URBAN MOBILITY IN FORTALEZA

CHALLENGES, POSSIBILITIES AND OUTCOMES
URBAN MOBILITY IS MUCH MORE THAN FLOW OF VEHICLES
THE WAY CITIES ARE PLANNED HAS CHANGED DRAMATICALLY IN THE PAST YEARS
THE CURRENT URBANIZATION MODEL IS UNSUSTAINABLE
THE CURRENT URBANIZATION MODEL IS UNSUSTAINABLE
THIS URBANIZATION MODEL GENERATES SOME COUNTLESS NEGATIVE EXTERNALITIES
INCREASED DEPENDENCE ON THE CAR
Relationship between Transport and Land Use

A commonly used study of 32 cities by Newman & Kenworthy in 1989 concluded that there was a strong link between urban development densities and petroleum consumption.

*NEWMAN & KENWORTHY (1989)
STRESS AND SEVERE ECONOMIC IMPACTS
EPIDEMIC OF INJURIES AND DEATHS IN TRAFFIC
IS THE NEW SUSTAINABLE MOBILITY PARADIGM POSSIBLE?

THE CITY THAT WE WANT
MODAL SHARE PER CITY SIZE [IN BRAZIL]

- 1 Milhão: TC - 31,8%, TI - 27,1%, TNM - 33,8%
- 500-1.000 mil: TC - 26,8%, TI - 27,0%, TNM - 33,8%
- 250-500 mil: TC - 25,9%, TI - 24,0%, TNM - 30,2%
- 100-250 mil: TC - 25,9%, TI - 24,0%, TNM - 27,0%
- 60-100 mil: TC - 23,7%, TI - 24,0%, TNM - 24,0%
- Total: TC - 29,0%, TI - 31,0%, TNM - 40,0%

*ANTP 2012
PEOPLE
SHOULD BE THE MAIN FOCUS OF URBAN PLANNING
4 GOALS, ONE POLICY

LIVABLE CITIES
WHERE PEOPLE ARE INVITED TO WALK, BIKE AND ENJOY THE PUBLIC SPACES

SAFE CITIES
WHERE AN INCREASE IN THE NUMBER OF ACTIVITIES AND PEOPLE ON THE STREETS ENHANCES THE SAFETY OF PUBLIC SPACES

SUSTAINABLE CITIES
WHERE RESOURCES ARE REDUCED AND EMISSIONS AND NOISE LEVELS ARE LIMITED

HEALTHY CITIES
WHERE DISPLACEMENTS CONTRIBUTE TO A MORE ACTIVE LIFE OF THE INHABITANTS OF A CITY

*GEHL 2010*
RESULTING IN COMPACT CITIES
RESULTING IN COMPACT CITIES
NATIONAL URBAN MOBILITY POLICY [2012]

PRIORITY OF NON-MOTORIZED MODES OF TRANSPORT OVER MOTORIZED VEHICLES AND COLLECTIVE PUBLIC TRANSPORT SERVICES OVER INDIVIDUAL MOTORIZED TRANSPORT;

IN PORTUGUESE: POLÍTICA NACIONAL DE MOBILIDADE URBANA [PNMU]
ACTION

IT IS CRUCIAL THAT, BASED ON THE PREMISES OF SUSTAINABLE MOBILITY, CITIES MOVE OUT OF INERTIA AND MAKE IMPACT CHANGES ALREADY!
Which outcomes Fortaleza has inherited from the traditional urban transport planning?
THE CITY OF FORTALEZA

POPULATION: 2,627,482

DENSITY: 8,367,7 pop/km²

GDP: US$ 10.75 BI

TOURISM FLOW: 10.9% of Brazil

AREA: 314 km²
FORTALEZA SURPASSED 1,100,000 VEHICLES
In the last 10 years, the fleet of motorcycles increased 3 times more than the car fleet.
64 MINUTES IS THE AVERAGE TIME OF THE DAILY DISPLACEMENTS HOME-WORK

THE AVERAGE TRAVEL TIME INCREASES APPROX. 30% FOR USERS WITH LOW INCOME, WHEN COMPARED WITH HIGH INCOME USERS*
61% of the total CO2 emissions come from the transportation systems* 

*ICLEI, 2012
86.8% of which come only from automobiles and motorcycles
IN 2016 IN FORTALEZA THERE WERE
281 DEATHS AND
18,295 INJURED VICTIMS
The World Health Organization faces road injuries and deaths as a global epidemic a matter of public health.
WHO estimates that a person dies every **25 SECONDS**

A road user will die in **0:25**

- today: 2611
- this month: 60691
- this year: 1102722

**SOURCE:** WHO (HTTP://WWW.WHO.INT/VIOLENCE_INJURY_PREVENTION/ROAD_TRAFFIC/DEATH-ON-THE-ROADS/EN/)
Road crashes are a preventable overburden to health system.

It is estimated* that the cost with road crashes in 2016 was:

R$ 730 million

≈ US$ 230 million

*IPEA
FORTALEZA
ROAD CRASH VICTIMS

MOTORCYCLISTS AND PEDESTRIANS ARE THE USER TYPES THAT MOST DIES (77.9%)
IT IS POSSIBLE TO IDENTIFY THE CRITICAL AREAS FOR ROAD CRASHES WITH DEATHS

MAP: ROAD CRASHES WITH DEATHS

LESTE-OESTE
OSÓRIO DE PAIVA
MONTESSE
JÓQUEI
MESSEJANA
BUT THE RELATIVE RISK IS DIFFERENT

FATAL PEDESTRIAN MEN
+60 YEARS

RISK OF DYING IS 376% HIGHER
The space-time standards allow greater assessment in the proposal of public policies.

There is a severity peak after midnight.

- 0h to 1h: 548
- 1h to 2h: 681
- 2h to 3h: 511
- 3h to 4h: 309
- 4h to 5h: 317
- 5h to 6h: 390
- 6h to 7h: 576
- 7h to 8h: 854
- 8h to 9h: 784
- 9h to 10h: 730
- 10h to 11h: 652
- 11h to 12h: 757
- 12h to 13h: 765
- 13h to 14h: 767
- 14h to 15h: 796
- 15h to 16h: 744
- 16h to 17h: 825
- 17h to 18h: 892
- 18h to 19h: 894
- 19h to 20h: 794
- 20h to 21h: 639
- 21h to 22h: 506
- 22h to 23h: 410
- 23h to 24h: 382

- 0h to 1h: 254
- 1h to 2h: 500
- 2h to 3h: 545
- 3h to 4h: 655
- 4h to 5h: 382

Total and fatal or injured incidents.
## Risk Behaviors Are Being Monitored

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<th></th>
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<tbody>
<tr>
<td>Drink and Drive</td>
<td>1.9%</td>
<td>1.3%</td>
<td>1.2%</td>
<td>1.0%</td>
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<tr>
<td>Correct Helmet Use</td>
<td>83.0%</td>
<td>86.0%*</td>
<td>86.0%*</td>
<td>88.0%*</td>
</tr>
<tr>
<td>Seat Belt</td>
<td>68.0%</td>
<td>77.0%*</td>
<td>79.0%*</td>
<td>86.0%*</td>
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<tr>
<td>Child Restraints</td>
<td>29.0%</td>
<td>35.0%</td>
<td>39.0%</td>
<td>34.0%</td>
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<tr>
<td>Excess Speed</td>
<td>22.0%</td>
<td>23.0%*</td>
<td>24.0%*</td>
<td>20.0%*</td>
</tr>
</tbody>
</table>

*Source: John Hopkins and Universidade Federal do Ceará*
ONE IN FIVE VEHICLES WERE OBSERVED EXCEEDING SPEED

VEHICLES EXCEEDING SPEED

ROUND 1  |  ROUND 2  |  ROUND 3  |  ROUND 4
---|---|---|---
22% | 23% | 24% | 20%
AND THE OUTCOMES THAT FORTALEZA BEGINS TO ACHIEVE WITH THE IMPLEMENTATION OF SUSTAINABLE MOBILITY POLICIES?
SINCE 2014, BEST PRACTICES HAVE BEEN IMPLEMENTED IN FORTALEZA
SHORT TERM ACTIONS WITH HIGH IMPACT
PAITT
IMMEDIATE ACTION PLAN ON TRANSIT AND TRANSPORTATION
PAITT GUIDELINES

PROMOTION OF PUBLIC TRANSPORT & NON-MOTORIZED MODES

ROAD SAFETY

EQUITATIVE DIVISION OF ROAD SPACE

REDUCTION OF CO2 EMISSION
COUNTING ON A NETWORK OF STRATEGIC PARTNERS
EXCHANGE OF BEST PRACTICES
10 CITIES IN THE WORLD WERE SELECTED
FORTALEZA IS ONE OF THEM
PARTNERSHIP COMBINING URBAN MOBILITY AND NON-COMMUNICABLE DISEASE PREVENTION
PARTICIPATION IN A NETWORK OF CITIES AND COUNTRIES TO SHARE INFORMATION AND DISCUSS BEST PRACTICES “SAFER CITY STREETS”
THE ROAD PROJECTS IMPLEMENTATION STRATEGY HAS AS MAIN OBJECTIVE
THE EQUITABLE DIVISION OF THE ROAD SPACE
35% of the road space reconquered for sustainable transportation.
207% was the speed gain in Av. Santos Dumont.
56% w/ WIFI
27% w/ AIR CONDITIONING

BUS FLEET
BUS TERMINAL REFURBISHMENTS
CHEAPEST FARE BETWEEN INTEGRATED SYSTEMS WITHOUT PUBLIC SUBSIDY

BILHETE ÚNICO
IMPROVEMENTS IN THE TRANSPORTATION SYSTEM HAVE ATTRACTED MORE PASSENGERS
IMPROVEMENTS IN THE TRANSPORTATION SYSTEM HAVE ATTRACTION MORE PASSENGERS

EVOLUTION: POPULATION X DEMAND

AFTER THE IMPLEMENTATION OF B.U. CARD AND SYSTEM IMPROVEMENTS, DEMAND RETURNED TO A 20-YEAR-OLD PATCH
CYCLING INFRASTRUCTURE
GROWTH OF 231% IN 4 YEARS

68 KM
JAN/2013

225.5KM
MAR/2018
IMPLEMENTATION OF PROJECTS ORIENTED BY THE BICYCLE MASTER PLAN

PLANO DIRETOR
CICLOVIÁRIO
INTEGRADO

Prefeitura de Fortaleza
Secretaria Municipal de Infraestrutura

BID
BETWEEN 2012 E 2017, CYCLIST FLOW INCREASED IN CYCLELANES

310 BEFORE 790 AFTER*

INCREASE OF 153% ON THE NUMBER OF CYCLISTS

*AV. DOMINGOS OLÍMPIO
MOST USED SYSTEM OF BRAZIL
6.0 TRIPS PER BICYCLE PER DAY
BICICLETA INTEGRADA: BIKE LENDING SYSTEM

FREE PUBLIC SYSTEM THAT ALLOWS 14H PER LOAN — SOLUTION FOR LASTMILE AND COMPLETE TRIPS
MINI BICICLETA R: BIKE SHARE SYSTEM FOR CHILDREN

EDUCATIONAL INITIATIVE
BICICLETERAR CORPORATIVO

A SUSTAINABLE TRANSPORTATION OPTION THAT BRINGS MORE HEALTH AND QUALITY OF LIFE TO EMPLOYEES OF THE CITY HALL.
LEISURE BIKE LANE ON SUNDAYS

ENCOURAGEMENT TO URBAN CYCLISM
LEISURE BIKE LANE ON SUNDAYS

23KM = 3 ROUTES CONVERGING TO HISTORICAL CENTER
BORA PEDALAR  A DIGITAL PLATFORM GEARED TO THE NEEDS OF URBAN CYCLISTS
689.8 tons of CO$_2$ stopped being thrown into the atmosphere*

*BICICLETAR - DEC/14 – MAR/19
VAMO FORTALEZA - 1ST PUBLIC SHARING SYSTEM OF SHARING OF ELECTRIC CARS OF BRAZIL
Several different road safety elements are being implemented in the city.
SPEED LIMIT REDUCTION
IMPLEMENTING 50KM/H IN ARTERIAL ROADS
NARROWING ROAD LANES HAS A POTENTIAL REDUCTION OF 57% OF CRASHES WITH VICTIMS

*STUDY EXECUTED IN MUNICIPAL ROADS*
RAISED PEDESTRIAN CROSSINGS
AV. CONEGO DE CASTRO

REDESIGN OF UNSAFE INTERSECTION GEOMETRIES
REDESIGN OF UNSAFE INTERSECTION GEOMETRIES
This elements are the basis of the low speed zones
1ST LOW SPEED ZONE

RODOLFO TEÓFILO NEIGHBORHOOD
84% of the people think it's safe to walk around now.
1,160 SQM OF RENEWED SIDEWALKS

1,980 SQM OF ASPHALT RECLAIMED AS A PEDESTRIAN SPACE
67% of reduction in crossing distances
PEDESTRIANS WALKING OUTSIDE FACILITY
* AT TERTULIANO SALES ST.

41.7% BEFORE

3.8% AFTER
NO MORE CHILDREN WALKING OR BEING CARRIED ON THE ROADBED

*BEFORE = 50%
INTERIM INTERVENTIONS ARE ALSO IMPORTANT FOR THE CITY
“CIDADE DA GENTE” PROJECT
RESHAPING STREET AND RECONNECTING COMMUNITIES
1,200 SQM OF RECLAIMED PUBLIC SPACE

5 NEW CROSSWALKS
SPACE DIVISION

BEFORE

21%

SPACE DIVISION

AFTER

73%

79%

27%

CREDIT: NACTO GDCI
59.7% increase in the percentage of children walking
In parallel to the Urban Design and Enforcement projects, Mass Media Campaigns are developed with specific focus.
CAMPAIGN
HELMET
SAVE LIVES

MARCH
2017
CAMPAIGN
DON’T DRINK AND DRIVE

JULY AND DECEMBER OF 2017
The data oriented strategies on communications, enforcement, education and urban design are generating positive results.
THE EFFORT IS SHOWING POSITIVE RESULTS

THIRD CONSECUTIVE FALL ON THE NUMBER OF ROAD DEATHS

REDUCTION OF 9% IN COMPARISON TO 2016
THE NUMBER OF ROAD DEATHS IS BELOW 300 FOR THE SECOND TIME IN MORE THAN 15 YEARS
THE MORTALITY RATE IS ALSO FALLING

Rate below 10 for the first time in 15 years (-35% [2010-2017])

Population x deaths / 100,000 inhabitants

2002: 2,219,837
2003: 17,16
2004: 14,76
2005: 14,19
2006: 15,37
2007: 14,11
2008: 13,79
2009: 13,87
2010: 12,45
2011: 14,88
2012: 15,38
2013: 14,76
2014: 14,03
2015: 12,20
2016: 10,77
2017: 9,71

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2011: 15.38
2012: 14.76
2013: 14.03
2014: 12.20
2015: 10.77
2016: 9.71
2017: 2,627,482
Despite the great challenges, the case of Fortaleza shows that it is possible to implement, in a systematic and gradual way, high impact public policies on the construction of a new model of urban mobility.
URBAN MOBILITY IS MUCH MORE THAN TRAFFIC FLOW
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- Environment
- Public Health
- Safety
- Urbanism
- Social Relations
- Economy
VIDEO 1: "WORLD CAR FREE DAY"
URBAN MOBILITY IS MUCH MORE THAN TRAFFIC FLOW

VIDEO 2: VAMO — CAR SHARING
VIDEO 3: CIDADE DA GENTE
INTERIM INTERVENTION
FIRST, WE SHAPE THE CITIES
THEN, THEY SHAPE OURSELVES.

- JAN GEHL