improve Science of measurement of urban environment
 - Multi-faceted measurements - Develop appropriate indicators, tools using GIS
 - Setting Norms for Built or neighborhood environment
- Evaluation of population level interventions are challenging
 - Academics must respond better to it and develop evaluation frameworks
 - Improve the communication of science to community
- Engaging with Community & Policy makers
 - Community Empowerment is essential for success of any such program.
 - How can we engage with politics of it more meaningfully?