Metrocable
Metro de Medellín

Metrocable

Our keys to keep the first urban cable car in operation after:

- **260** million passengers mobilized
- **135,000** hours
- **20 years**

Urban cable cars

a sustainable transport option

Bolzano, Italy 2017


Metrocables
Metrocable Line P
Metrocable Line K
Metrocable Line L
Metrocable Line J
Línea A
Metrocable Line M
Line B
Line T
Metrocable Line H

Metrocable line K

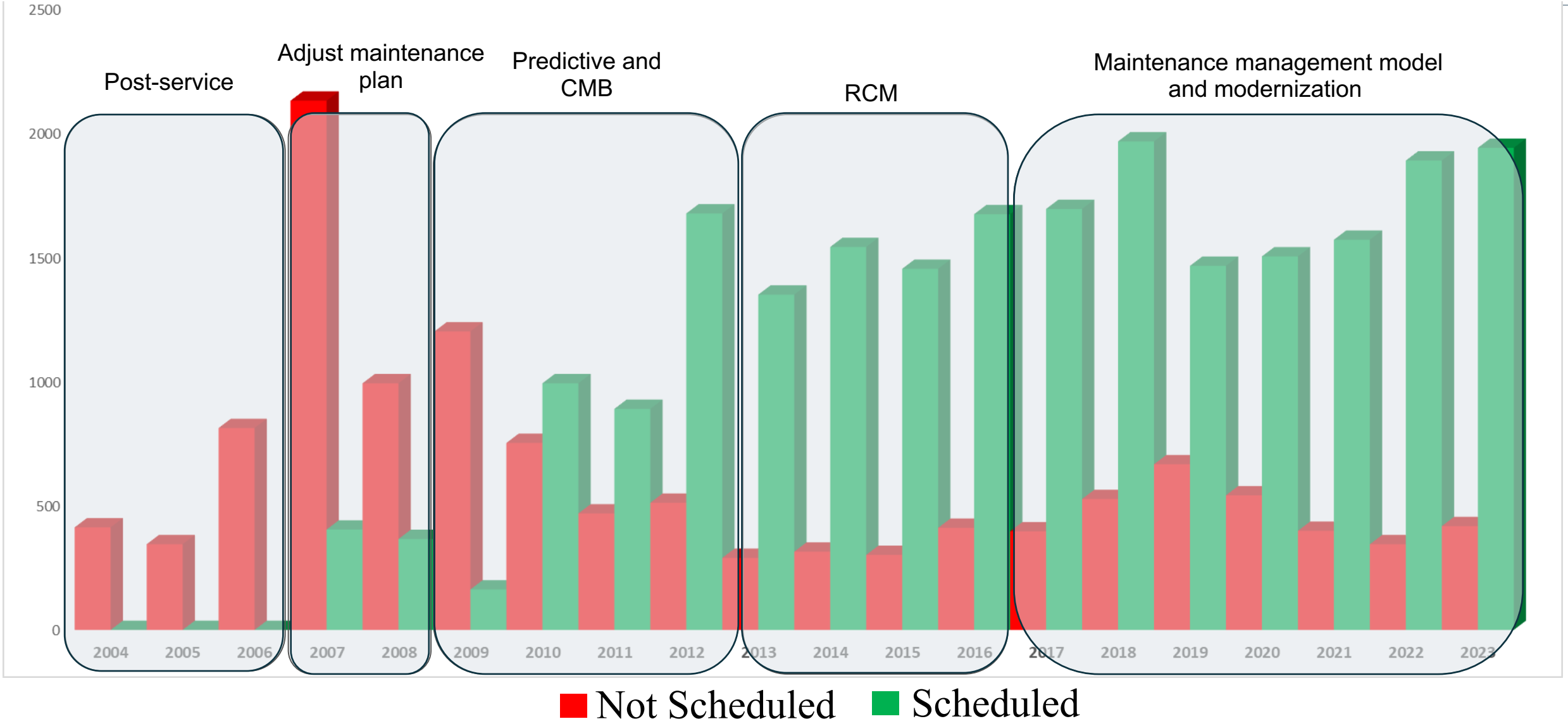
Paradigms 20 years ago:

- Urban cable car
- Integrated to a metro system
- 2 intermediate stations
- 360x20 operation

Keys to keep a reliable operation after **135.000** hours of operation, **260** million passengers mobilized and **20** uninterrupted years.

1. Specific maintenance

Corrective maintenance services

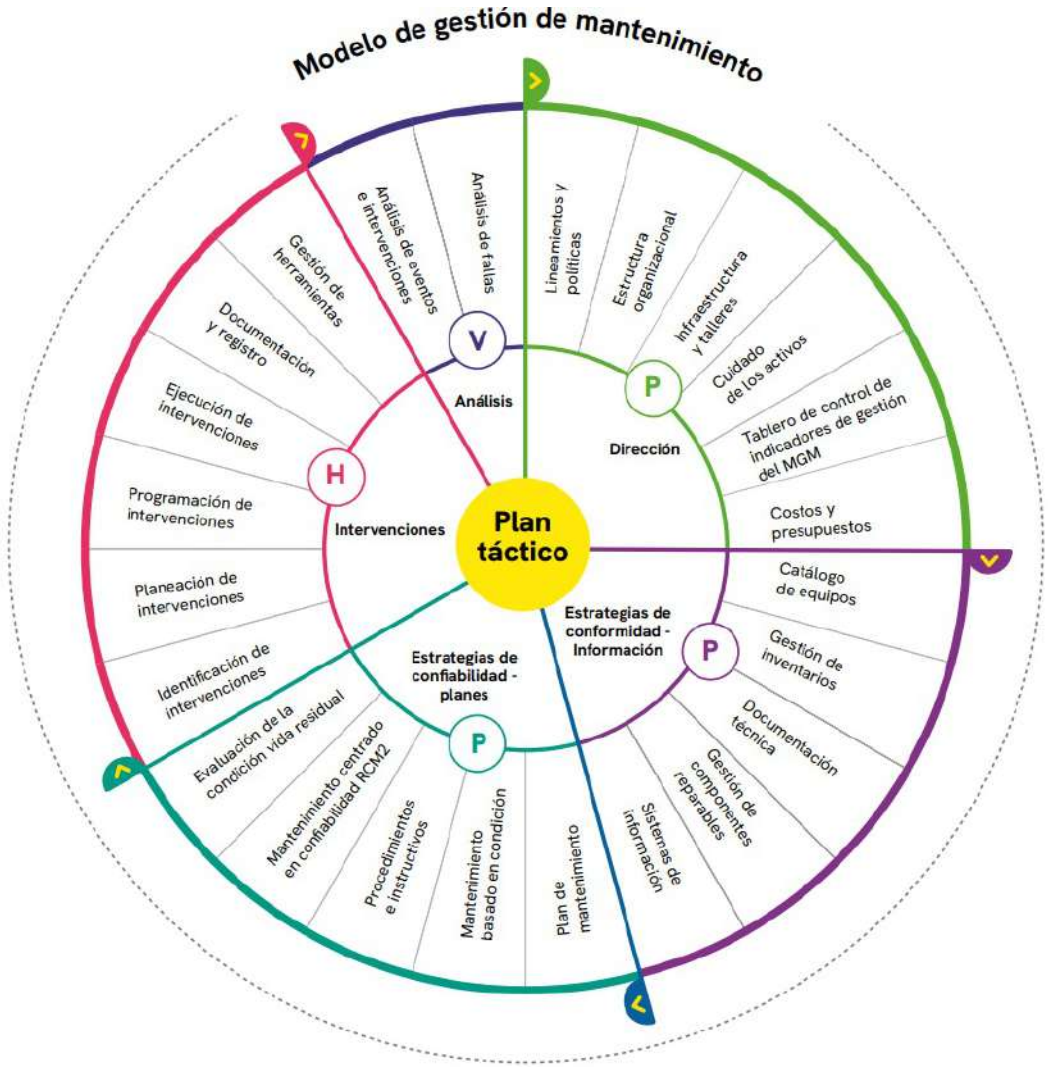


1. Specific maintenance

- Maintenance plan adjustment
- Condition Based Maintenance (CBM): monitoring of asset conditions
- Implementation of RCM methodology

1. Specific maintenance

- Maintenance management model with **25 components:**



2. Knowledge management

Metro University

- Strategy aimed at integrally training our human talent to strengthen essential and distinctive skills for the operation, business and leaders.
  - **87 operators (line conductors)**
  - **217 maintenance staff**

2. Knowledge management

El Metro de Medellín Ltda.

Certifica que:

JOSE MANUEL RIVERA GALEANO

C.C. 71.228.364

Participó del programa de formación teórico práctico de Operación de Cables Aéreos; en el periodo comprendido entre el 31 de julio y el 17 de diciembre de 2023, con una duración de 1370 horas para certificarse como:

"OPERADOR DE CABLES AÉREOS"

Para constancia se firma en Bello a los veinte (20) días del mes de diciembre de dos mil veintitrés (2023).

PAULA ANDREA ECHEVERRI PARRA
Jefe Gestión del Talento Humano

ANDRES FELIPE AGUDELO L.
Instructor

2. Knowledge management

Laboratory and training tower

- The laboratory is used for the training of operation and maintenance staff, as well as for testing repaired elements before their installation on the cable car.

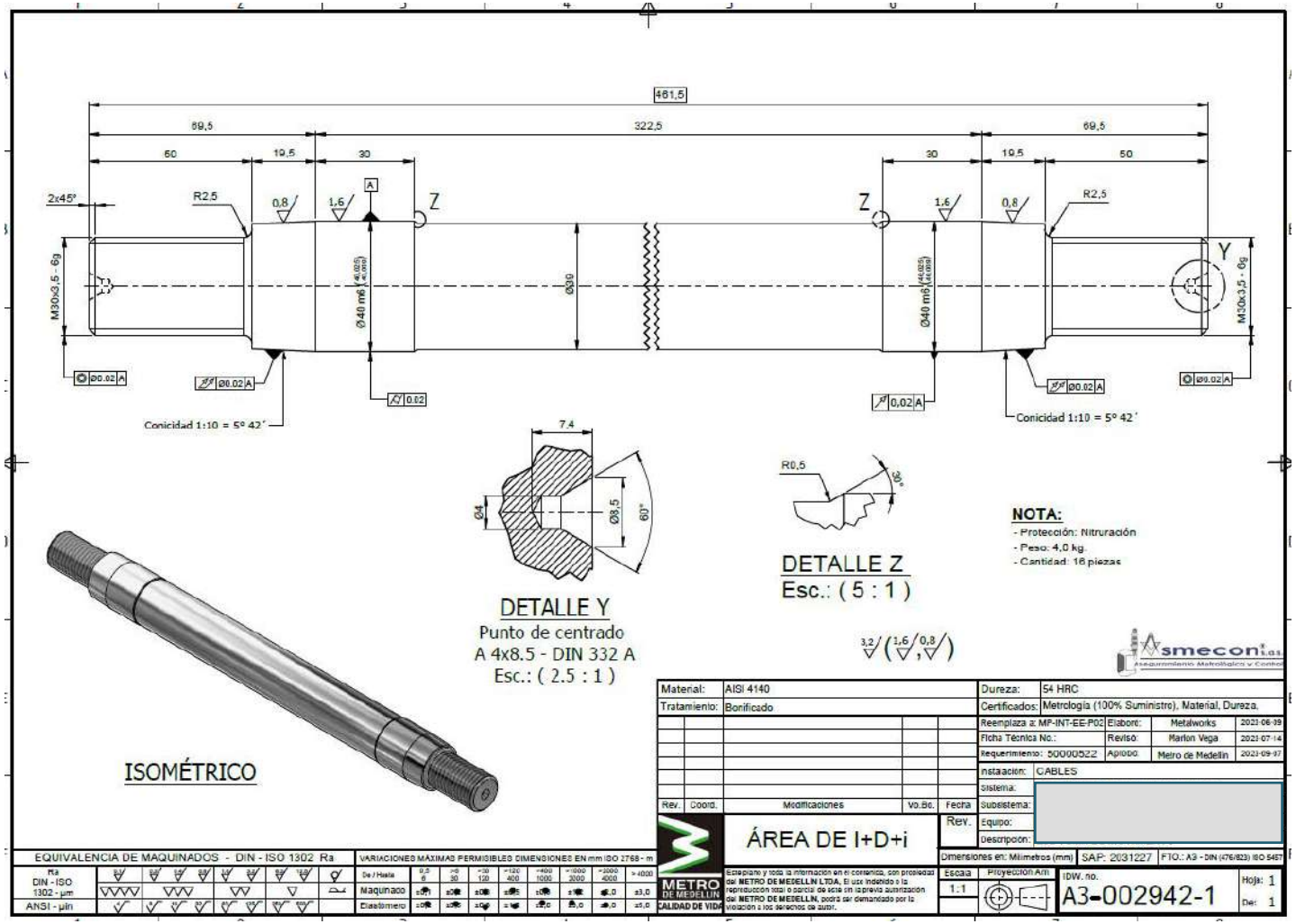
- The school tower allows simulating the operating conditions on a line tower.

3. I+D+i

We have a corporate innovation system that takes advantage of internal and external input components and is based on research, the development of prototypes and projects and the appropriation of innovation by the entire human team.

3. I+D+i

Approval and replacement procedure: **240 items developed**



GERENCIA DE PLANEACIÓN
PROCESO (I+D+i)

Ficha de Especificaciones Técnicas para la Homologación y Fabricación de Prototipos Metal Mecanicos.

ID 002					VERSIÓN
N° Ficha		246			V1
TRV	OB	OS	OCA	INF	T
Código SAP / Plano Metro		2031227 / A3 002942 H1			
Fabricación	MM	PL	EL	ELC	

1. IDENTIFICACIÓN

1.1Sistema	Estaciones Metro Cable
1.2 Subsistema	
1.3 Equipo	
1.4 Nombre	
1.5 Descripción	Eje metálico con una geometría variable en cuanto al maquinado de varios diámetros exteriores; dentro de los cuales se destacan 2 con una medida de 40 m6 mm, sobre los cuales se alojan 2 rodamientos 6308 que a su vez acoplan dentro de la chumacera para permitir su giro.
1.6 Prototipo	SI / NO

2. ESPECIFICACIONES TÉCNICAS

2.1 Material Original	NA								
2.2 Material Equivalente	Acero AISI 4140								
2.3 Tratamiento Térmico	Bonificado								
2.4 Protección Superficial	Nitrurado	2.5 Color	Propio del material						
2.6 Espesor de Capa	NA								
2.7 Dureza	54 HRC	HRA	HRB	HRC	HB	HV	HK	SHA	SHD

3. ESPECIFICACIONES METRÓLOGICAS

3.1 Diámetro Exterior	Ver Plano A3 002942 H1	3.5 Diámetro Interior	Ver Plano A3 002942 H1	IMAGEN
3.2 Altura	Ver Plano A3 002942 H1	3.6 Longitud	Ver Plano A3 002942 H1	
3.3 Espesor	Ver Plano A3 002942 H1	3.7 Acabados	Ver Plano A3 002942 H1	
3.4 Rosca	Ver Plano A3 002942 H1	3.8 Conicidad	1:10	

3.9 Tolerancia Dimensionales	Norma ISO 2768 - m	Norma ISO 286
3.10 Acabados		N6 (0.8 µm)
3.11 Tolerancias Geométricas		

4. CONDICIONES DE ENTREGA

4.1 Certificación del tratamiento térmico	SI	NO
4.2 Certificación proceso de protección	SI	NO

4. Modernization

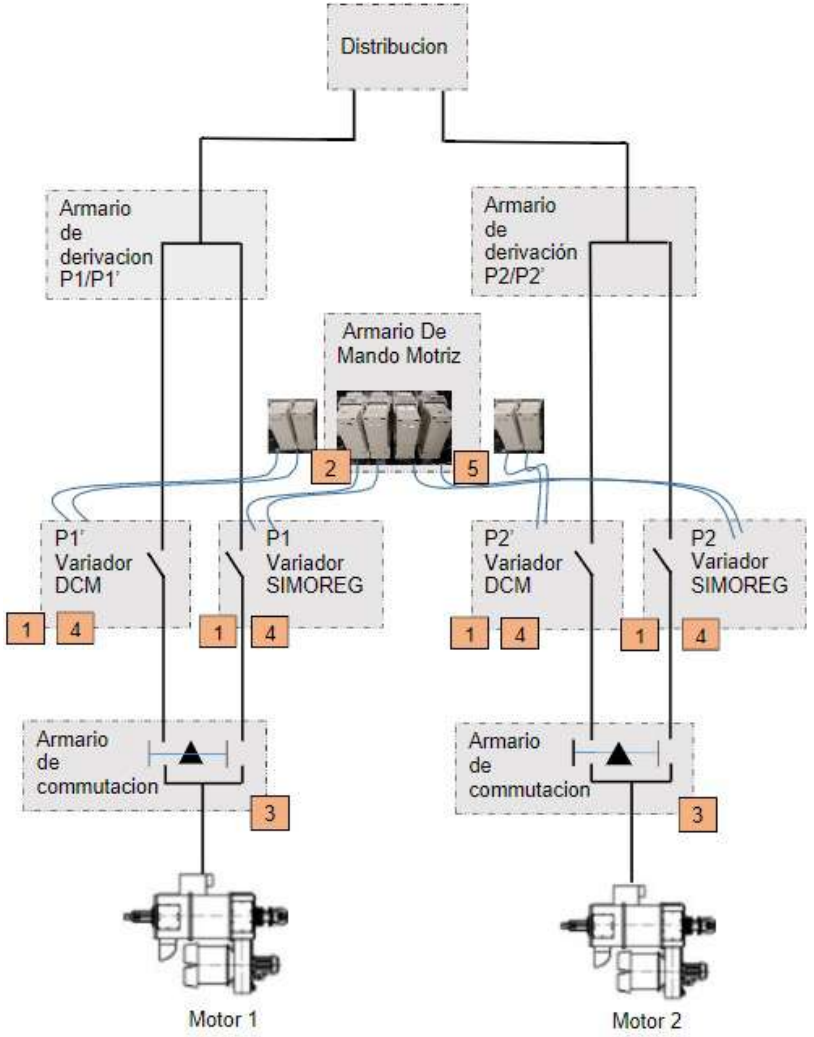
Deep maintenance of cabins

4. Modernization

Change of stabilization rails in stations

4. Modernization

Backup power drive system



4. Modernization

Hydraulic cylinders

2nd generation roller batteries

Stations rails

Communication cable

5. Social transformation of the territory

In addition to the benefits for our users in economic savings, less environmental pollution and safer transportation terms, the greatest impact of our cable cars was the improvement in city conditions.

5. Social transformation of the territory

- Improving the quality of life of the low-income population.
- Reduced transportation costs.
- Accessibility for all the transportation service users.
- Violence reduction in neighborhoods

American Journal of Epidemiology
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Vol. 175, No. 10
DOI: 10.1093/aje/kwr428
Advance Access publication:
April 2, 2012

Original Contribution

Reducing Violence by Transforming Neighborhoods: A Natural Experiment in Medellín, Colombia

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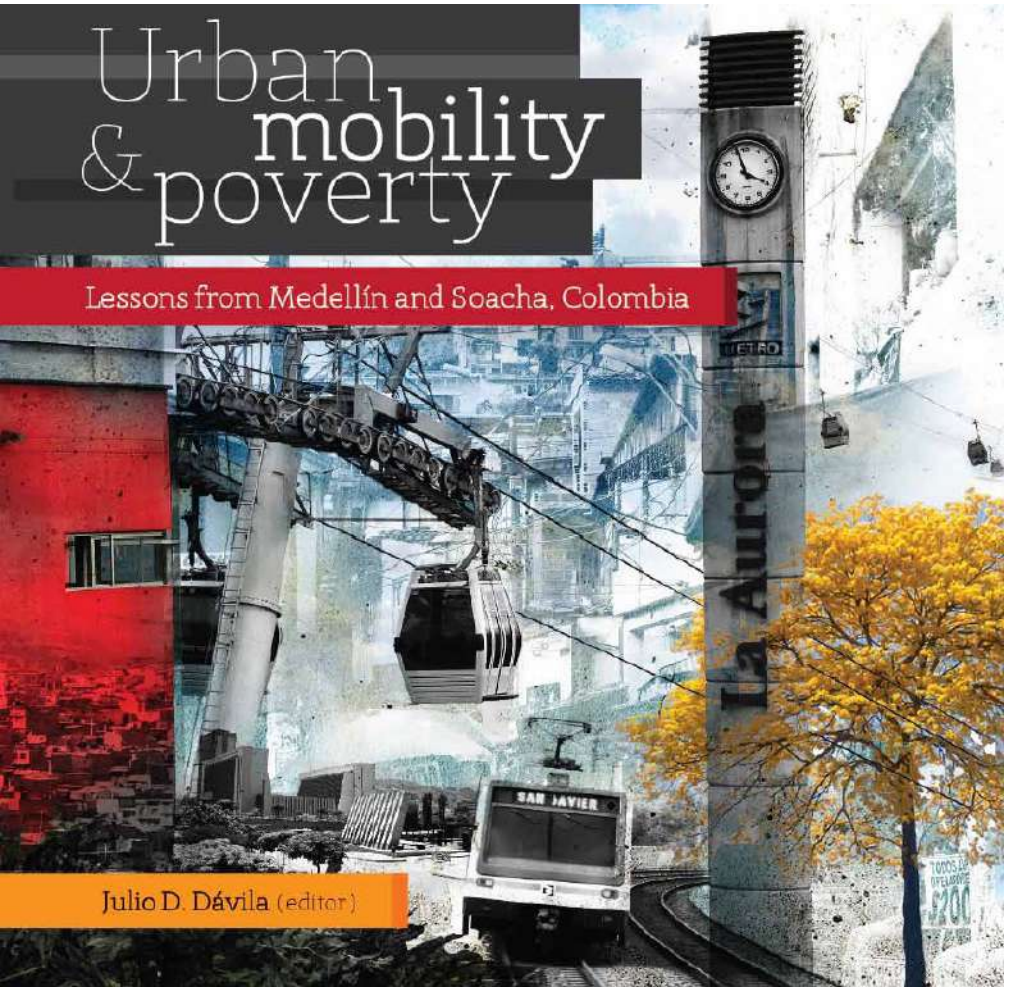
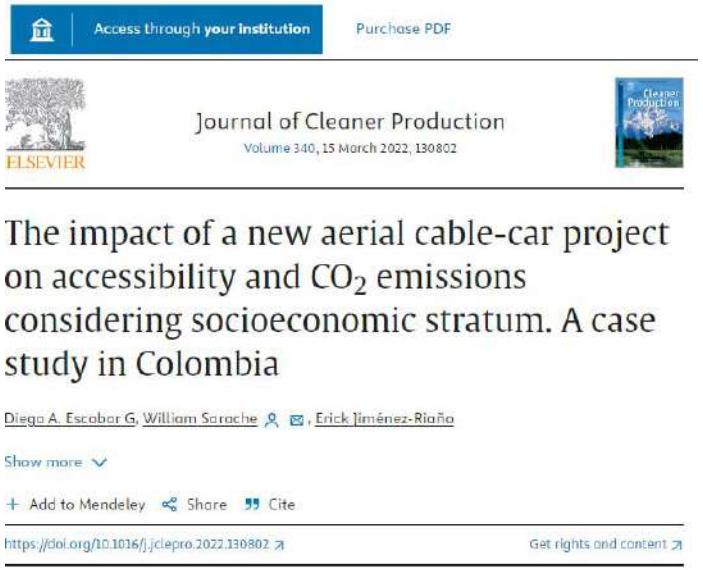
Initially submitted May 9, 2011; accepted for publication October 28, 2011.

Neighborhood-level interventions provide an opportunity to better understand the impact that neighborhoods have on health. In 2004, municipal authorities in Medellín, Colombia, built a public transit system to connect isolated low-income neighborhoods to the city's urban center. Transit-oriented development was accompanied by municipal investment in neighborhood infrastructure. In this study, the authors examined the effects of this exogenous change in the built environment on violence. Neighborhood conditions and violence were assessed in intervention neighborhoods ($n = 25$) and comparable control neighborhoods ($n = 23$) before (2003) and after (2008) completion of the transit project, using a longitudinal sample of 466 residents and homicide records from the Office of the Public Prosecutor. Baseline differences between these groups were of the same magnitude as random assignment of neighborhoods would have generated, and differences that remained after propensity score matching closely resembled imbalances produced by paired randomization. Permutation tests were used to estimate differential change in the outcomes of interest in intervention neighborhoods versus control neighborhoods. The decline in the homicide rate was 66% greater in intervention neighborhoods than in control neighborhoods (rate ratio = 0.33; 95% confidence interval: 0.16, 0.61), and resident reports of violence decreased 75% more in intervention neighborhoods (odds ratio = 0.25, 95% confidence interval 0.11, 0.67). These results show that interventions in neighborhood physical infrastructure can reduce violence.

causality; economic development; environment; neighborhood; residence characteristics; violence

5. Social transformation of the territory





5. Social transformation of the territory

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GO BACK March 25th, 2016 | Infrastructure · Cities

The Metrocable: transport by urban cable car in Medellín

JUMP TO A SECTION
The initiative
The challenge
The public impact
Legitimacy
Stakeholder engagement Strong
Political commitment Strong
Public confidence Good
Policy
Clarity of objectives Strong
Strength of evidence Strong
Feasibility Fair

At the turn of the century, the Colombian city of Medellín had the reputation of being an exceptionally violent and dangerous place and a global centre of drug crime. There were major problems of social exclusion: the residents of the hillside *barrios* that sat above the city were not well served by public transport. Within the wider context of urban integration, the city introduced the Metrocable, a cable car which connected the people of the *barrios* with the city centre in the valley below.

The initiative

The solution for such problems of steep access has generally been either a funicular railway or a cable car. In 2004, the first Metrocable cable car was built in Medellín. "By integrating the design of the system with other forms of mass transit and improving access for pedestrians, the city's Metrocable system has helped connect low-income residents to their city and put urban mobility at the heart of equity." [2]

The overarching goal was social inclusion and improving the quality of life in the barrios. The more specific objective of the Metrocable was to connect three of the barrios to Medellín's main metropolitan public transport system in the centre, and to increase the Metro's levels of usage.

LEE KUAN YEW WORLD CITY PRIZE

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Medellín – MetroCable cable car system

22 SEP 2020

Medellín's MetroCable is the first of its kind in the world – a cable car system designed as mass transit. It connects marginalised communities in inaccessible mountain areas to the city centre, opens opportunities to employment and education, and breaks down socioeconomic stratification.

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Colombia, cuna del transporte sostenible sin ruido

Judit Alonso
26/04/2020

Además de reducir las emisiones, otra ventaja que ofrece este medio de transporte es la reducción de la contaminación acústica. En el Día Internacional de Concienciación sobre el Ruido, DW repasa las ventajas que ofrece.

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CASE STUDY

How Aerial Cable Cars Can Boost Mobility in Cities

Share on:

Published: 14 January 2019

In Medellin city, Colombia, cable cars have helped enhance mobility for marginalized neighborhoods, reduce pollution, and improve quality of life.

Ask the Experts

Fabien Abinal
Urban Ropeways Specialist, Cabinet ERIC

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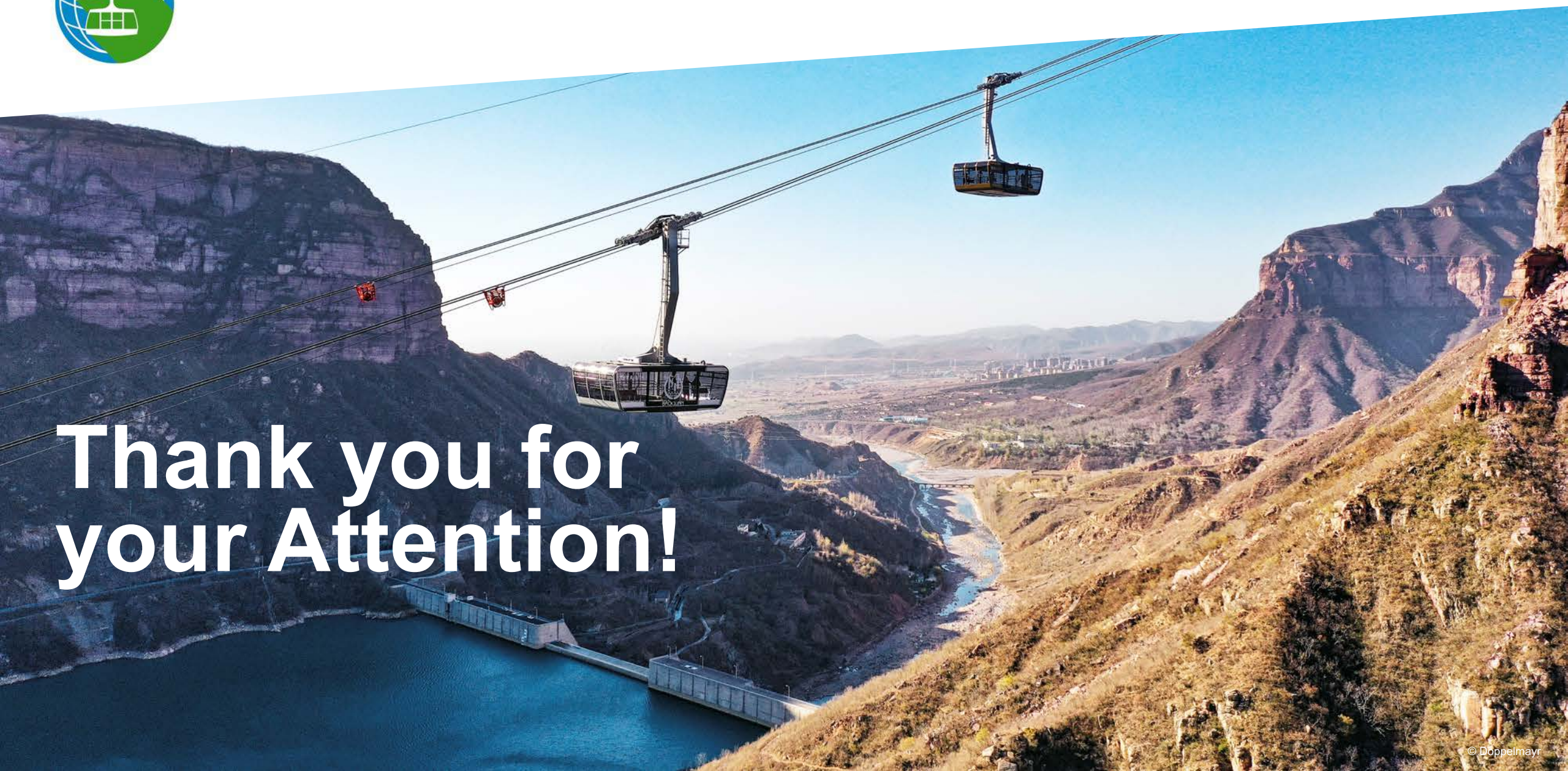
Metrocable Medellín: Estudio de Caso

Visto: 21350

> La población de Medellín, Colombia, se triplicó entre 1951 y 1973, impulsada por la industria manufacturera de la ciudad, principalmente textil. La rápida inmigración condujo al desarrollo de asentamientos informales en las empinadas colinas de la ciudad.


Thank you for
your Attention!
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