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<td>19</td>
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</tbody>
</table>
1. Past & Now
Seoul transportation in the past

Mode of transportation

- Walk (~ 1945)
- Streetcar (1945 ~ 1970)
- Bus (1971 ~ 1985)
- Car (1986 ~ 2000)

Expansion of Road Network

- 1936
- 1966
- 1972
- 2000
1. Past & Now

**Rapid urban Development**

- **Gangnam (1970~)**
- **Yeouido (1967~)**
1. Past & Now

Car-oriented policy

Population & number of cars

- Population
- Number of cars

[Graph showing population and number of cars over time]

[Images of overpass for pedestrians and urban expressways]

[Image of an elevated highway]
1. Past & Now

Car- oriented policy

- Freeway traffic management system (FTMS)
  - Start to operate in 1997
  - Road length of operation: 259km
1. Past & Now

**Car-oriented policy**

- Traffic impact analysis (TIA)

  - **What are in TIA?**
    1) Forecast travel demand
    2) Examine the impacts of development on the traffic conditions
    3) Prepare measures to mitigate the impacts

  - **Introduced in 1986 as a mandatory legal process before development**

  - **Review committee members:**
    Experts at transportation, road, urban planning and architecture

**Process: 4 steps**

1. Draft TIA by developer
2. Submit TIA
3. Review on the TIA
4. Approval
1. Past & Now

Transport demand management (TDM)

Mandatory
- Annual traffic impact fee
- Raised traffic impact fee
- Parking pricing

Voluntary
- Employer-based TDM
- Non-free parking
- Monthly public transit day
- Car Sharing

Employer-based TDM
- 1st phase metro system (Line 1-4, '85)
- 2nd phase metro system (Line 5-8, '95-97)
- Weekly no-driving day program
- Chunggae stream restoration project
- Public transit reform
- Metro line 9

Raised traffic impact fee
- 1990
- 1991
- 1992
- 1993
- 1994
- 1995
- 1996
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- 2003
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- 2005
- 2006
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- 2009
- 2010
- 2011
- 2012
- 2013

Parking cap
- Raised parking cap
- Expanding parking cap area

Illegal parking enforcement
- 2003

Car Sharing
- Revised Employer-based TDM

Namsan congestion charging
- 1990

Weekly no-driving day program
- 2001

Public transit reform
- 2006

Chunggae stream restoration project
- 2008

Business taxi
- 2010

Metro line 9
- 2011

Flexible working hours
- 2012

Monthly public transit day
- 2013

Expanding parking cap area
- 2008

Car Sharing
- Revised Employer-based TDM

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Metro line 9
- 2011

Flexible working hours
- 2012

Monthly public transit day
- 2013

Expanding parking cap area
- 2008

Car Sharing
- Revised Employer-based TDM
Transport demand management (TDM)

- **Annual traffic impact fee (ATIF)**
  - Floor area $\times$ Unit fee $\times$ Traffic impact factor
  - Target buildings with floor area $\geq 1,000$ m$^2$
  - Unit fee: 350~700 KRW/ m$^2$
  - Traffic impact factor:
    - 0.47 (factory) $\sim$ 9.83 (department store)

- **Employer-based TDM**
  - Alleviate ATIF if employer joins in traffic reduction programs (TRPs)
  - TRPs: Parking pricing, Business taxi, etc.
  - Reduction rate of ATIF (each TRP): 5~30%

**Parking cap**

- Target: highly developed area
- Limit parking space:
  - Maximum 50% of regular area

**Parking cap area**

- **1997~2008**
  - Total area: 13.8km$^2$
- **2009~**
  - Total area: 16.2km$^2$
1. Past & Now

Transport demand management (TDM)

- **Weekly No-Driving Day program**

  - Start to implement in 2003

  Participation rate

  ![Graph showing participation rate from 2006 to 2012](image)

1. Past & Now

Public transportation

- Bus system change (2004)

**Median bus lanes**

**Color-coded hierarchical bus system**

- Inter-regional Lines
- Trunk Lines
- Feeder Lines
- Circular Lines
1. Past & Now

Public transportation

- Bus system change (2004)

<table>
<thead>
<tr>
<th>Transportation Center</th>
<th>Integrated distance-based transit fare system</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Before" /></td>
<td>➢ Free transfer between bus-bus and bus-subway, free transfer within 30 minutes. (maximum 5 times)</td>
</tr>
<tr>
<td><img src="image2.png" alt="After" /></td>
<td>➢ Introduction of transportation card</td>
</tr>
<tr>
<td></td>
<td>➢ Distance-based fare system</td>
</tr>
</tbody>
</table>
1. Past & Now

Mode share vs. energy consumption share

- Mode share of car 25.9% vs. energy consumption share 55.7%
- Mode share of subway 35.2% vs. energy consumption share 5.5%
1. Past & Now

Uprising congestion cost

- Congestion cost 7,500 billion KRW (2009) ⇒ 22,400 billion KRW (2030) by simple trend analysis
II. Vision
2. Vision

Toward paradigm shift

Present

- Car
- Mobility
- Restricted Mobility
- Owning
- Divided modality
- Top-down
- Hardware
- Efficiency only

Future

- Human
- Accessibility
- Universal Mobility
- Sharing
- Inter-modality
- Bottom-up
- Software
- Equity+Sustainability+Economic
2. Vision

**VISION**

*Livable Seoul without relying on cars*

**Human-oriented**
- Promoting walking and cycling
- Improving neighborhood streets
- Securing the mobility for transportation vulnerable

**Sharing together**
- Establishing transit oriented-transport system
- Promoting sharing transportation
- Converting car-oriented road space

**Considering environment**
- Encouraging rational use of cars
- Saving energy with efficient traffic operations
- Introducing eco-friendly transport modes

**6 principles for implementation**

- Safety
- Diversity
- Agreement
- Design
- Technology
- User-Pay
2. Vision

- **Green transport mode share**: 80%
  - 2010: 70%
  - 2020: 75%
  - 2030: 80%

- **Car trip reduction by 30%**
- **Transit commute travel time reduction by 30%**
- **Green space ratio in downtown**
  - From 10% to 30%
- **Reduction in transport GHG emissions by 0.3t/year per capita**
  - 2010: 1.2t
  - 2020: 1.1t
  - 2030: 0.9t

*Green transport mode: transit, walk, bicycle, zero emission vehicles*
III. Implementation
3. Implementation

「Seoul Transport 2030」

11 Promises

- Building pedestrian-oriented environment
- Encouraging the wide use of bike
- Making accident free city
- Removing barriers for the transportation vulnerable
- Establishing rail-oriented public transit system
- Making public transit faster and more convenient
- Encouraging shared transport
- Reducing unnecessary trips
- Introducing environmentally friendly transport modes
- Making cars on the road flow smoothly
- Improving the citizen's awareness of the better transport culture
3. Implementation

- **Human**
  - Doubled Sidewalks & Bike roads
  - At least 80% decrease in car accident deaths
  - 100% Equipped with barrier-free facilities
  - Present 430 deaths/year
  - Present 75%

- **Sharing**
  - Accessible to subway stations within 10 min
  - Bus speed 25km/h on bus lanes
  - At least 2 car sharing spots per neighborhood
  - Present 20.1 km/h
  - Present 0.7/administrative unit

- **Environment**
  - 10% car modal share in downtown
  - 80% transit cars with zero emissions
  - 90% arterial roads with no-congestion
  - Present 19.3%
  - Present 0.2%
  - Present 80%
3. Implementation

01 Transit mall

Introducing transit mall on Sinchon-ro in January, 2014
Pedestrian-only road on weekends


http://m.bizwatch.co.kr/?mod=mview&uid=4887
3. Implementation

01 Transit mall

Decrease in traffic accidents
Increase in citizen’s satisfaction and stores’ sales

<table>
<thead>
<tr>
<th>Traffic accidents</th>
<th>Satisfaction degree</th>
<th>Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of traffic accidents in Sinchon district</td>
<td>Citizen’s satisfaction degree of Sinchon transit mall (N=1,300)</td>
<td>Stores’ sales &amp; number of visitors in Sinchon district</td>
</tr>
<tr>
<td>29</td>
<td>80%</td>
<td>18,000</td>
</tr>
<tr>
<td>19</td>
<td>12%</td>
<td>16,500</td>
</tr>
<tr>
<td>34.5% (▼)</td>
<td>58% (▲)</td>
<td>Monthly sales (Mil. KRW)</td>
</tr>
<tr>
<td>70%</td>
<td></td>
<td>Daily visitors</td>
</tr>
</tbody>
</table>

Number of traffic accidents in Sinchon district:
- Jan.-Jun., 2013: 29
- Jan.-Jun., 2014: 19
- Decrease: 34.5% (▼)

Citizen’s satisfaction degree of Sinchon transit mall (N=1,300):
- Before: 12%
- After: 70%
- Increase: 58% (▲)

Stores’ sales & number of visitors in Sinchon district:
- Jan.-May, 2013: 17,000
- Jan.-May, 2014: 62,000
- Increase: 45,000

3. Implementation

02 Car sharing

Start to operate in February, 2012 including a fleet of electric vehicles (EVs)

**Seoul car sharing spots (676 spots, 1,303 cars)**

**Easy renting system**

**Introducing EVs**
3. Implementation

02 Car sharing

Rapid increase of car sharing members and rentals
High degree of car sharing member’s satisfaction

Car sharing members & rentals

Satisfaction degree of car sharing

Number of respondents: 5,950

- Strongly satisfied: 23.30%
- Satisfied: 55.10%
- Moderate: 18.00%
- Unsatisfied: 0.50%
- Strongly unsatisfied: 3.10%
3. Implementation

03 Removal of overpass

Start to remove overpass in 2002
Enhancing urban scenery, vitality, and traffic conditions

3. Implementation

03 Removal of overpass

Increase in travel speed and rise in land value

<table>
<thead>
<tr>
<th>Travel speed before and after removal of overpass</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Travel speed (km/h)</strong></td>
</tr>
<tr>
<td>Hongje</td>
</tr>
<tr>
<td>Noryangjin</td>
</tr>
<tr>
<td>Hwayang</td>
</tr>
<tr>
<td>Mullae</td>
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<tr>
<td>Hangangdaegyo</td>
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<tr>
<td>Hoehyeon</td>
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<tr>
<td>Hyehwa</td>
</tr>
<tr>
<td>Gwanghee</td>
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<tr>
<td>Sinseol</td>
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<tr>
<td>15.0</td>
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<tr>
<td>20.0</td>
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<tr>
<td>25.0</td>
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<tr>
<td>30.0 (Km/h)</td>
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<tr>
<td>before</td>
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<td>after</td>
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<tr>
<td>1.0(▼)</td>
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<tr>
<td>2.3(▲)</td>
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<td>1.3(▲)</td>
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<td>3.1(▲)</td>
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<td>6.6(▲)</td>
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<td>4.3(▼)</td>
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<tr>
<td>0.4(▲)</td>
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<tr>
<td>1.1(▲)</td>
</tr>
<tr>
<td>6.0(▲)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Land value before and after removal of overpasses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Land value</strong></td>
</tr>
<tr>
<td>(Thou. KRW)</td>
</tr>
<tr>
<td>2006</td>
</tr>
<tr>
<td>2007</td>
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<td>2008</td>
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<td>2011</td>
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<td>2012</td>
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<tr>
<td>Sinseol (2007)</td>
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<td>Hyehwa (2008)</td>
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<tr>
<td>Mullae (2010)</td>
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<tr>
<td>Hwayang (2011)</td>
</tr>
</tbody>
</table>
3. Implementation

04 Road diet

Widening sidewalks by eliminating lanes on several downtown roads

Seoul Downtown and road diet target roads (yellow lines)
Thank you!!