

걷기 좋고 안전한 보행 도시 만들기

Walkable & Safe City

일시 | 2015년 9월 16일(수) 14:00 ~ 18:00

장소 | 정부서울청사 별관 3층 국제회의장





모시는 글

International Seminar on Pedestrian Safety Walkable & Safe City

최근 전 세계적으로 안전, 환경, 삶의 질 등에 대한 관심이 높아지고 보행환경 개선에 대한 논의가 활발하게 이루어지고 있습니다.

우리나라에서도 2012년 「보행안전 및 편의증진에 관한 법률」이 제정되어 국민의 보행권 확립을 위한 제도적 기반이 마련되었고, 효과적인 보행환경 개선을 위해 체계적인 연구와 노력이 필요한 실정입니다.

이에따라 국민안전처와 건축도시공간연구소, 한국교통연구원, 손해보험협회에서는 「걷기 좋고 안전한 보행 도시 만들기」를 주제로 「보행안전 국제세미나」를 개최하여, 선진국의 보행환경 정책과 개선사례들을 살펴보고 바람직한 보행환경 정책방향을 논의하는 장을 마련하게 되었습니다.

이번 행사는 미국, 스위스, 영국, 한국의 보행안전 전문가들을 초청하여 안전하고 편리한 보행 환경 조성을 위한 각국의 노력과 성과를 공유하는 좋은 기회가 될 것입니다. 우리나라 보행안전 정책의 발전과 문화 확산의 계기가 될 「보행안전 국제세미나」에 여러분의 많은 관심과 참여를 부탁드립니다.

2015년 9월 16일
국민안전처 장관 **박인용**



PROGRAM

14:00-14:40		Opening		Moderator : Cheol OH Professor, HANYANG University	
		The Pledge of Allegiance			
Opening Remarks	In-Yong Park	Minister, Ministry of Public Safety and Security			
Congratulatory Speech	Seung-Yong Joo	Member of the National Assembly, Republic of Korea			
	Won-Jin Cho	Member of the National Assembly, Republic of Korea			
	Chang Woon Lee	President, The Korea Transport Institute			
	Nam-Sik Chang	Chairman & CEO, General Insurance Association of Korea			
Keynote Speech	「Livable Streets for Pedestrian」				
	Haeseong Je	President, Architecture & Urban Research Institute			
14:40-15:20		Session I			
		Improvements of Walking Environment			
Presentation 1	「Creating Walkable Cities : Lessons from North American West Coast Cities」				
	Elizabeth Macdonald	USA / Professor, City & Regional Planning, UC Berkeley			
Presentation 2	「Planning and Designing of Walkable Environment : Urban Landscape & Urban Design Perspective」				
	Joongseok Joseph Ryu	Korea / Professor, Dept. of Urban Design and Studies, Chung-Ang University			
15:20-16:00		Session II			
		Policies for Walkable Cities			
Presentation 3	「Is there a Friction Between Comfort and Safety in Urban Walking?」				
	Christian M. Thomas	Switzerland / Secretary, International Federation of Pedestrians			
Presentation 4	「We all deserve to ask better Walking Environment」				
	Sangjin Han	Korea / Head of Transport Safety Research Group, Korea Transport Institute			
16:00-16:10		Coffee Break			
16:10-17:10		Session III			
		Safeguards against Pedestrian Traffic Accidents			
Presentation 5	「Pedestrian Safety : UK Perspective」				
	Alan Kennedy	UK / Business and Operations Manager, Road Safety GB			
Presentation 6	「An Analysis on the Relationship between Pedestrian Behavior and Accident Characteristics」				
	Sooil Lee	Korea / Research Fellow, Hyundai Insurance Research Center			
Presentation 7	「Prevention of Pedestrian Accidents for Neighborhood Streets」				
	Junhan Cho	Korea / Research Associate, Samsung Traffic Safety Research Institute			
17:10-18:00		Discussion			
Moderator	Dong I. Ha	Ph. D. Research Professor, Seoul National University			
Panel	Jeeyeop Kim	Assistant Professor/Juris Doctor, Dept. of Architecture, Director, Dept. of Urban Development, AJOU University			
	Cheol Oh	Professor, Dept. of Transportation & Logistics Engineering, HANYANG University			
	Man Bae Kim	Chief Research Manager, Road Traffic Authority			
	Kyunguk Chang	Ph. D. Senior Researcher, Dept. of Transportation Strategy, Korea Transportation Safety Authority			
	Younho Lee	Secretary general, Citizens' Coalition for Safety			
	Byoung Dae Min	Director, Safety Improvements Division, Ministry of Public Safety and Security			
	Jae-Chan Go	Director-General, Construction&Transportation bureau, Jeonbuk Provincial Government			
18:00		Closing			



프로그램

14:00~14:40	개 회 식	사회 : 오철 한양대학교 교수
	국민의례	
개 회 사	박인용 국민안전처 장관	
축 사	주승용 국회의원	
	조원진 국회의원	
	이창운 한국교통연구원장	
	장남식 손해보험협회장	
기조강연	『보행자를 위한 가로환경 조성 방향』	
	제해성 건축도시공간연구소장	
14:40~15:20	Session I	
	보행자 친화적인 국내외 보행환경 개선 사례	
주제발표 1	『보행친화도시 조성 : 북미 서부해안도시를 중심으로』	
	Elizabeth Macdonald UC Berkeley 교수 / 미국	
주제발표 2	『보행환경의 계획 및 설계 : 도시경관 및 도시설계적 관점』	
	류중식 중앙대학교 도시시스템공학전공 교수 / 한국	
15:20~16:00	Session II	
	걷기 좋은 도시 만들기를 위한 정책 제언	
주제발표 3	『도시에서 편안한 보행과 안전한 보행은 충돌하는가?』	
	Christian M. Thomas 국제보행자연맹 사무총장 / 스위스	
주제발표 4	『우리는 더 나은 보행환경을 요구할 자격이 있다』	
	한상진 한국교통연구원 교통안전연구그룹장 / 한국	
16:00~16:10	휴식 및 정리	
16:10~17:10	Session III	
	보행 교통사고 위험요인과 예방대책	
주제발표 5	『영국의 보행안전 정책 및 사례』	
	Alan Kennedy 영국도로안전협회 고문 / 영국	
주제발표 6	『보행자 통행실태와 사고 특성』	
	이수일 현대해상 교통기후환경연구소 연구위원 / 한국	
주제발표 7	『생활도로 보행사고 원인 및 대책』	
	조준한 삼성교통안전문화연구소 책임연구원 / 한국	
17:10~18:00	총평 및 토론	
좌 장	하동익 서울대학교 건설환경공학부 교수	
토 론 자	김지엽 아주대학교 건축학과 교수	
	오 철 한양대학교 교통·물류공학과 교수	
	김만배 도로교통공단 처장	
	장경욱 교통안전공단 선임연구원	
	이윤호 안전생활실천시민연합 사무처장	
	민병대 국민안전처 안전개선과장	
	고재찬 전라북도 건설교통국장	
18:00	폐 회	



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	Haeseong Je President, Architecture & Urban Research Institute	

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「Livable Streets for Pedestrian」

「보행자를 위한 가로환경 조성 방향」

Haeseong Je
제해성

President, Architecture & Urban Research Institute
건축도시공간연구소장

기조
강연



(aur)

Livable Streets for Pedestrians



Architecture & Urban
Research Institute,
President,
Haeseong Je, Ph.D.

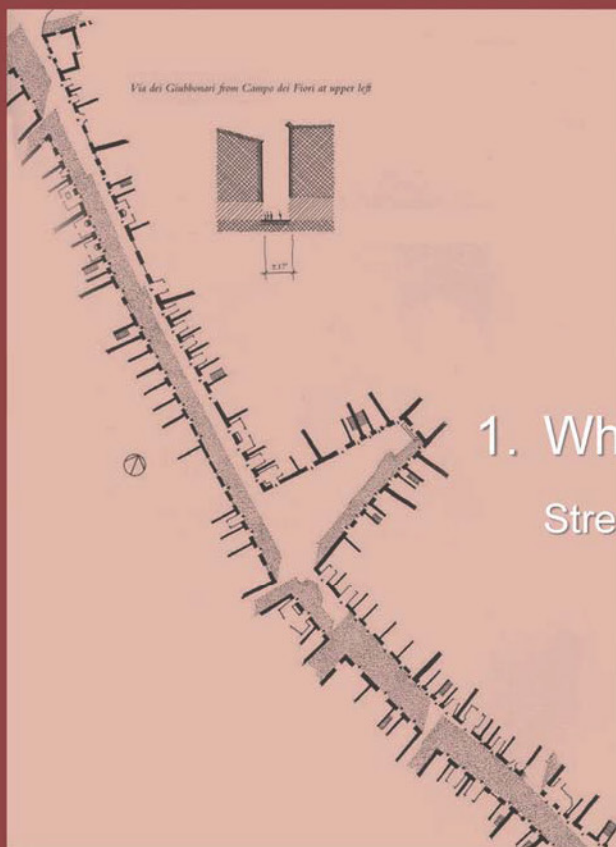
(aur)

보행자를 위한 가로환경 조성 방향

Livable Streets for Pedestrians

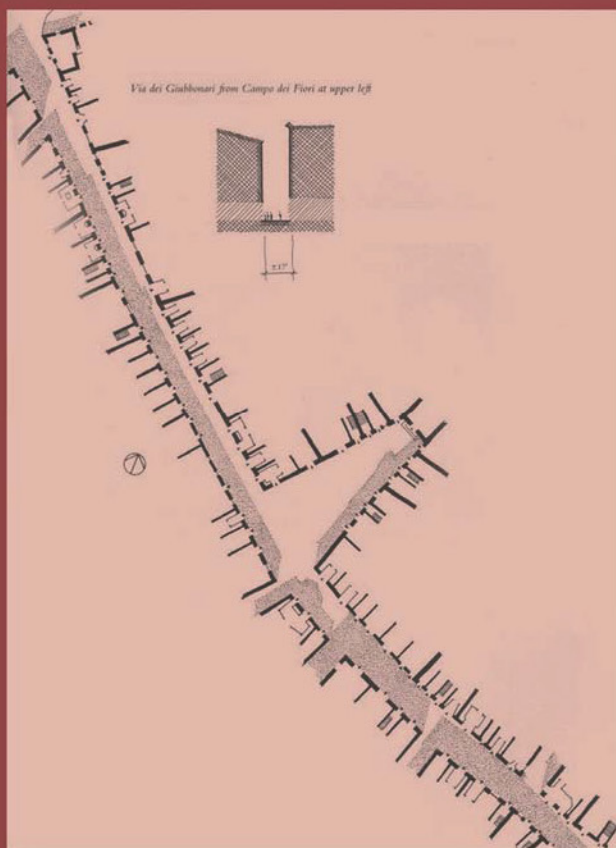


건축도시공간연구소 소장
제해성



1. Why Streets?

Street Friendly & Walkability



1. 왜 가로인가?

가로친화와 보행성

(aur)

1.1 Etymology of Street & Road

[A connection between Settlements]

Road

Traffic Though-fare, 道路/經路



A wide & straight road,
No relations between buildings & roads

A road is a route **between settlements**
(reflecting the etymological relation with *ride*).

[A connection within a Settlement]

Street

Activity of People, 街路/家路



A street for Pedestrians to walk & stay
Significance of street-scape & activities

A street is a route **within a settlement** (city or town), strictly speaking paved.

3

(aur)

1.1 가로와 도로의 어원

[도시간 연결통로]

Road

차량의 통행, 道路/經路



차량위주의 넓고 곧은 길
건축물과 가로는 별도의 체계

A road is a route **between settlements**
(reflecting the etymological relation with *ride*).

[도시내 연결통로]

Street

사람의 활동, 街路/家路



보행자가 걷고 머무르고 싶은 길
가로경관과 사회적 활동을 중시

A street is a route **within a settlement** (city or town), strictly speaking paved.

3

■ Pedestrian Safety & Eyes on the Street

Safe, comfortable, convenient streets induce various pedestrian activities, and rich pedestrian activities support safe, vibrant streets.



Sidewalk life permits a range of casual public interactions, from asking for directions and getting advice from the grocer, to nodding hello to passersby and admiring a new dog.

Street-friendly building layout is needed to enable safe and convenient walking conditions.

4

■ 가로환경과 보행안전

안전하고 쾌적하고 편리한 가로는 다양한 보행활동을 유도,
풍부한 보행활동은 다시 안전하고 활력 넘치는 가로를 만들



가로에서 사람들이 다양한 만남과 접촉, 흥미가 일어날 수 있도록 보행자와 건축물간의 다양한 접촉이 필요하다. 이는 도시의 안전과 활력을 확보할 수 있게 해준다. - 제인 제이콥스(Jane Jacobs 1961)

안전하고 편리한 보행환경 조성을 위해서는 가로친화적 연도형 환경조성이 필요

4



Unhealthy City during Industrial Revolution Era

> polluted, unhygienic

- the formation of anti-street & anti-city sentiments



산업혁명, 병든 도시

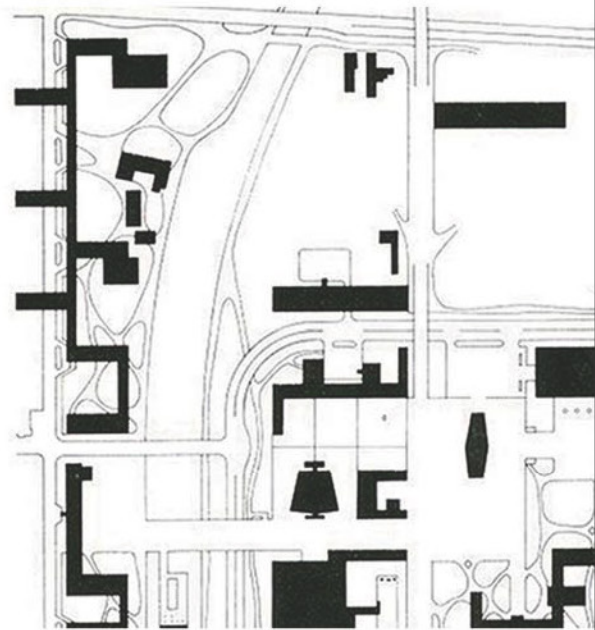
> 오염, 비위생 - 반가로, 反도시 정서 형성

The disappearing of pedestrian activities on sidewalks & domination of roads by vehicles force people retreat into buildings.



Street Patterns

Correspondence between street & building patterns
Social activities taking place in streets



Building Patterns

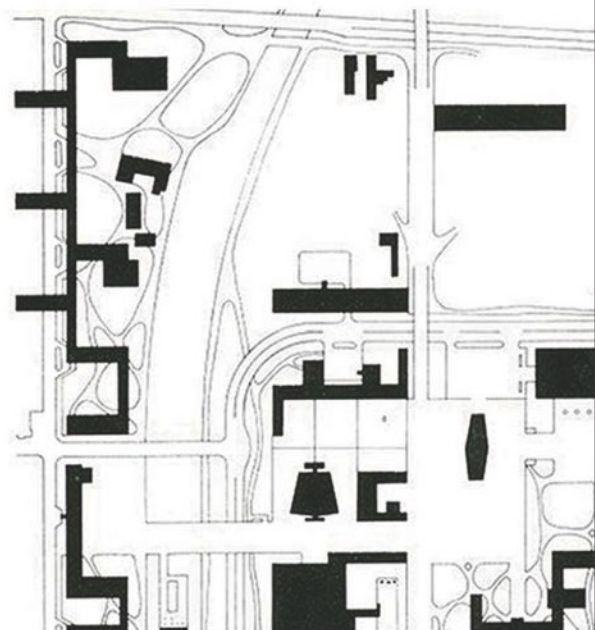
Correspondence between street & building patterns
Roads for vehicles, social activities within buildings 6

길에서 보행이 사라지고 차량이 도로를 점령, 사람은 건물속으로



Street Patterns

가로와 빌딩 패턴이 일치
길에서 보행과 사회적 활동 발생

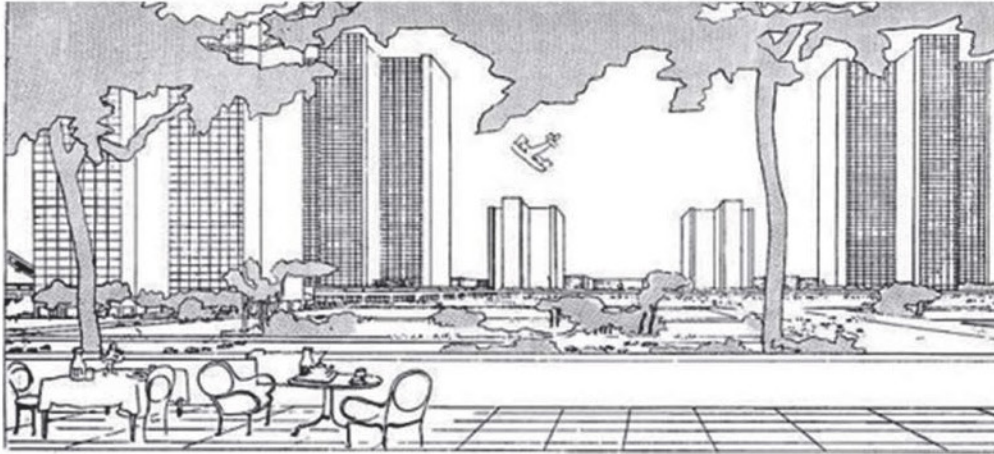


Building Patterns

도로와 빌딩 패턴이 무관, 도로는 차량통행
건축물/단지내에서 사회적 활동 발생 6

Towers in a Park

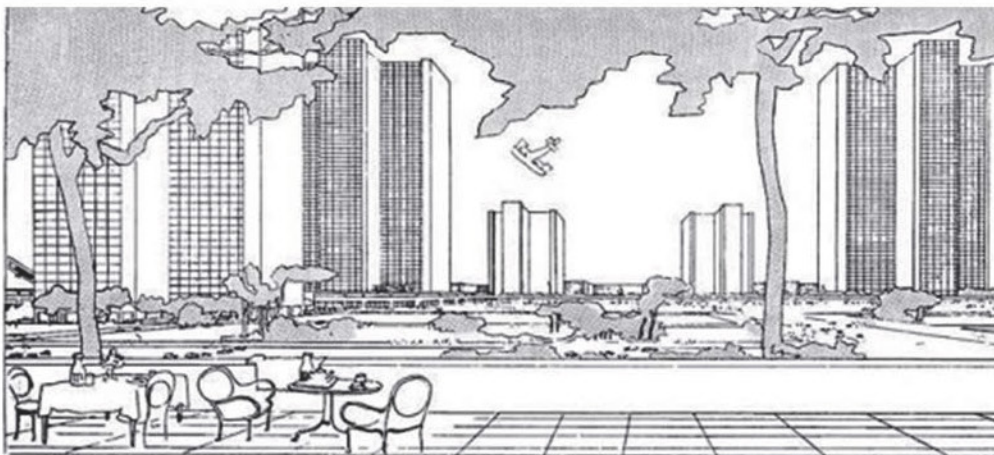
- Le Corbusier proposed a "Contemporary City" for three million inhabitants (Ville Contemporaine).
- The group of sixty-story cruciform skyscrapers **was set within large, rectangular, park-like green spaces.**



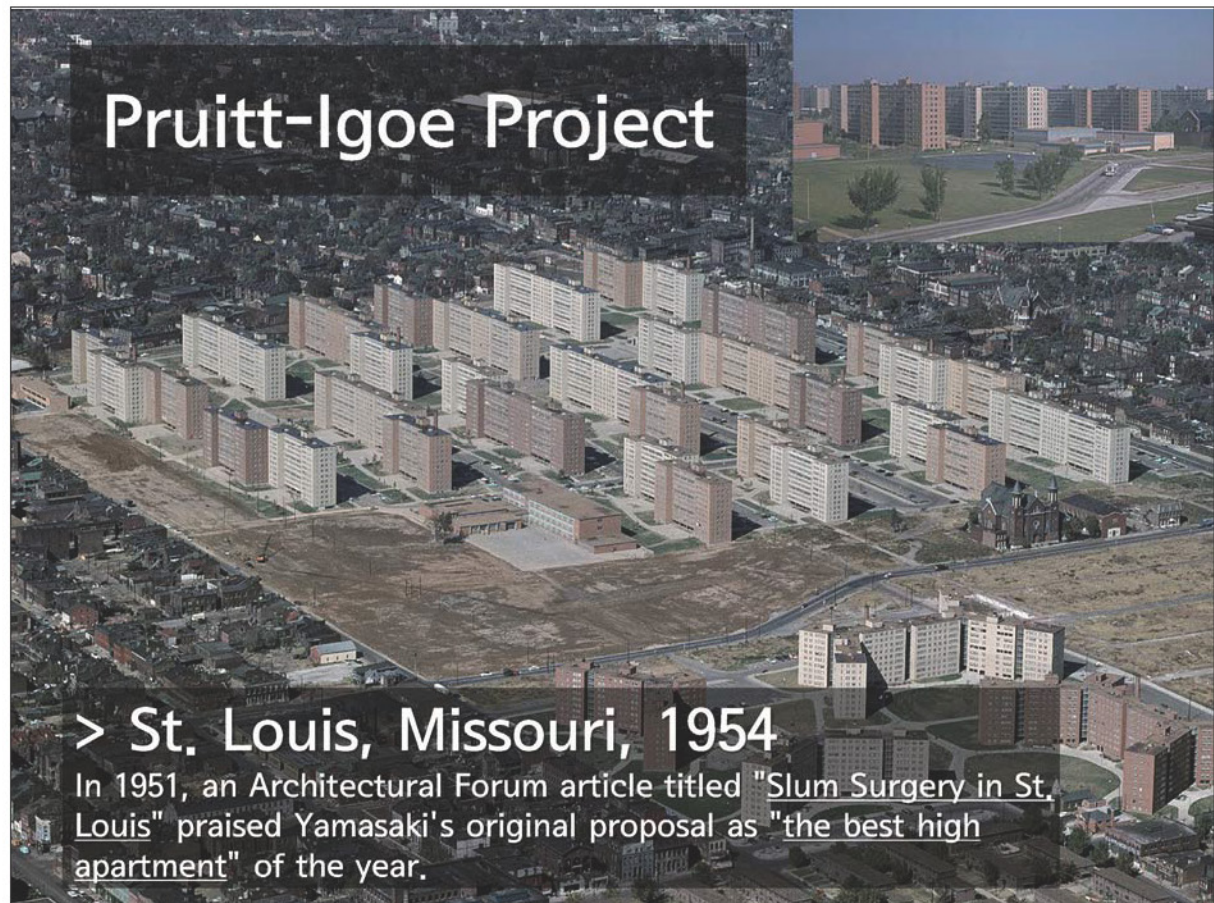
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공원 속 초고층 건물 Towers in a Park

- Le Corbusier proposed a "Contemporary City" for three million inhabitants (Ville Contemporaine).
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7



Pruitt-Igoe Project

> St. Louis, Missouri, 1954 - 1972

11 story 33 buildings, 2,870 units were demolished in 1972

Pruitt-Igoe Project

> St. Louis, Missouri, 1954 - 1972

11 story 33 buildings, 2,870 units were demolished in 1972

Apartment Blocks

Apgujeong, Seoul

> Hyundai Apt. 1979, Hanyang Apt. 1978

압구정동 아파트지구

> 현대아파트 1979, 한양아파트 1978

Architectural Policy Encouraging Pedestrian Activities

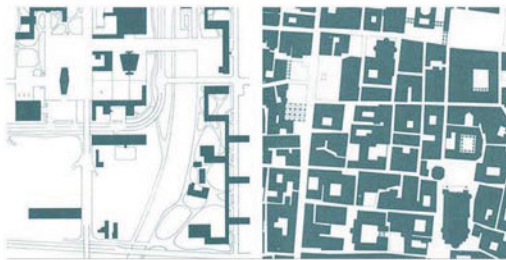
Christian de Porzamparc
Rue et Place Nationale, Paris, 1990-1995

PROGRAM

Urban project.
Dual-purpose project accommodating
housings, shops and public facilities,
rehabilitation of 3 apartment buildings,
implementation of 2 buildings of apartments
and shops, implementation of a building of
an Art School, a concert hall and art studios.

CLIENT

Régie Immobilière de la Ville de Paris



보행촉진 가로조성 건축정책

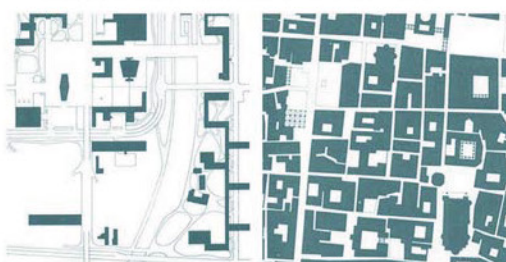
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CLIENT

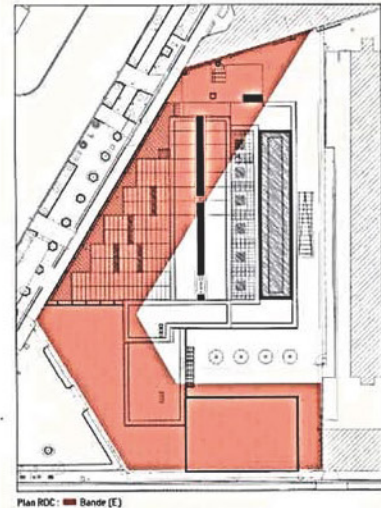
Régie Immobilière de la Ville de Paris



Architectural Policy Encouraging Pedestrian Activities, Paris, France

> Bande (E)

- Ensuring continued contact between buildings and streets
- Increased street vitality from building allocations in a park to building arrangements along the streets
- Implementing “Bande” Policy
- A band of 20 meters, an important architecture policy for safe and vital street environment

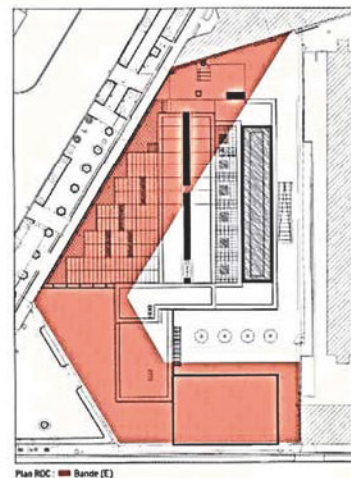


12

보행촉진 가로조성 건축정책, 프랑스 파리

> Bande (E)

- 건축 및 도시경관의 연속성을 유지하기 위하여 지정
- 법적 근거를 갖는 Bande 제도 도입
- 자유로운 단지형 건축에서 가로친화형 건축으로 가로활성화에 기여
- 폭 20m의 띠, 안전하고 활기찬 가로형성에 긴요한 제도



12

RUE ET PLACE NATIONALE, PARIS

<http://www.portzamparc.com/en/projects/rue-place-nationale-2/>

RUE ET PLACE NATIONALE, PARIS

<http://www.portzamparc.com/en/projects/rue-place-nationale-2/>

RUE ET PLACE NATIONALE, PARIS



RUE ET PLACE NATIONALE, PARIS





2. Street Environment

Current Situations & Problems

2. 가로환경 실태와 문제점

Disappearance of Pedestrians

Streets function only for vehicular passage

House - Basement Parking - Road -
Basement parking - Destination

사라진 보행 (단순한 차량통로 기능)

집 - 지하주차장 - 도로 - 지하주차장 - 목적지

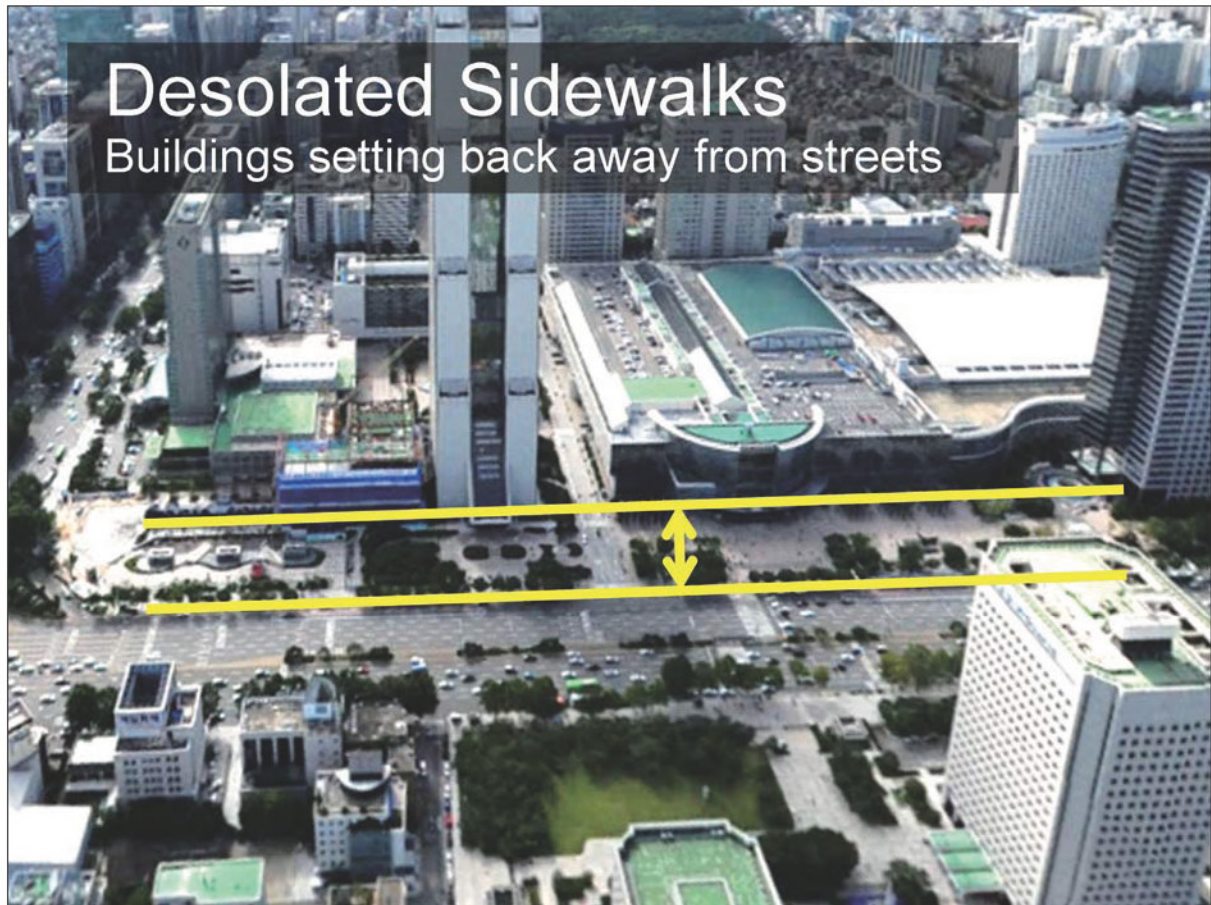
Walled Sidewalks

Both buildings confine pedestrians by walls



답답한 면벽 보행 (벽으로 닫힌 건축)





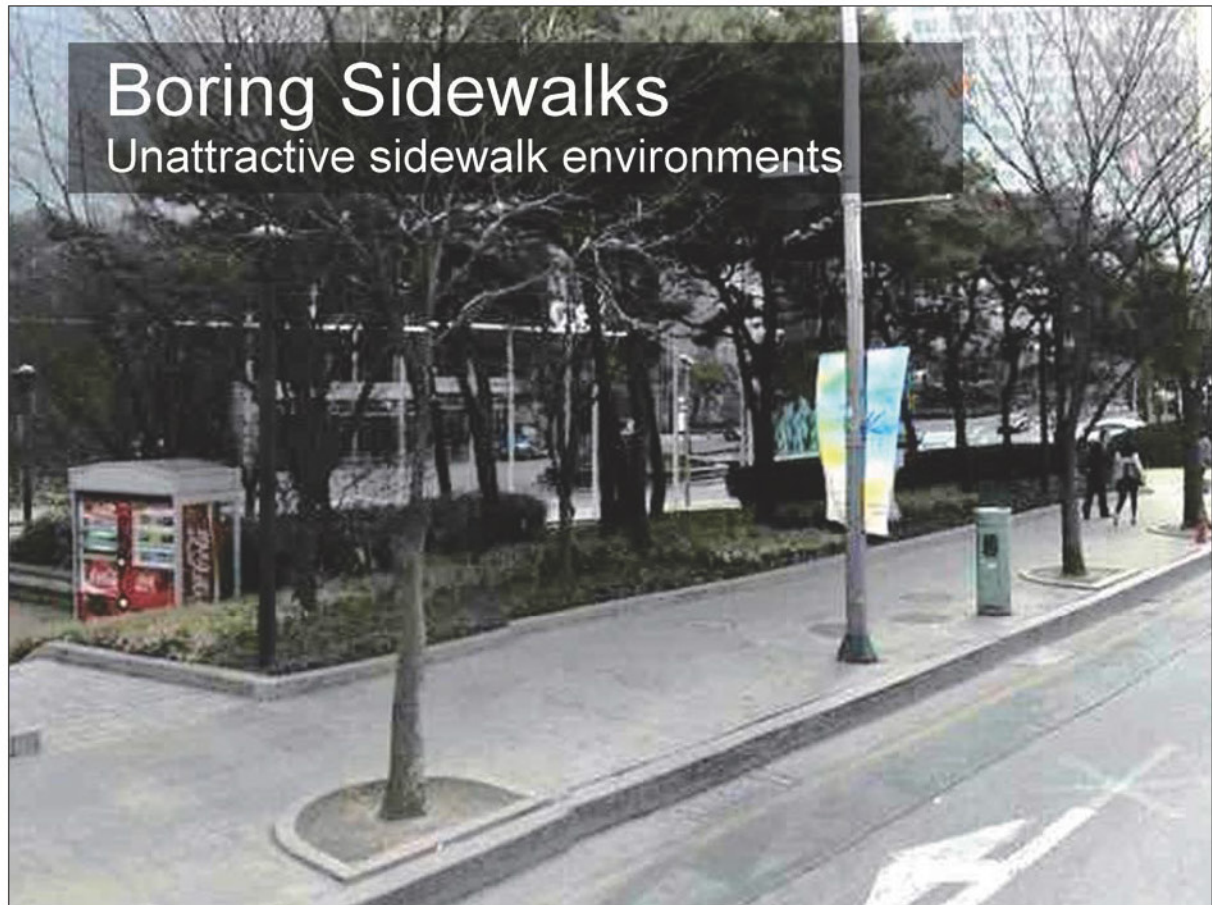
Inconvenient Walking

A mega-structure blocks pedestrian passage

Overflow of cars & disappearance of pedestrians

불편한 보행 (대형 건축물의 가로 단절)

차량은 넘쳐나고 보행이 사라지는 도시



Confusing Streetscape

Chaotic signboards = Visual pollution



혼란스러운 보행 (무질서간판 = 시각공해)







(auri)

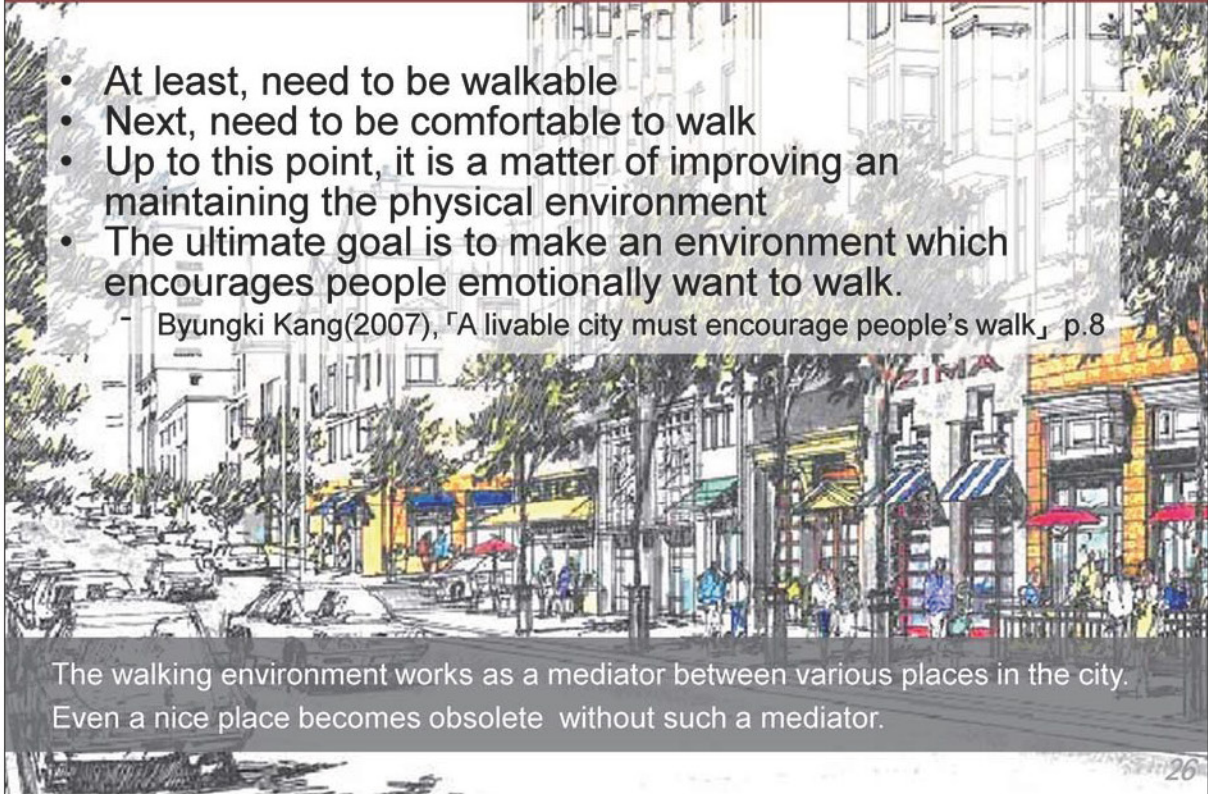
3. What is the Nature of Ideal Streets?

(auri)

3. 바람직한 가로 모습

3.1 Conditions for Ideal Streets

- At least, need to be walkable
 - Next, need to be comfortable to walk
 - Up to this point, it is a matter of improving and maintaining the physical environment
 - The ultimate goal is to make an environment which encourages people emotionally want to walk.
- Byungki Kang(2007), 「A livable city must encourage people's walk」 p.8



The walking environment works as a mediator between various places in the city.
Even a nice place becomes obsolete without such a mediator.

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3.1 바람직한 가로 조건

- 적어도 걸을 수 있는 여건이 마련되어야 한다.
 - 다음은 걸기 쉬워져야 한다.
 - 여기까지는 물리적 시설 환경의 개선과 정비의 과제이다.
 - 최종 목적은 걷고 싶은 감정을 동하게 만드는 환경이 마련되어야 한다.
- 강병기(2007), 「걷고 싶은 도시라야 살고 싶은 도시다」 p.8



보행환경은 여러 용도의 공간들을 연결하는 도시공간을 접속하는 매개체 역할을 하고 있다.
아무리 좋은 용도의 공간이라고 해도 보행이라는 매개체 없이는 무용지물이다.

26

(aur)

3.1 Conditions for Ideal Streets

The fundamental quality and role of streets

Streets, fundamentally, are places for people to have outdoor activities such as political, commercial, social ones.



Social Activity



Political Activity



Commercial Activity



27

(aur)

3.1 바람직한 가로의 조건

가로의 본질과 역할

가로는 본질적으로, 사람들이 행하는 모든 외부활동(정치, 상업, 경제, 사회 등의 행위)을 지원하는 공간이다.



사회적 공간으로서의 가로



정치적 공간으로서의 가로



경제적 공간으로서의 가로



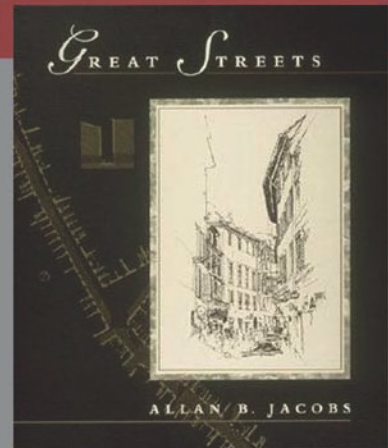
27

3.1 Conditions for Ideal Streets [Allan Jacobs]

Safe & Comfortable Physically



Support Community Development



Participation of People & Building



Memorable & Impressive



Local & Place Representation

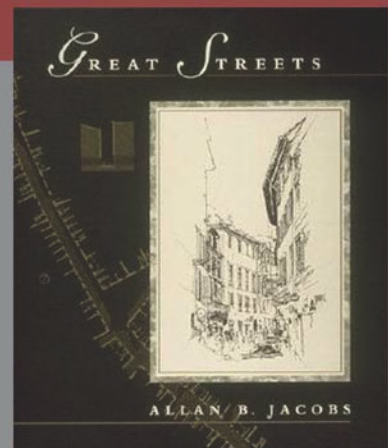


3.1 바람직한 가로 조건 [앨런 제이콥스]

물리적으로 편안하고 안전해야 함



커뮤니티 형성에 도움이 되어야 함



사람과 건축물의 참여가 수반되어야 함



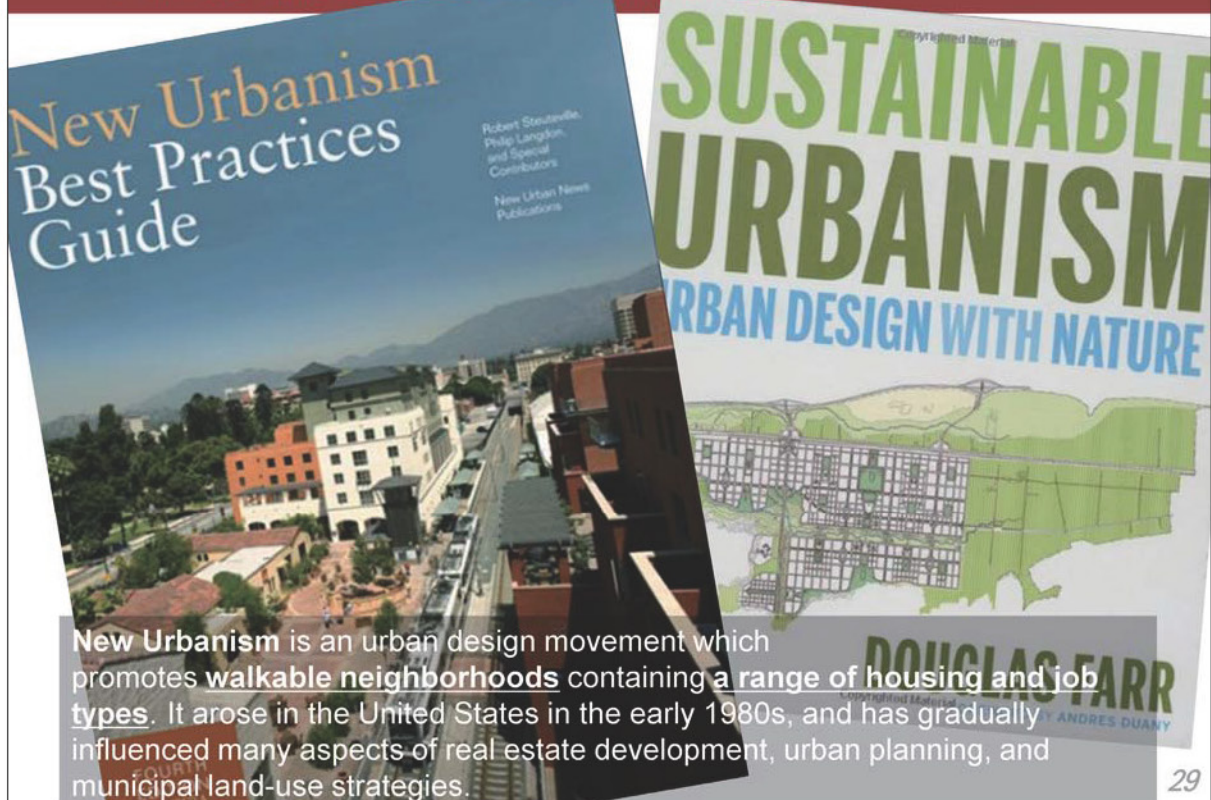
기억에 남는 인상을 주어야 함



지역의 대표성을 가지고 있어야 함

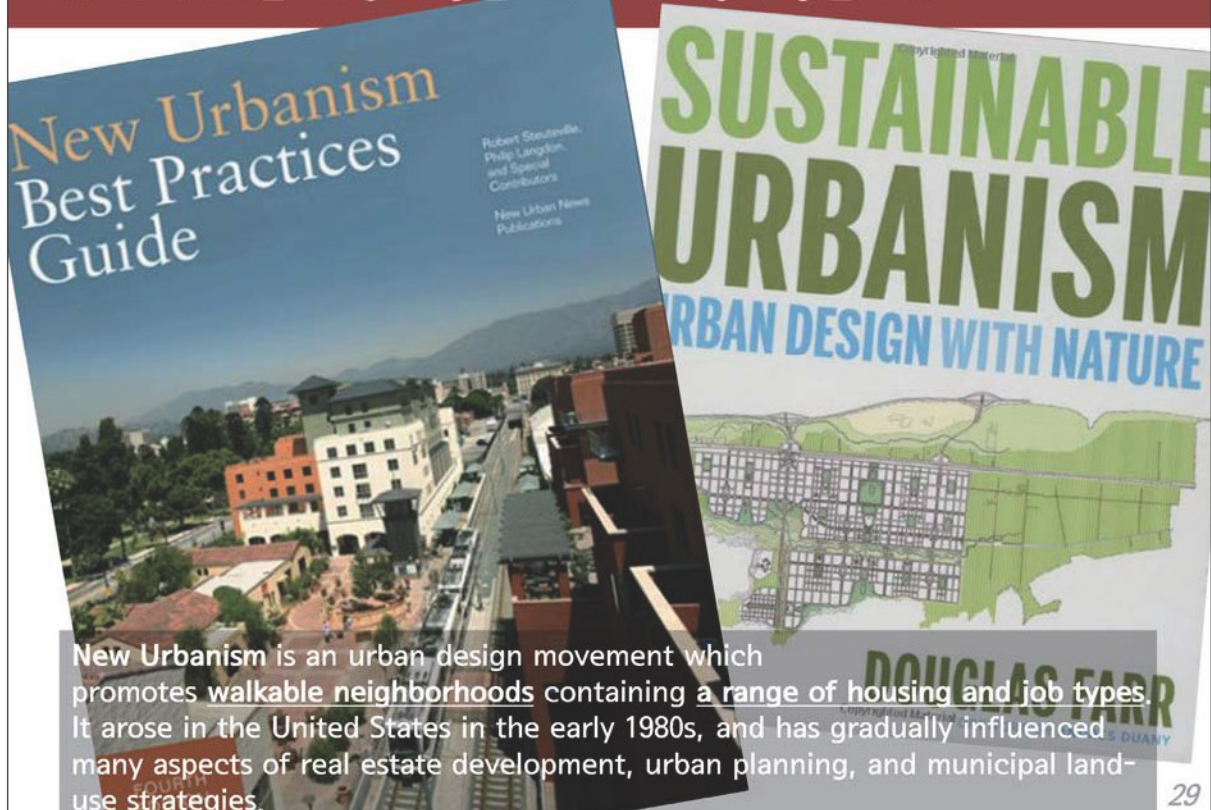


3.2 New Urbanism: From Car-oriented to Pedestrian-Oriented Cities



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3.2 뉴어바니즘: 자동차 중심도시에서 보행자 중심도시로



29

3.2 New Urbanism: From Car-oriented to Pedestrian-Oriented Cities

(aur)

Automobile-oriented
Building Frontage

VS.

Pedestrian-oriented
Building Frontage



30

3.2 뉴어바니즘: 자동차 중심도시에서 보행자 중심도시로

(aur)

자동차 중심의
전면공지 건축

VS.

보행자 중심의
전면접도 건축

Automobile-oriented frontage

Pedestrian-oriented frontage



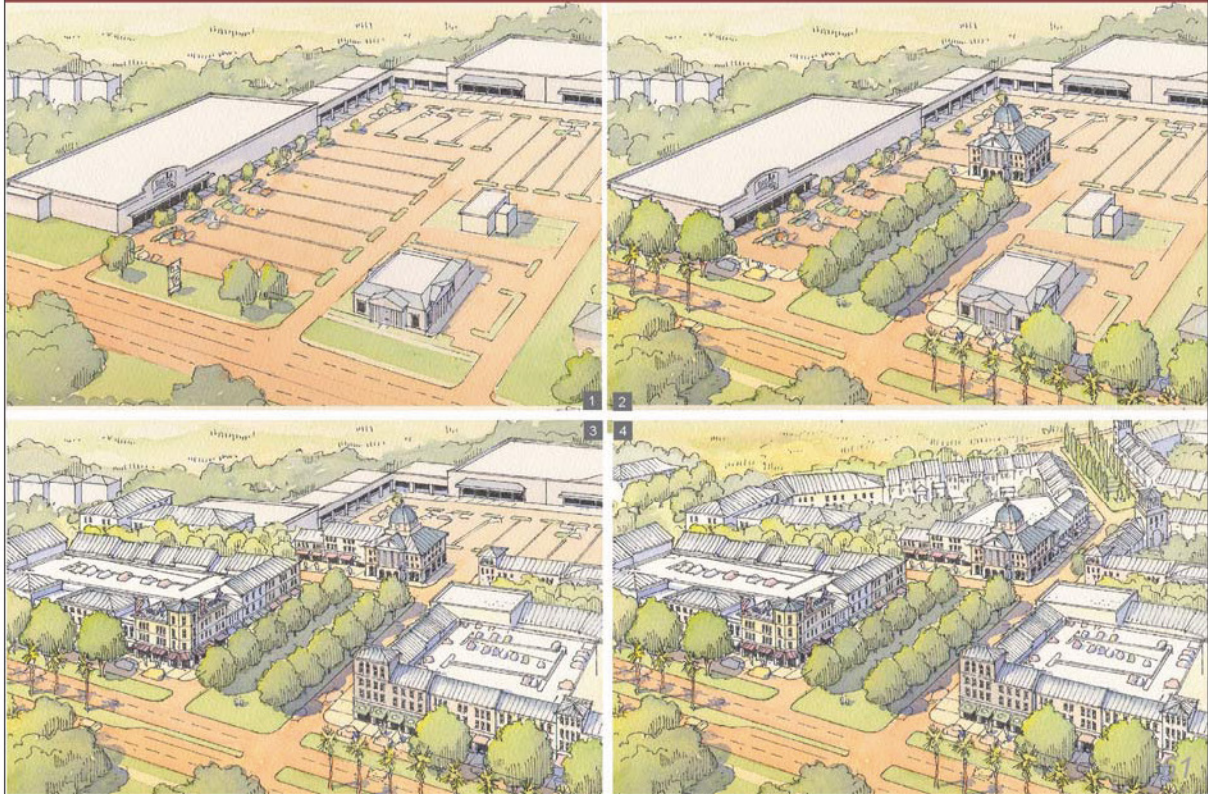
공지형 후퇴건축

연도형 접도건축

30

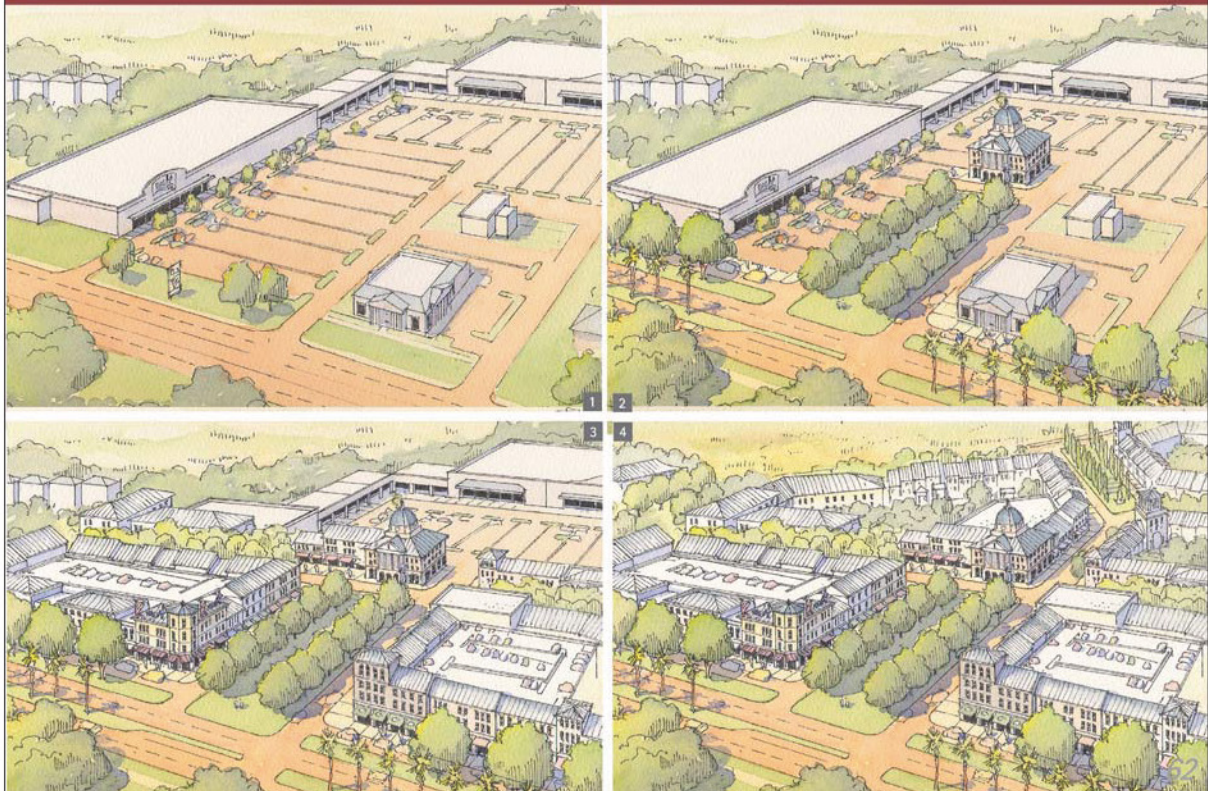
3.2 New Urbanism: From Car-oriented to Pedestrian-Oriented Cities

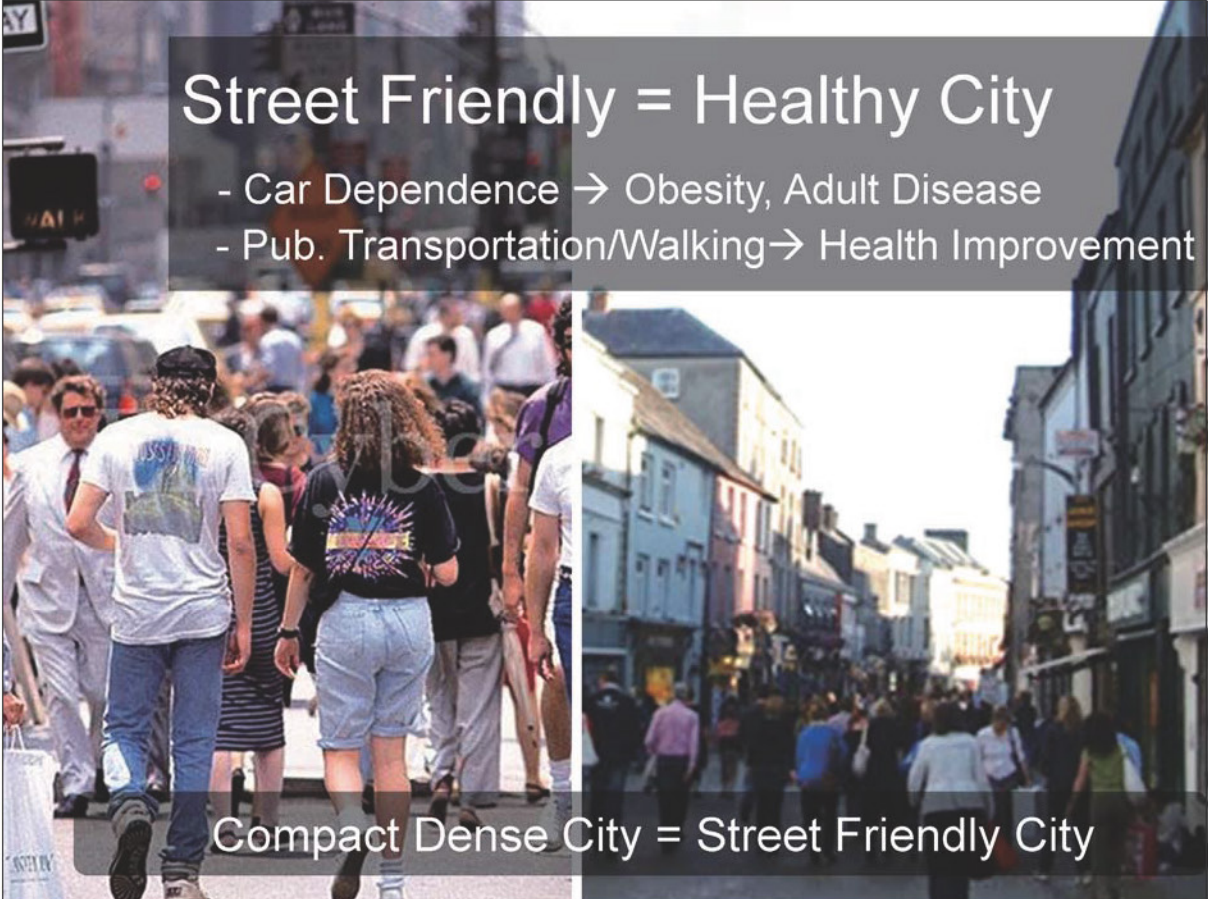
(aur)



3.2 뉴어바니즘: 자동차 중심에서 보행자/대중교통 중심도시로

(aur)





Street Friendly = Healthy City

- Car Dependence → Obesity, Adult Disease
- Pub. Transportation/Walking → Health Improvement

Compact Dense City = Street Friendly City



보행친화도시 = 건강한 도시

- 승용차 → 비만, 성인병 노출
- 대중교통/보행 → 건강증진

압축 고밀 도시 = 사람 많은 도시 = 가로친화형 도시

(auri)

4. Street Friendly Urban Design

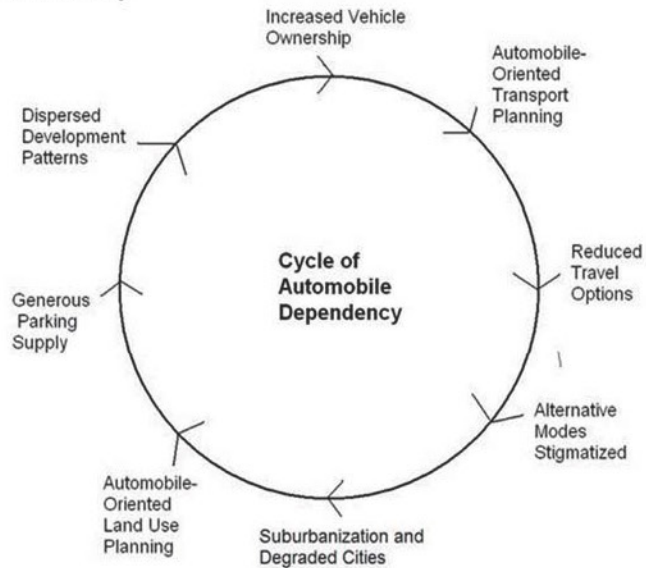
(auri)

4. 보행자를 위한 가로환경 조성 방향

4.1 A Paradigm Shift in Urban Policies

From a Vehicle-oriented City

Limitations of a Vehicle-oriented City



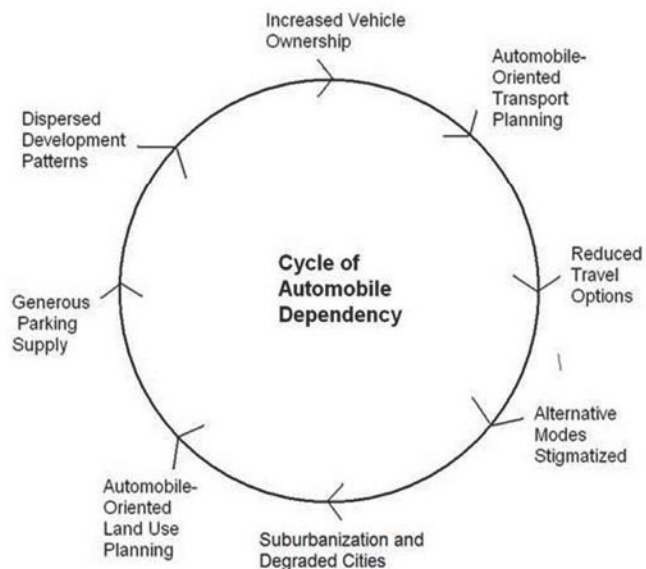
Victoria Transport Policy Institute (2014)

34

4.1 도시정책의 패러다임 전환

자동차 중심도시에서

자동차 중심 도시의 한계



Victoria Transport Policy Institute (2014)

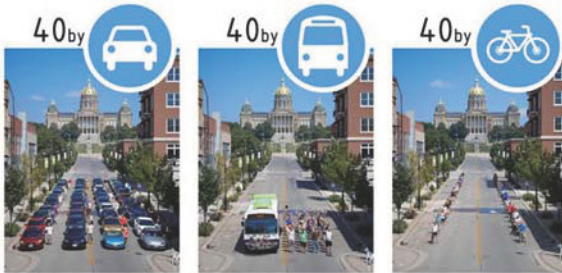
34

(aur)

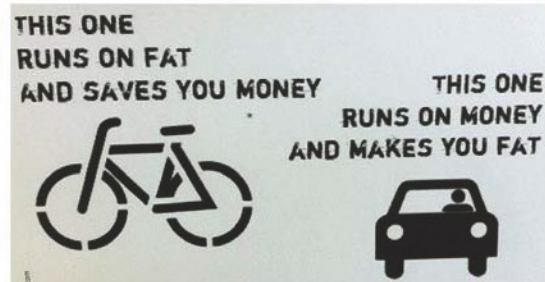
4.1 A Paradigm Shift in Urban Policies

To a Pedestrian-oriented City

Effects of a Pedestrian-oriented City



Amount of space required to transport the same number of passengers by car, bus, or bicycle.
Event info at www.facebook.com/UrbanAmbassadors - Photos by www.tobinbennett.com
(Des Moines, Iowa - August 2010)



Individual Aspect

Safety,
Health/Exercise
Leisure/Travel
Quality of Life
Life Style

Economic Aspect

Inexpensive, Flexible
transportation mode,
Savings of
resources/space/time

Environment Aspect

Environment-friendly
transportation
Combining walk/bike/bus
Sustainable transportation

Socio-cultural Aspect

Vitalization of streets &
public places,
Place attachment,
Urban attraction,
Community integration

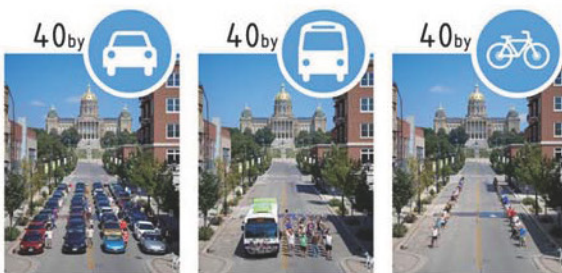
35

(aur)

4.1 도시정책의 패러다임 전환

보행자 중심도시로

보행자 중심 도시의 효용



Amount of space required to transport the same number of passengers by car, bus, or bicycle.
Event info at www.facebook.com/UrbanAmbassadors - Photos by www.tobinbennett.com
(Des Moines, Iowa - August 2010)



개인적 관점

안전, 건강/운동
여가/여행
삶의 질과 행복
생활양식과 가치관

경제적 관점

저렴, 유연한 교통수단
자원/공간/시간의 절감
다양한 교통수단의 조합

환경적 관점

보행=친환경적 교통수단
(에너지 소모/오염/환경)
보행/자전거/대중 연계
지속가능 교통체계 구축

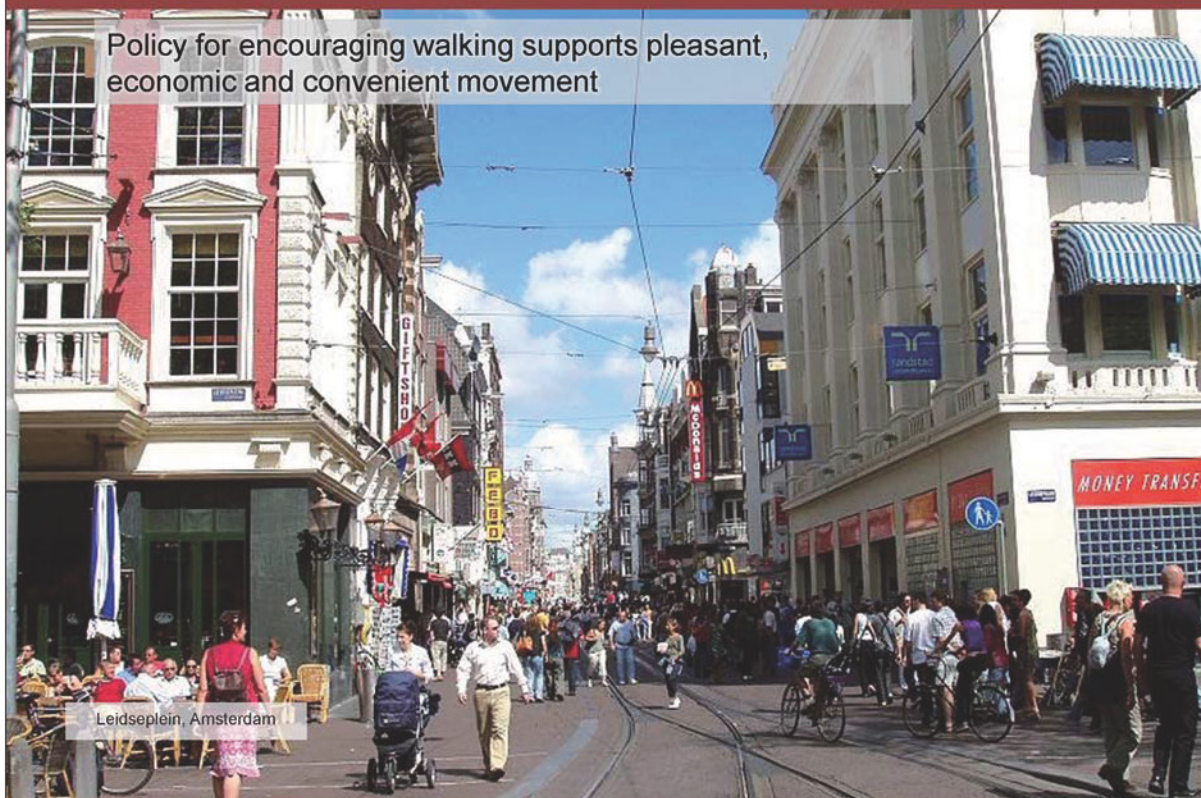
사회문화적 관점

가로/공공영역의 활성화
장소성과 장소애착
도시의 매력과 경쟁력
사회 통합과 소통

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4.1 A Paradigm Shift in Urban Policies

Policy for encouraging walking supports pleasant, economic and convenient movement



Leidseplein, Amsterdam

4.1 도시정책의 패러다임 전환

보행장려 정책은 쾌적하고, 여유롭고, 간편하고, 경제적인 통행을 지원



Leidseplein, Amsterdam

4.1 A Paradigm Shift in Urban Policies

Policy for encouraging walking supports pleasant, economic and convenient movement



Koningsplein, Amsterdam

4.1 도시정책의 패러다임 전환

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Koningsplein, Amsterdam

4.1 A Paradigm Shift in Urban Policies

Adopting Shared Space



Exhibition Road, Kensington, UK

4.1 도시정책의 패러다임 전환

공유 공간(Shared Space)의 도입



Exhibition Road, Kensington, UK

(auri)

4.2 Relating Architecture and Pedestrian Traffic Policy

Street Facing Retailers & Cafes Encourage Vibrant Sidewalk Activities



(auri)

4.2 건축정책과의 연계 강화

가로변 상점과 카페는 보도공간에서 활발한 활동을 유도



4.3 Supporting Public Transportation Policy

Help the City to Establish a Convenient and Comfortable Public Transportation System



Hauptplatz, Graz, Austria

4.3 교통정책의 지원

편리하고 쾌적한 대중교통체계 도입



Hauptplatz, Graz, Austria

(aur)

4.3 Support of Public Transportation Policy

Help the City to Establish a Convenient and Comfortable
Public Transportation System



Strasbourg in Alsace, France

(aur)

4.3 교통정책의 지원

편리하고 쾌적한 대중교통체계 도입



Strasbourg in Alsace, France

4.4 A Policy Proposal for Strengthening the Right to Walk

Improving walk-related laws & regulations

Road Traffic Act Article 8 (Pedestrian Traffic) ②

- On a road that is without a sidewalk
- Pedestrians shall walk on the fringe of the road
- At an opposite side of forthcoming vehicles.



4.4 보행권 강화를 위한 제도기반 마련

보행관련 법령 및 제도 개선

도로교통법 제8조(보행자의 통행) ②

- 보행자는 보도와 차도가 구분되지 아니한 도로에서는
- 차마와 마주보는 방향의
- 길가장자리 또는 길가장자리 구역으로 통행하여야 한다.



(auri)

4.4 A Policy Proposal for Strengthening the Right to Walk

Strengthening the right to walk is an important issue.



김지엽 (2014), '보행자 관련 법제 현황과 개선방향,' auri 보행도시포럼

(auri)

4.4 보행권 강화를 위한 제도기반 마련

보행권 강화



김지엽 (2014), '보행자 관련 법제 현황과 개선방향,' auri 보행도시포럼

5. Cases of Pedestrian-oriented Street Design & Conclusion

5. 보행자를 위한 가로조성 사례와 결론

5.1 Sejong Happy City, Bus Rapid Transit System



5.1 사례: 행복도시 BRT도로



5.2 Pedestrian & Bicycle System in the Netherlands



5.2 사례: 네델란드 보행과 자전거도로 체계



5.3 Street Design Policy to Encourage Pedestrian Traffic

- Necessary for the shift from the vehicle-oriented city to a pedestrian-oriented city
- Streets & buildings, separated for the past 50 years, need to be integrated to reinstate a sense of place
- Safe & convenient walking conditions need to contribute toward creating vital urban environment

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5.3 결론: 보행자를 위한 가로환경 조성 정책방향

- 자동차위주 도시에서 사람중심 도시로 전환하는데 필수적인 도시설계 정책
- 지난 50년간 자동차 때문에 분리되어 온 길과 건축을 다시 일체화하여 장소성 강화
- 안전하고 편리한 걷고 싶은 길을 조성하여 활기찬 도시형성에 기여

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5.3 Street Design Policy to Encourage Pedestrian Traffic

- Integration of streets & buildings can also create an attractive urban atmosphere
- Increase of pedestrian activities contribute to the establishment of healthy city
- Pedestrian activities at sidewalks can encourage to the use of public transportation
- A future street design policy needs to be based on street-friendly building layouts

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5.3 결론: 보행자를 위한 가로환경 조성 정책방향

- 가로와 일체화된 건축적 요소가 매력적 도시분위기 형성을 유도
- 보행 활성화는 건강도시 정책에 기여
- 가로변 보행은 대중교통 활성화에 기여
- 가로친화형 건축은 미래형 도시설계 전략

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Thank you.

감사합니다.



Improvements of Walking Environment

보행자 친화적인 국내외 보행환경 개선 사례

Session I





I-1

International Seminar on Pedestrian Safety Walkable & Safe City

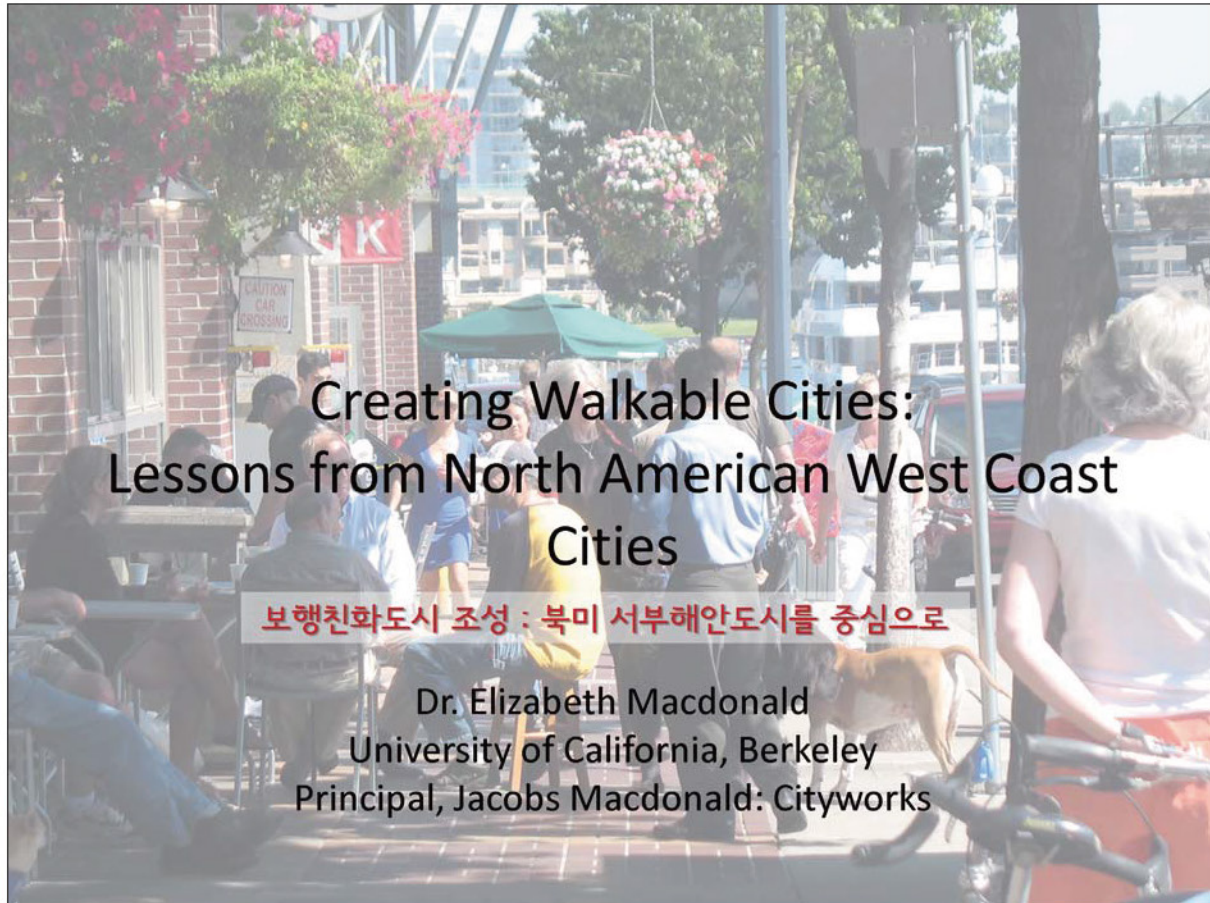
「Creating Walkable Cities : Lessons from North American West Coast Cities」

「보행친화도시 조성 : 북미 서부해안도시를 중심으로」

Elizabeth Macdonald

USA / Professor, City & Regional Planning, UC Berkeley

UC Berkeley 교수 / 미국



Creating Walkable Cities: Lessons from North American West Coast Cities

보행친화도시 조성 : 북미 서부해안도시를 중심으로

Dr. Elizabeth Macdonald
University of California, Berkeley
Principal, Jacobs Macdonald: Cityworks

Research Findings Related to Pedestrian Safety 보행안전과 관련된 연구 결과

The Effects of Transportation Corridors' Roadside Design Features on User Behavior and Safety, and their Contributions to Health, Environmental Quality, and Community Economic Vitality: A Literature Review (Macdonald, 2008)

주요 교통경로에 설치된 교통 표지판 디자인은 이용자 행태와 안전, 건강, 환경의 질, 그리고 커뮤니티의 경제 활성화에 영향을 미친다.

Higher vehicle speeds are associated with more serious pedestrian injuries.

교통수단의 속도가 빠를수록 보행자의 사고위험은 더 높아지게 된다.

Narrower roadways seem associated with slower speeds and fewer collisions between vehicles and pedestrians.

도로가 좁을수록 속도는 더욱 느려지게 되고, 교통수단과 보행자 간 충돌은 줄어들게 된다.

Collisions between vehicles and pedestrians decrease as pedestrian volumes increase.

교통수단과 보행자 간 충돌사고는 보행자의 보행량 증가에 의해서도 줄어들 수 있다.

<보행자와의 접촉 시 자동차 속도>

Speed of Motor Vehicle Upon Hitting Pedestrian	Likelihood of Pedestrian Survival
20 mph	~ 95%
30 mph	~ 60%
40 mph	~ 20%
50 mph	~ 0%

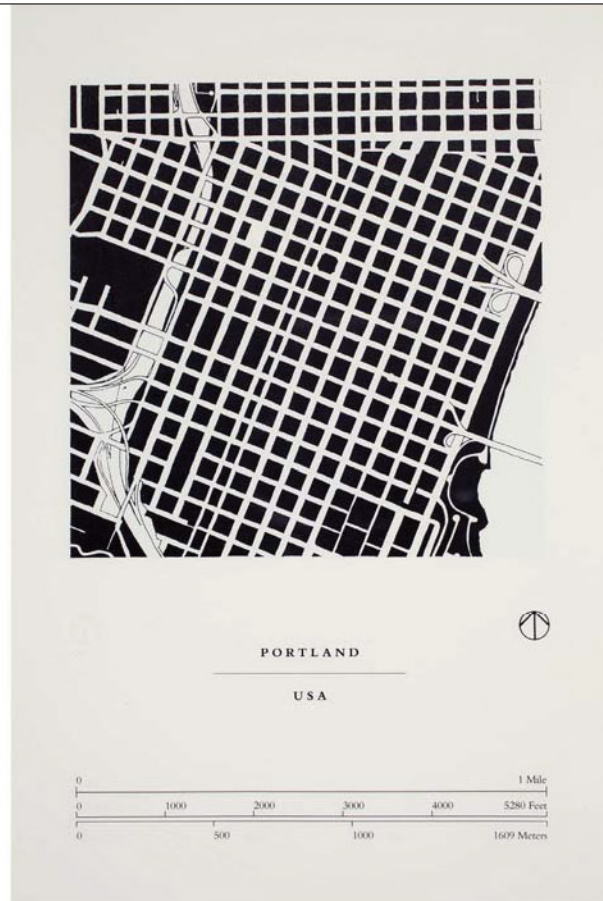
<보행자의 생존 가능성>





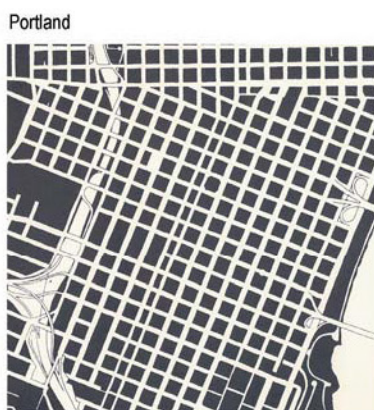
Portland, Oregon





Source:
Allan Jacobs,
Great Streets

Portland
Intersections
370
Blocks
318

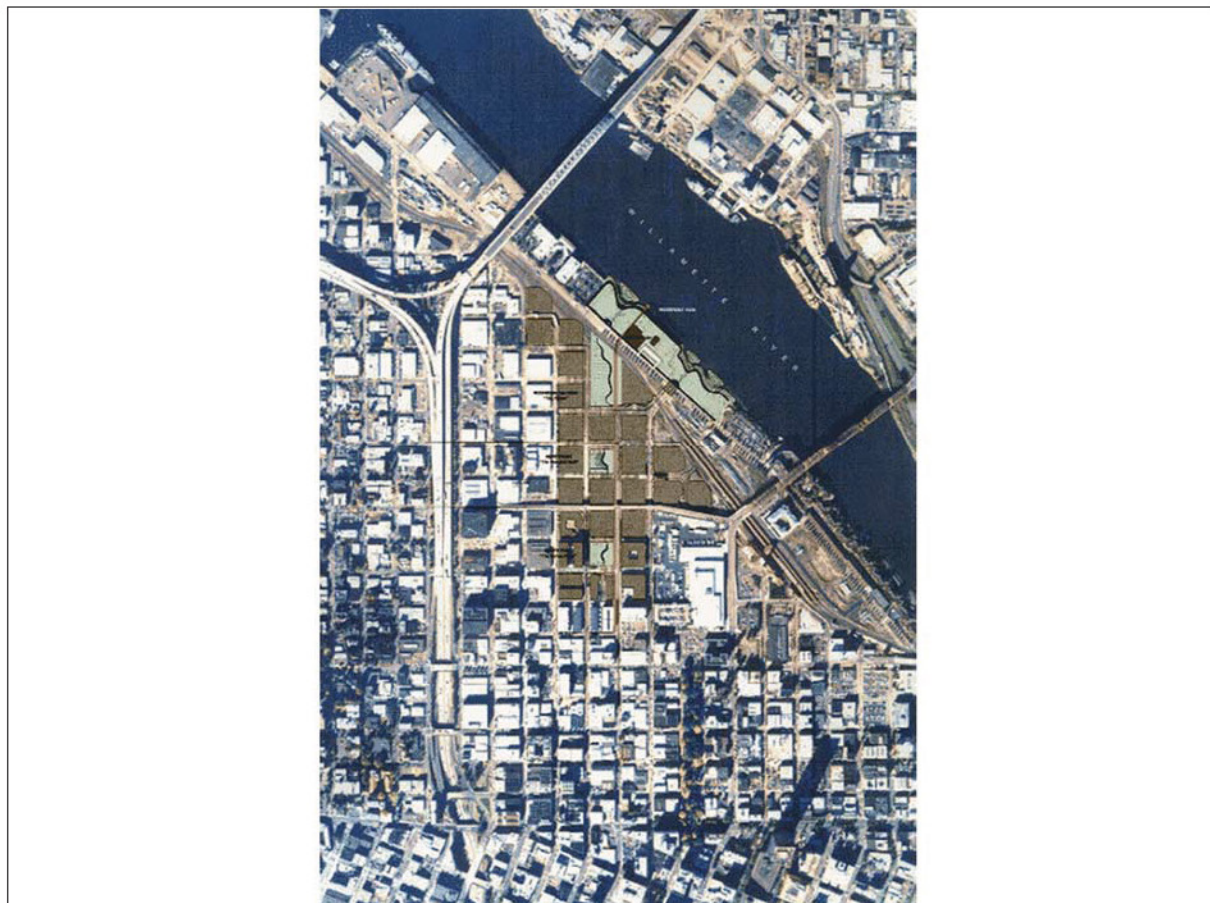


Manhattan



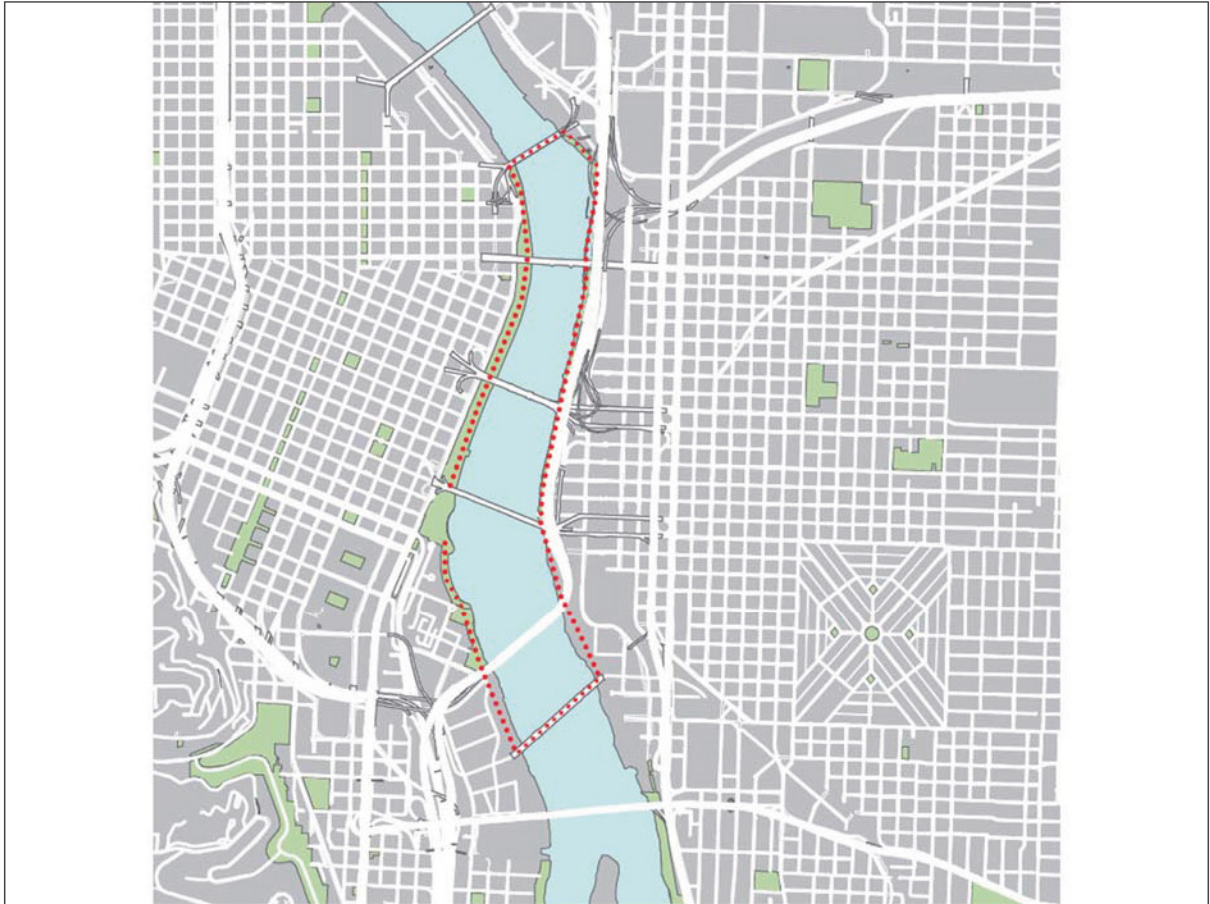
Intersections
181
Blocks
166

Source: Allan Jacobs, *Great Streets*













San Francisco, California

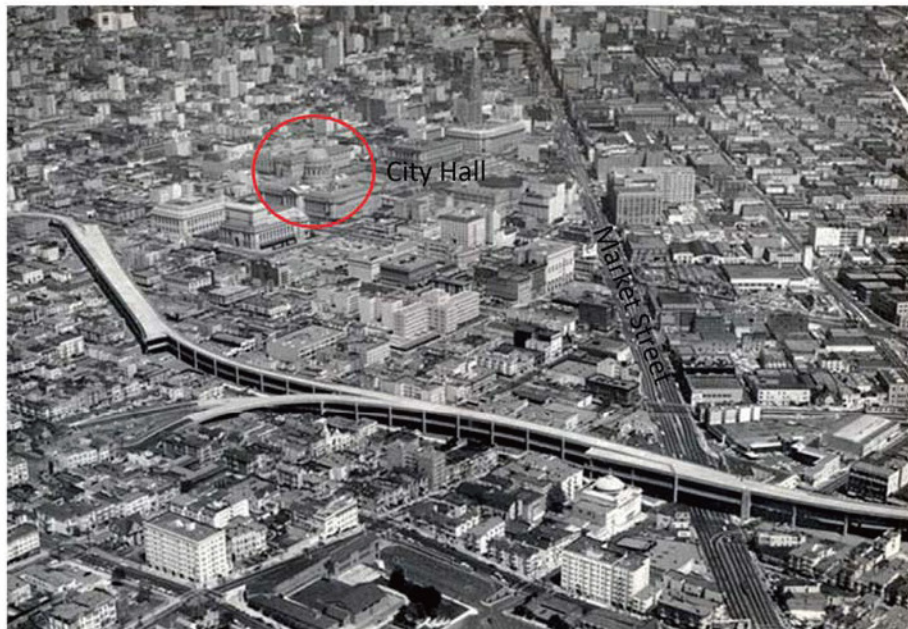
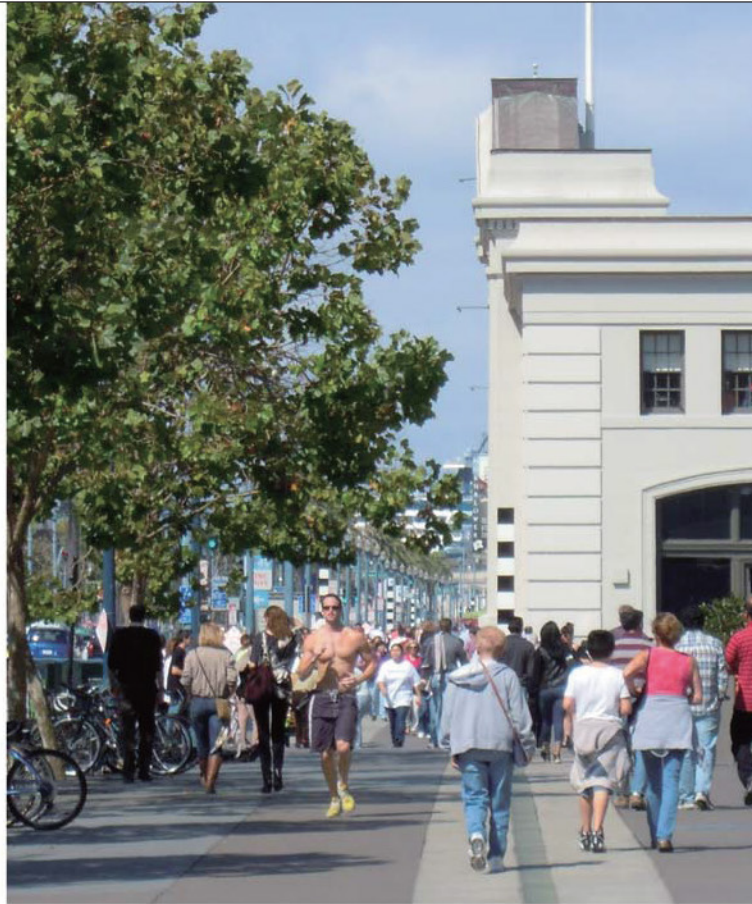




Image source: San Francisco History Center, San Francisco Public Library

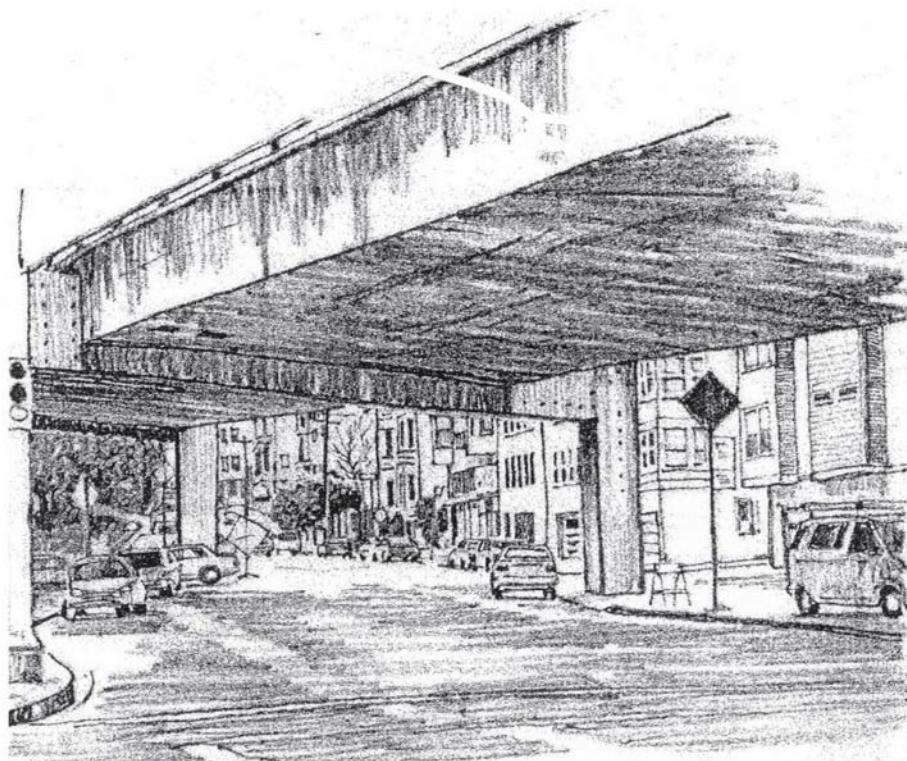


Image source: San Francisco History Center, San Francisco Public Library



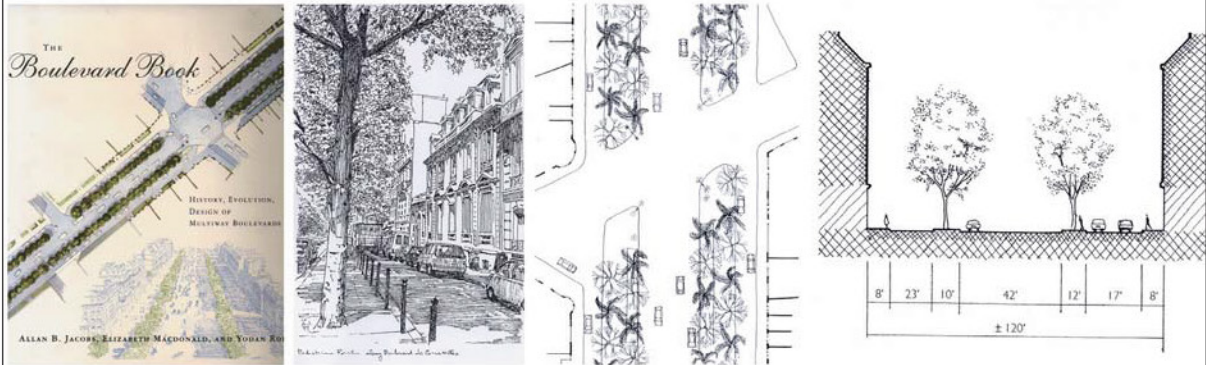
Chronicle File Photo

Image Source: San Francisco Chronicle



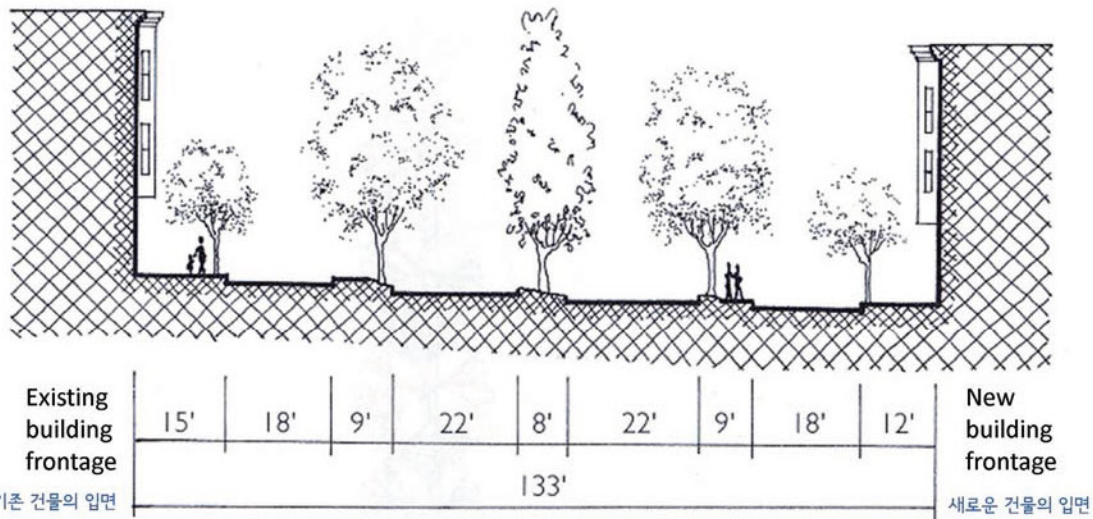
Octavia Boulevard, San Francisco

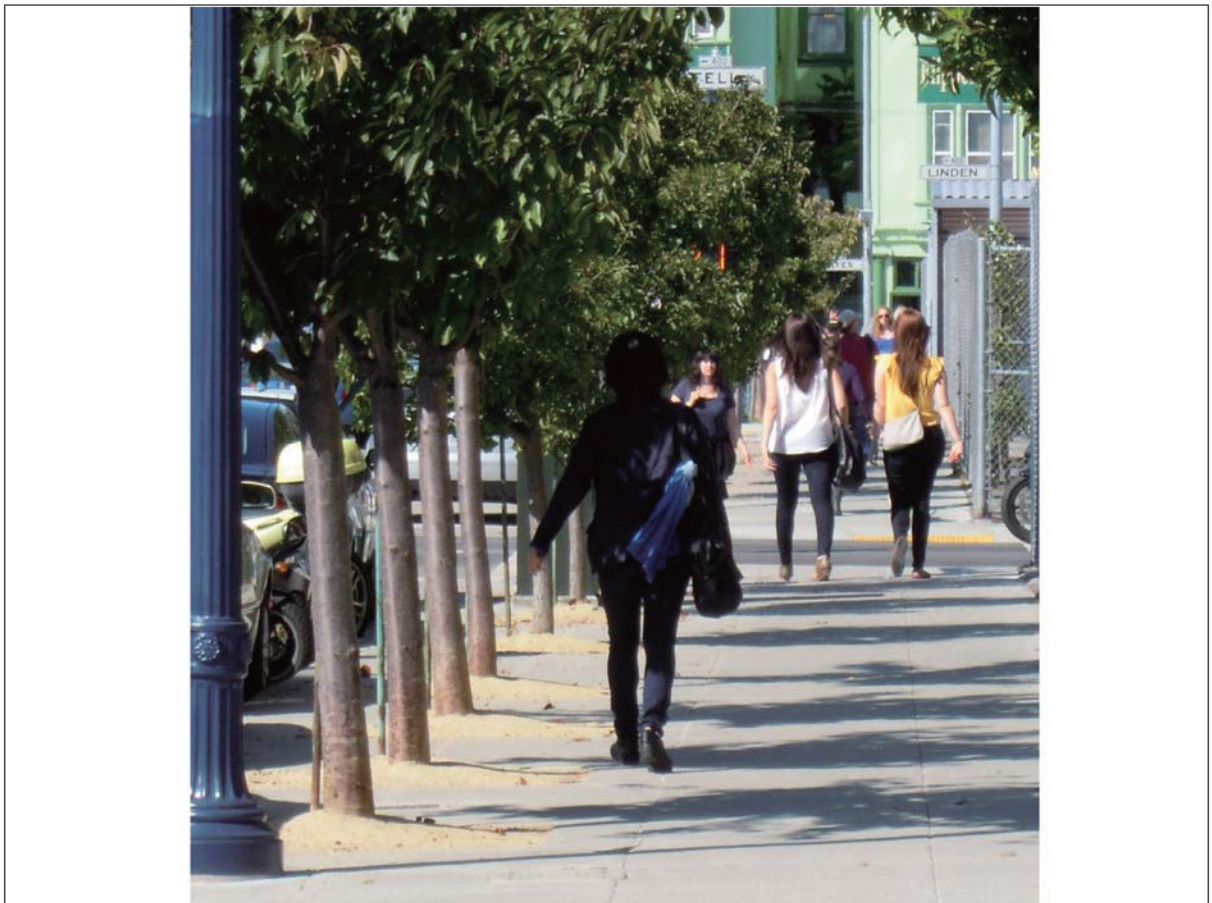




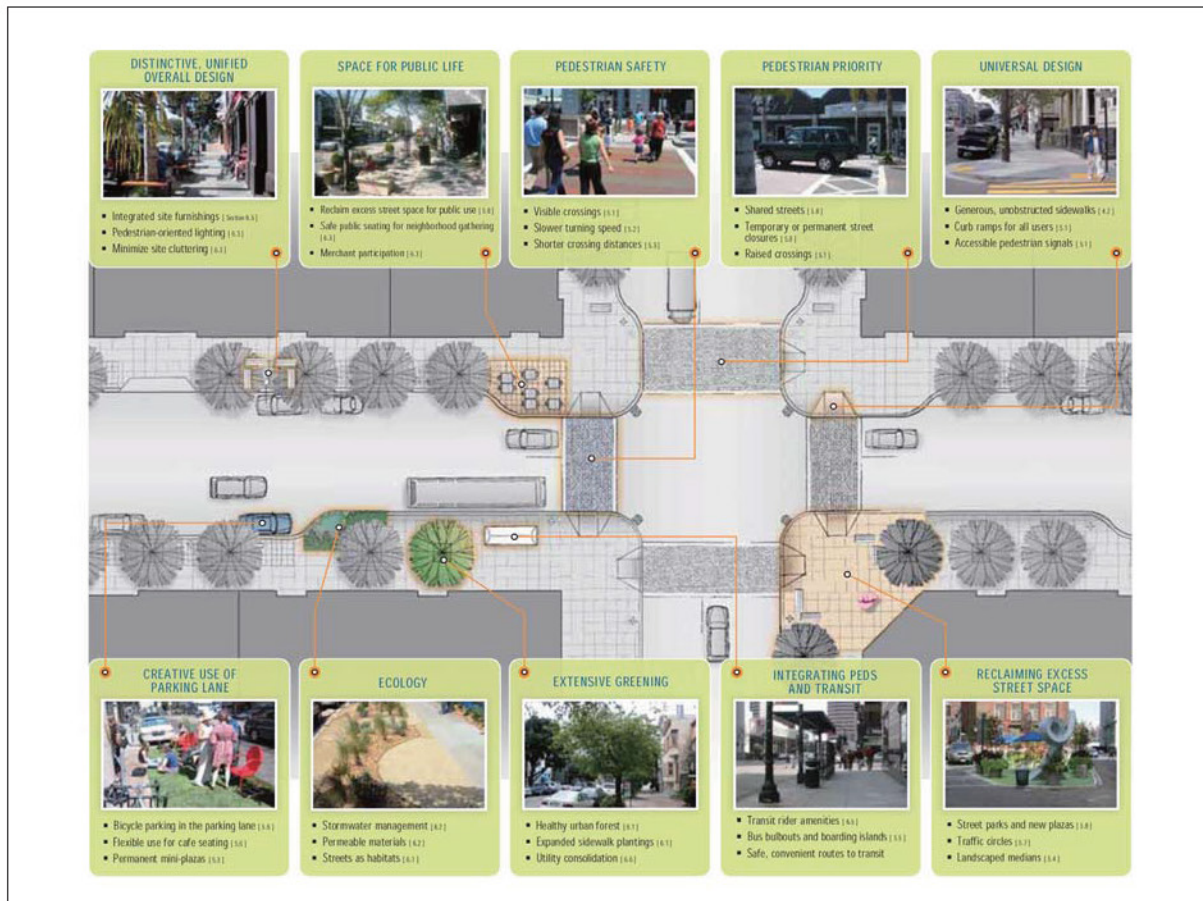
Research methods: comparative case studies, field observations, analysis of traffic accident data

연구방법 : 사례 비교분석, 현장답사, 교통사고 데이터 분석





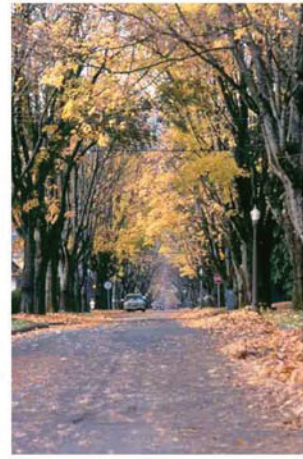






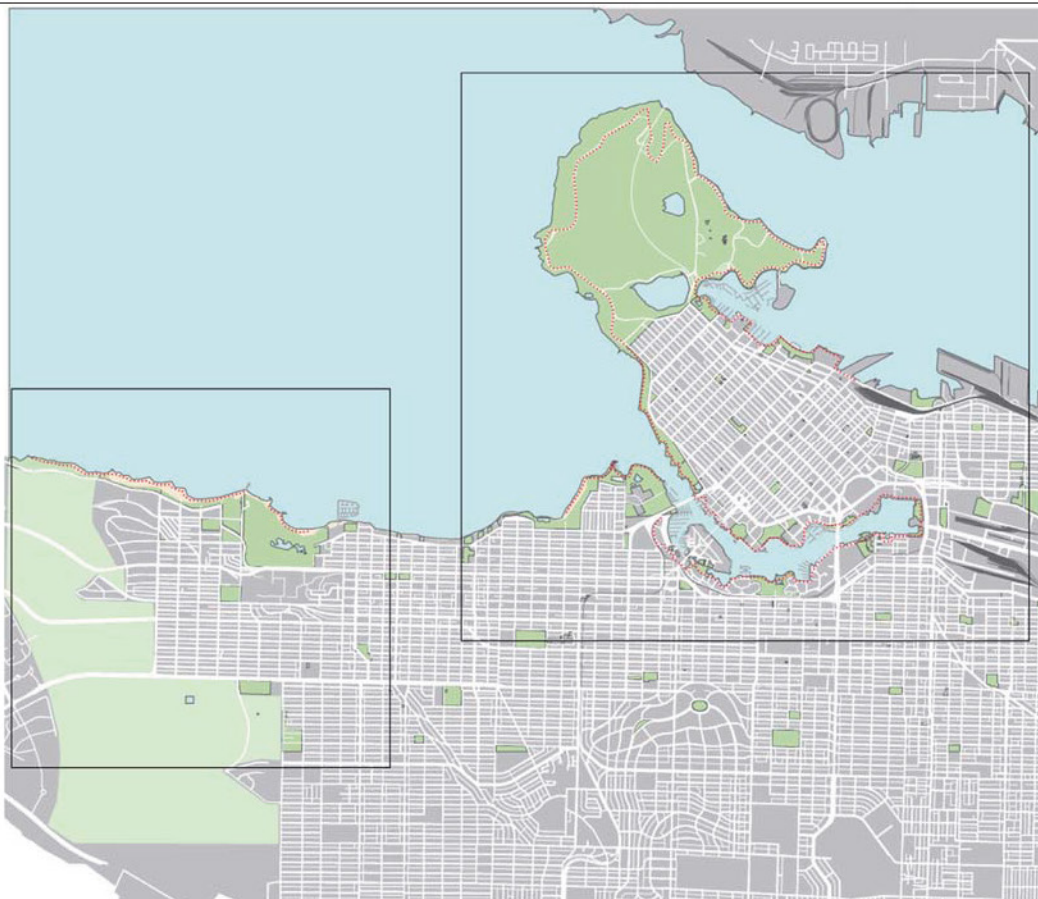


Vancouver, British Columbia

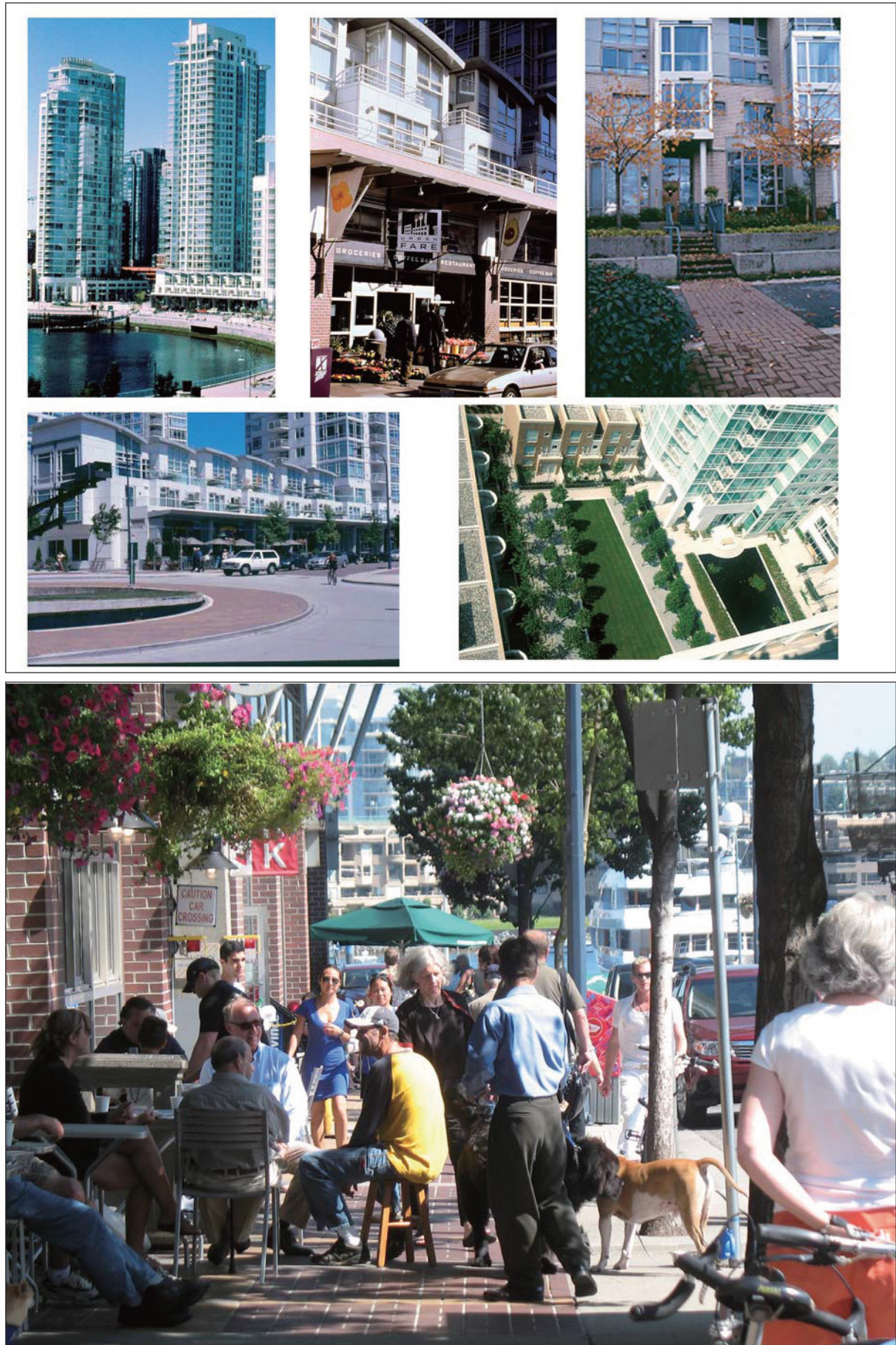




Public Waterfront Legacy: 1929 Barthomew Plan







Pacific Boulevard, Vancouver, British Columbia



Pacific Boulevard, Vancouver, British Columbia



3.5 meter lanes (11.5')

폭 3.5m(11.5 피트) 도로

Streets in the rest of the city
have 2.8 to 2.9 meter lanes
(9.2' to 9.5')

나머지 도로는 폭 2.8~2.9 미터
(9.2~9.5 피트)로 만들어져 있다.

Peak hour traffic:

800 to 1,000 vehicles

시간당 교통량 최대치 : 800~1,000대

Excess capacity

용량 초과

1997 Transportation Plan

•Limit roadway capacity to
1997 levels

1997 밴쿠버 교통계획의 계획치까지
도로 수용량 제한





Seoul, Korea



I-2

International Seminar on Pedestrian Safety Walkable & Safe City

「Planning and Designing of Walkable Environment : Urban Landscape & Urban Design Perspective」

「보행환경의 계획 및 설계 : 도시경관 및 도시설계적 관점」

Joongseok Joseph Ryu

류중석

Korea / Professor, Dept. of Urban Design and Studies, Chung-Ang University

중앙대학교 도시시스템공학전공 교수 / 한국



보행환경의 계획 및 설계 : 도시경관 및 도시설계적 관점 PLANNING AND DESIGNING OF WALKABLE ENVIRONMENT : LANDSCAPE & URBAN DESIGN PERSPECTIVE

2015.9.16

류중석 (중앙대학교 교수)
Prof. Joseph Ryu (Chung-Ang University)
jryu@cau.ac.kr

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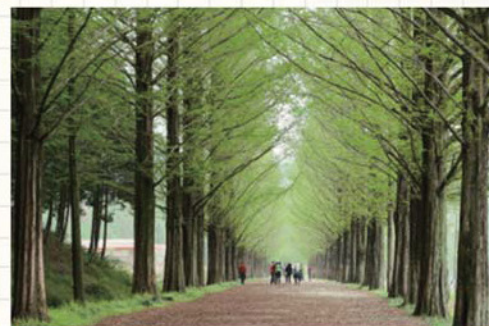
1. 경관 및 도시설계의 관점에서 본 보행환경
Walkable environment from landscape and urban design perspective
2. 한국 보행환경의 현 실태와 문제점
Current status and problems of walkable environment in Korea
3. 보행환경 개선을 위한 법제도적 장치
Institutional apparatus for the betterment of walkable environment
4. 보행환경개선 사례와 시사점
Best practices and implications
5. 맺는 말 Concluding remarks

1.

경관 및 도시설계의 관점에서 본 보행환경 WALKABLE ENVIRONMENT FROM LANDSCAPE AND URBAN DESIGN PERSPECTIVE

1.1 경관과 보행환경 Streetscape and Walking Environment

- 전망과 조망 View & Vista
- 건물, 바닥, 정면, 하늘이 만들어 내는 공간의 분위기
Spacial atmosphere made by buildings, pavement, front, and sky



담양 메타세콰이어길 Meta-sequoia avenue in Damyang



NC Cube Canal Walk in Incheon

건축물 영역 Building section

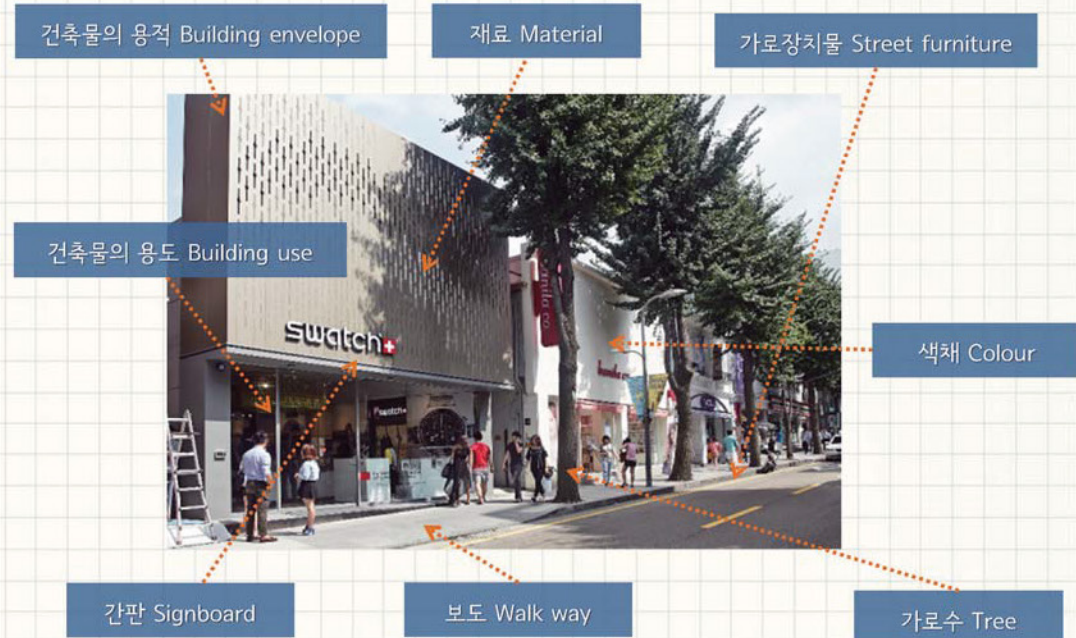
하늘 영역 Sky section

정면 영역 Front section

바닥 영역 Pavement section

1.2 도시설계 요소와 보행환경

Urban Design Elements in Walking Env.



보행환경의 계획 및 설계 Planning and Designing of Walkable Environment

Page 5

2.

한국 보행환경의 현 실태와 문제점 CURRENT STATUS AND PROBLEMS OF WALKABLE ENVIRONMENT IN KOREA

2.1 국가상징가로 National (Symbolic) Street



보행환경의 계획 및 설계 Planning and Designing of Walkable Environment

Page 7

2.1 국가상징가로 National (Symbolic) Street

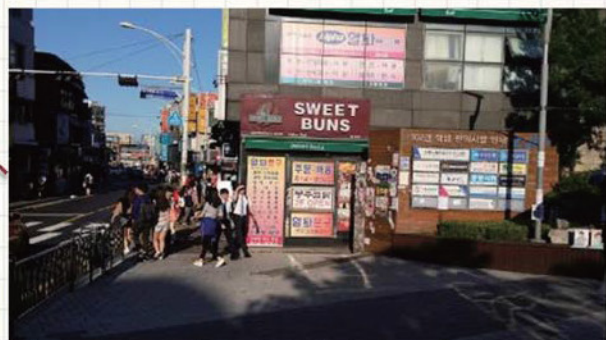
- 권위적 공간
Authoritarian space
- 공간의 단조로움
Monotonous configuration
- 비인간적 척도
Inhuman Scale
- 주변건물과의 단절
Disconnection to neighbouring buildings
- 편의시설 부족
Shortage of user facilities (No trees, no benches)



보행환경의 계획 및 설계 Planning and Designing of Walkable Environment

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2.2 대학가 보행가로 Streets in front of Univ.



보행환경의 계획 및 설계 Planning and Designing of Walkable Environment

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2.2 대학가 보행가로 Streets in front of Univ.

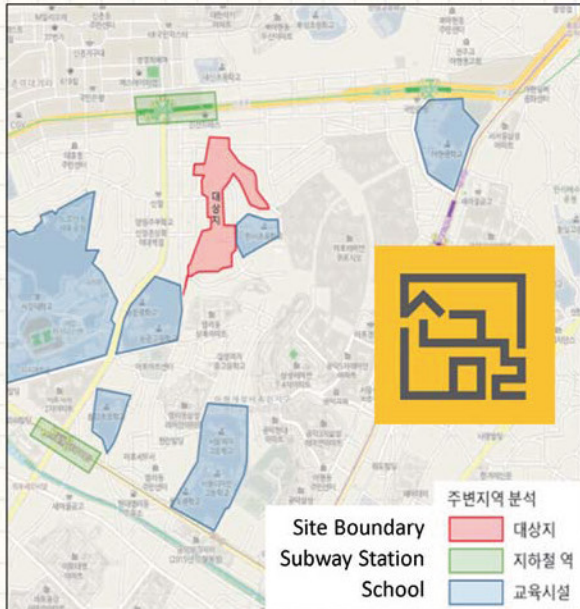
- 오래된 도시구조로 인한 보행로 확폭의 한계
Inherent limitation from old street pattern
- 도시설계적 수단의 부재
Absence of urban design measures
- 가로시설물의 침범
Encroachment of street furniture
- 점포의 보도 불법점유
Illegal occupation of pedestrian realm



보행환경의 계획 및 설계 Planning and Designing of Walkable Environment

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2.3 서울시 범죄예방 환경설계 시범사업(소금길) CPTED Model Project in Seoul (Salt Way)



- 서울시 범죄예방 환경설계 시범사업 시행 (2012~2013)
Model site of CPTED project (2012~2013)
- 골목길 환경정비를 통한 범죄예방
Environmental design of alley to prevent crime
- 자연감시기능 강화
Watch eye on the street
- 지킴이집 지정
Designation of Watch house

보행환경의 계획 및 설계 Planning and Designing of Walkable Environment

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2.3 서울시 범죄예방 환경설계 시범사업(소금길) CPTED Model Project in Seoul (Salt Way)



범죄예방 환경설계: 벽화 및 어린이 놀이 장려
Environmental design: Wall painting & encouraging children's play

보행환경의 계획 및 설계 Planning and Designing of Walkable Environment

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2.3 서울시 범죄예방 환경설계 시범사업(소금길) CPTED Model Project in Seoul (Salt Way)



(위) 전신주 번호부여, (아래) 노란대문 지킴이집
(Top) Numbered street light; (Bottom) Watch house in yellow colour

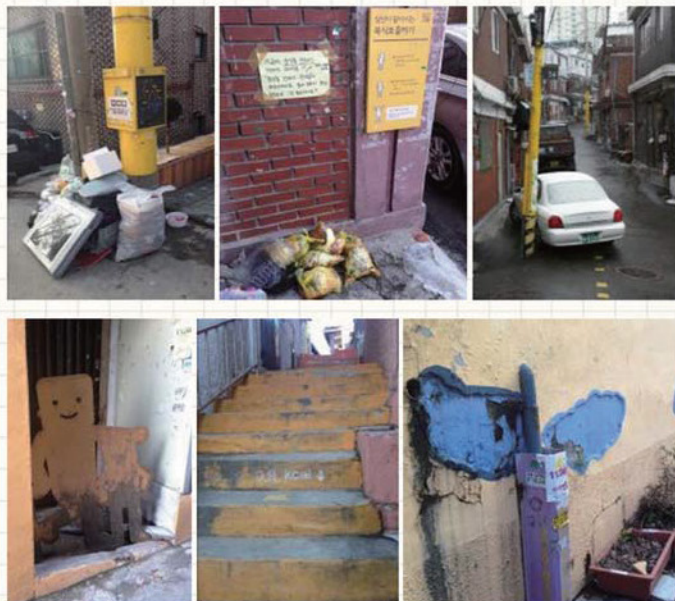


보행환경의 계획 및 설계 Planning and Designing of Walkable Environment

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2.3 서울시 범죄예방 환경설계 시범사업(소금길) CPTED Model Project in Seoul (Salt Way)

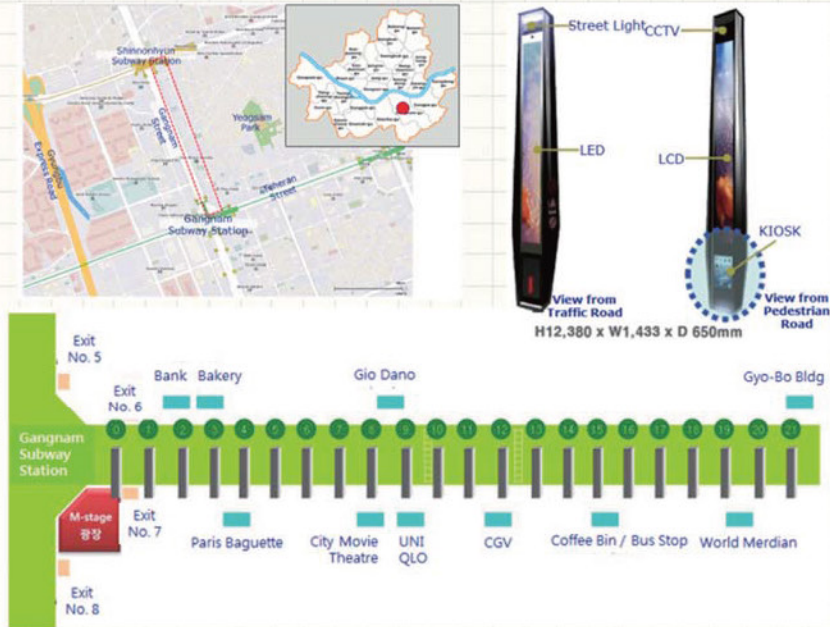
- 쓰레기 투기
Garbage dumping
- 유지관리 소홀
Neglegence of maintenance
- 불법주차
Illegal parking
- 벽화 오염
Contamination of wall painting



보행환경의 계획 및 설계 Planning and Designing of Walkable Environment

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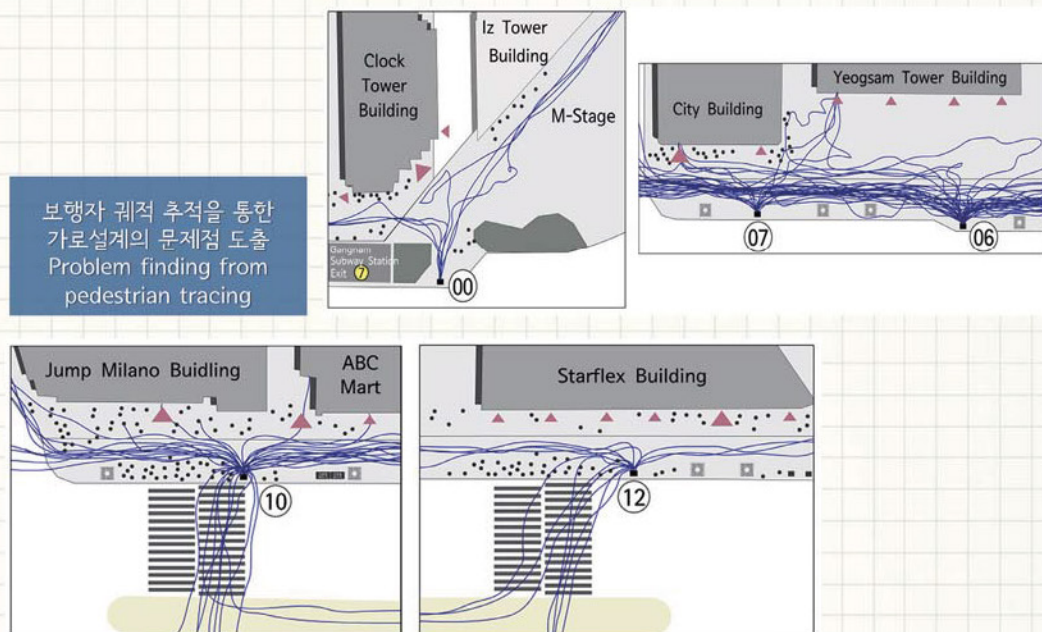
2.4 서울시 강남구 유비쿼터스 가로 Ubiquitous street in Gangnam, Seoul



보행환경의 계획 및 설계 Planning and Designing of Walkable Environment

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2.4 서울시 강남구 유비쿼터스 가로 Ubiquitous street in Gangnam, Seoul



보행환경의 계획 및 설계 Planning and Designing of Walkable Environment

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2.4 서울시 강남구 유비쿼터스 가로 Ubiquitous street in Gangnam, Seoul

- 보행자 특성을 고려한 미디어폴 설치
Installation of media pole considering user behaviour
- 주변 건축물의 용도를 고려한 가로설계
Street design considering building use
- 분야간의 협업을 통한 가로설계 필요
Interdisciplinary approach needed between IT and urban design



보행환경의 계획 및 설계 Planning and Designing of Walkable Environment

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3.

보행환경 개선을 위한 법제도적 장치 INSTITUTIONAL APPARATUS FOR THE BETTERMENT OF WALKABLE ENVIRONMENT

3.1 관계법령 Related Laws and Bylaws



보행안전 및 편의증진에 관한 법률

PEDESTRIAN SAFETY AND CONVENIENCE ENHANCEMENT ACT

Amended by Act No. 11339, Feb. 22, 2012

Amended by Act No. 11690, Mar. 23, 2013

Article 1 (Purpose)

The purpose of this Act is to protect people's lives and bodies from various hazards, improve people's quality of life, and contribute to the enhancement of public welfare by creating a comfortable environment in which pedestrians can walk safely and conveniently.

3.1 관계법령 Related Laws and Bylaws

■ 보행안전 및 편의증진에 관한 법률의 주요 내용 (1) Major contents of "Pedestrian Safety and Conv. Enhance. Act" (1)

- 보행권의 보장
Pedestrian right of way
- 국가와 지방자치단체의 책무
Responsibilities of State and Local Governments
- 보행안전 및 편의증진 실태조사
Fact-finding survey to enhance pedestrian safety and convenience
- 보행안전 및 편의증진 기본계획의 수립
Formulation of "Master Plan"

3.1 관계법령 Related Laws and Bylaws

- 보행안전 및 편의증진에 관한 법률의 주요 내용 (2)
Major contents of “Pedestrian Safety and Conv. Enhance. Act” (2)

 - 연차별 실행계획의 수립
Formulation of “Annual Implementation Plans”
 - 보행환경개선지구의 지정
Designation, implementation and management of zones to improve pedestrian environment
 - 개발사업 시행 시 보행환경 검토
Review of pedestrian environment in implementing development projects, etc.

3.2 보행환경개선사업 Pedestrian Environment Improvement Proj.

◆ 유형 1 : 재래시장 주변 Type 1 : Traditional Market Area



◆ 유형 2 : 상업지역 주변 Type 2 : Commercial Area



3.2 보행환경개선사업

Pedestrian Environment Improvement Proj.

◆ 유형 3 : 선진국형 완전도로 Type 3 : Complete Streets



◆ 유형 4 : 어린이 보호구역 정비 Type 4 : School Zone Rearrangement



보행환경의 계획 및 설계 Planning and Designing of Walkable Environment

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3.3 가로경관 가이드라인

Streetscape Guideline

기존 자동차를 중심으로 구분한 가로유형 구분

Car-oriented classification of roads

- 도시계획상 기능에 따라 주간선도로, 보조간선도로, 집산도로, 국지도로, 특수도로 등
- 도로의 물리적 특성(폭)에 따라 광로, 대로, 중로, 소로 등



주변 토지이용을 고려한 가로 전체의 특성으로 구분

Reclassification of roads according to neighbouring land use

- 가로이용 특성에 따라 도심상업, 복합용도, 근린상업, 아파트단지, 저층주거지 등 5개의 유형으로 구분



도심상업가로	복합용도가로	근린상업가로	아파트단지가로	저층주거지 가로
Commercial	Mixed use	Neighbourhood Commercial	Apartment Streets	Low-rise Residential St.

보행환경의 계획 및 설계 Planning and Designing of Walkable Environment

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3.3 가로경관 가이드라인 Streetscape Guideline

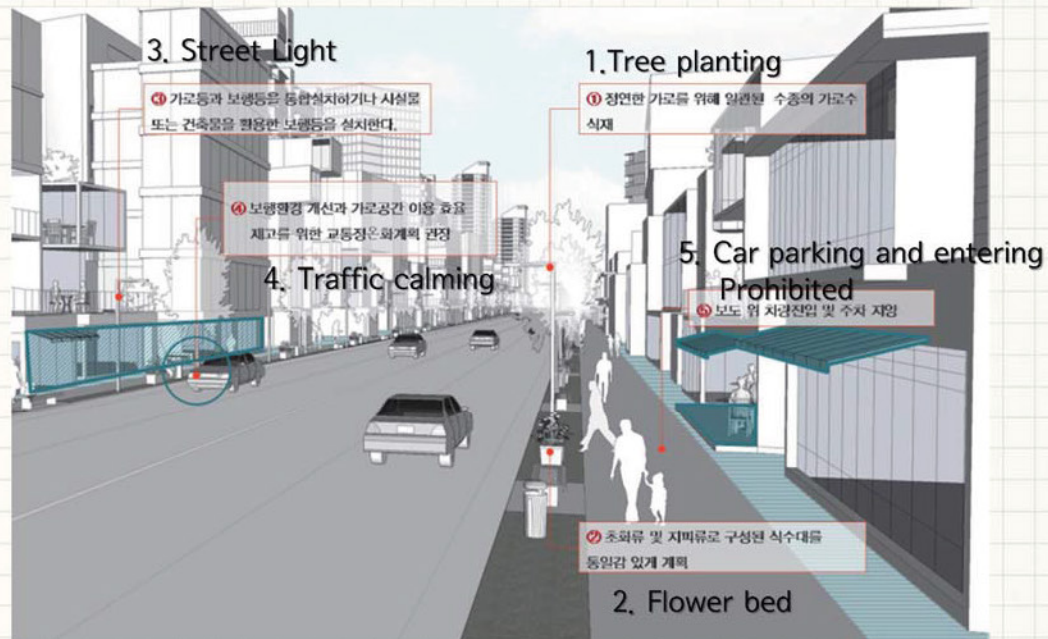
가이드라인의 기본원칙 Basic Principles of the Guideline



3.3 가로경관 가이드라인 Streetscape Guideline



3.3 가로경관 가이드라인 Streetscape Guideline



보행환경의 계획 및 설계 Planning and Designing of Walkable Environment

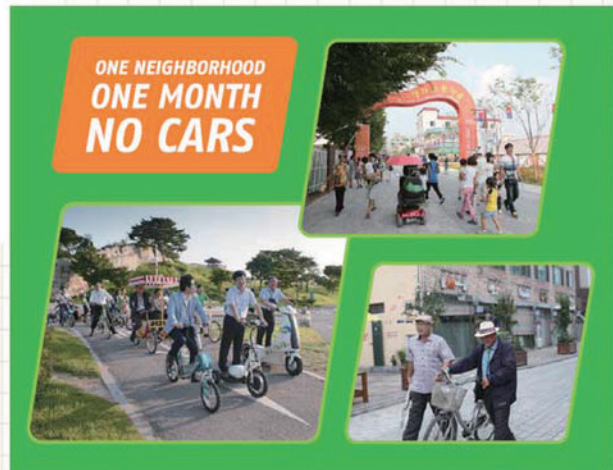
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4.

보행환경개선 사례와 시사점 BEST PRACTICES AND THEIR IMPLICATIONS

4.1 수원 생태교통 페스티벌 (2013) Eco-Mobility Festival, Suwon, 2013

■ 개념 Concept



보행환경의 계획 및 설계 Planning and Designing of Walkable Environment

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4.1 수원 생태교통 페스티벌 (2013) Eco-Mobility Festival, Suwon, 2013

■ 대상지 개요 Site Summary



보행환경의 계획 및 설계 Planning and Designing of Walkable Environment

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4.1 수원 생태교통 페스티벌 (2013) Eco-Mobility Festival, Suwon, 2013

추진과정 Process



보행환경의 계획 및 설계 Planning and Designing of Walkable Environment

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4.1 수원 생태교통 페스티벌 (2013) Eco-Mobility Festival, Suwon, 2013

축제 이모저모 Sketches of the Festival



보행환경의 계획 및 설계 Planning and Designing of Walkable Environment

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4.1 수원 생태교통 페스티벌 (2013) Eco-Mobility Festival, Suwon, 2013

- 보행환경개선 Street Environment Improvement
 - 노면 포장과 식재
Pavement improvement and planting



보행환경의 계획 및 설계 Planning and Designing of Walkable Environment

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4.1 수원 생태교통 페스티벌 (2013) Eco-Mobility Festival, Suwon, 2013

- 보행환경개선 Street Environment Improvement
 - 주차장 부지를 활용한 쉼터 조성
Resting shelter utilizing car park area



보행환경의 계획 및 설계 Planning and Designing of Walkable Environment

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4.2 서울시 특화거리 조성사업

Specialized Street Promotion Project (Seoul)

- 종로 노점특화거리 조성사업 (2009~2010)
Street-shop specialized street promotion project (2009~2010)



보행환경의 계획 및 설계 Planning and Designing of Walkable Environment

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4.2 서울시 특화거리 조성사업

Specialized Street Promotion Project (Seoul)



젊음의거리 Youth street



빛의거리 Light street



다문화거리 Multi-culture street



녹지거리 Green street

보행환경의 계획 및 설계 Planning and Designing of Walkable Environment

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4.2 서울시 특화거리 조성사업

Specialized Street Promotion Project (Seoul)

도로점거 Encroachment toward street



방치된 노점 Abandoned street shop stall

보행환경의 계획 및 설계 Planning and Designing of Walkable Environment

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4.3 서울시 동작구 상도4동 도시재생 시범사업 (2015)

Sangdo-4-dong Urban Regeneration Project

- 개념 : 골목길을 활성화를 통한 도시재생
Concept : Urban regeneration focused on vitalisation of neighbourhood street

공간적 범위

- 위치 : 서울특별시 동작구 상도4동
- 면적 : 약 72.6만㎡
- *상대갈 주거환경관리사업구역 제외
- 인구 : 약 2.9만명 거주 (35개 통)
- 용도지역 : 제1, 2, 3종일반주거

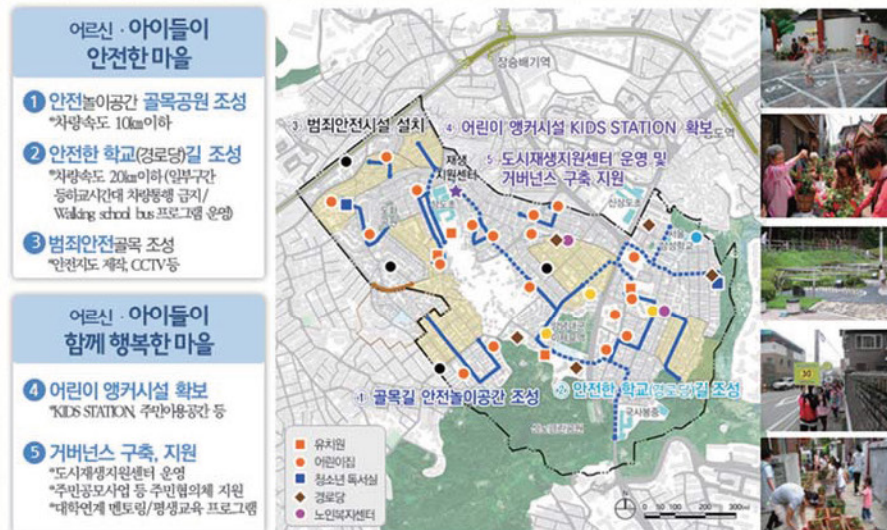


보행환경의 계획 및 설계 Planning and Designing of Walkable Environment

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4.3 서울시 동작구 상도4동 도시재생 시범사업 (2015) Sangdo-4-dong Urban Regeneration Project

Goal1 : Safe neighbourhood with children and grandparents (Street park)



보행환경의 계획 및 설계 Planning and Designing of Walkable Environment

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4.3 서울시 동작구 상도4동 도시재생 시범사업 (2015) Sangdo-4-dong Urban Regeneration Project

Goal2 : Green neighbourhood with walkable environment



보행환경의 계획 및 설계 Planning and Designing of Walkable Environment

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4.3 서울시 동작구 상도4동 도시재생 시범사업 (2015) Sangdo-4-dong Urban Regeneration Project

Street park & street playground (1)



4.3 서울시 동작구 상도4동 도시재생 시범사업 (2015) Sangdo-4-dong Urban Regeneration Project

Street park & street playground (2)



5.

맺는 말

CONCLUDING REMARKS

5.1 사례의 시사점 Implications from cases

- 국가상징가로이면서도 시민친화적인 공간 조성
National symbolic street with citizen-friendly space
- 도시설계적 수법을 활용한 가로환경 정비
Improving street environment with urban design measures
- 생태교통 실현의 가능성 확인
Possibility for eco-mobility to promote walkable street
- 분야간 협업을 통한 학제적 접근 (IT와 도시설계)
Interdisciplinary approach toward street design (IT and urban design)

5.2 현안과제 Agenda

- **적극적 주민참여와 운영의 노하우 전파**
Active citizen-participation and propagation of street management know-hows
- **지속가능한 가로환경 유지관리를 위한 민관협약**
Public-private agreement for sustainable maintenance of street environment
- **도시재생을 통한 적극적 가로환경 정비**
Street environment Improvement through urban regeneration projects



Thank You!



Policies for Walkable Cities

걷기 좋은 도시 만들기를 위한 정책 제언

Session II





II-1

International Seminar on Pedestrian Safety Walkable & Safe City

「Is there a Friction Between Comfort and Safety in Urban Walking?」

「도시에서 편안한 보행과 안전한 보행은 충돌하는가?」

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Comfort and Safety for Pedestrians

: 보행자를 위한 편리함과 안전

Seoul, Korea, 2015

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- Fussgängerverein Zürich, Switzerland

Structure of the presentation

- I. **The two Paradigms for safe walking** : 안전한 보행을 위한 패러다임
- A. Separation between Walking and Driving
- B. Walkable infrastructure, lower speed limits

- II. **Steps in Swiss Transportation Politics** : 스위스 교통정책의 발전
1. 1960ies: Generally following paradigm A.
2. 1970ies: Political pressure (bottom-up)
3. 1980ies: New measures for protection
4. 1990ies: New forms of «traffic calming»
5. 2000f: New and stricter safety measures
6. 2000f: Rethinking infrastructure

7. Summary

Paradigm A: 차량의 흐름을 최적화하기 위해
차가 운행우선권

Car traffic has priority and all the surfaces to optimise the flow of cars

- Walking and cycling get marginal surfaces not needed by the cars,
- If necessary, subways and bridges are built.
- To accelerate the flow of cars often no left turns are allowed.

▶ 보행과 자전거는 최소한의 공간만 할애/지하보도나 육교설치



Paradigm B: 모든 교통수단에 대해 배려

**The quality of urban life has priority
and all modes of transport are
respected**

- Walking and cycling are considered serious modes of mobility, and obtain the surfaces they need.
- Where necessary pedestrian crossings are in place.
- The speed of the flow of cars is compatible for all road users.

▶ 보행은 중요한 교통수단, 어디든 필요시 보행자 횡단가능,
차량속도는 다른 수단과 보조

B:



Why do I suggest to have a look at the history of Transportation ideas in Switzerland?

- Some of the steps of transformation in Switzerland are typical for Europe.
- Korea is a fast changing country: What other countries do in decades Korea has done in a few years.
- A historical perspective allows for perspectives for the future.
- In the future we consume less energy, and we use our fitness for walking and cycling.

Why do I suggest to have a look at the history of Transportation ideas in Switzerland?



Switzerland combines influences from:

- Germany (green)
- Austria (red)
- Italy (yellow)
- France (green-brown)
- and other countries

Korea and Switzerland: two republics between big and powerful nations

Korea

- is an ancient culture of its own
- big task to build its industrial power from scrap
- new drive for democracy

Switzerland

- speaks the three languages of its neighbours (ger./fr./it)
- after World war two industry was still working
- no war or colonialist for 200 years

1960ies: Enthusiasm for cars



1962: Inauguration of new motorway:
The public (on foot) wants to see the first cars NZZ

▶ 1960년대 국민들이 차를 위한 공간을 원함

1960ies: Enthusiast for cars



The ugly face of the new urban mobility (Rosengartenstr)

▶ 고속도로의 설치 및 경관 파괴

1960ies: Enthusiasm for cars



New motorways cutting across landscapes (N1 1969)

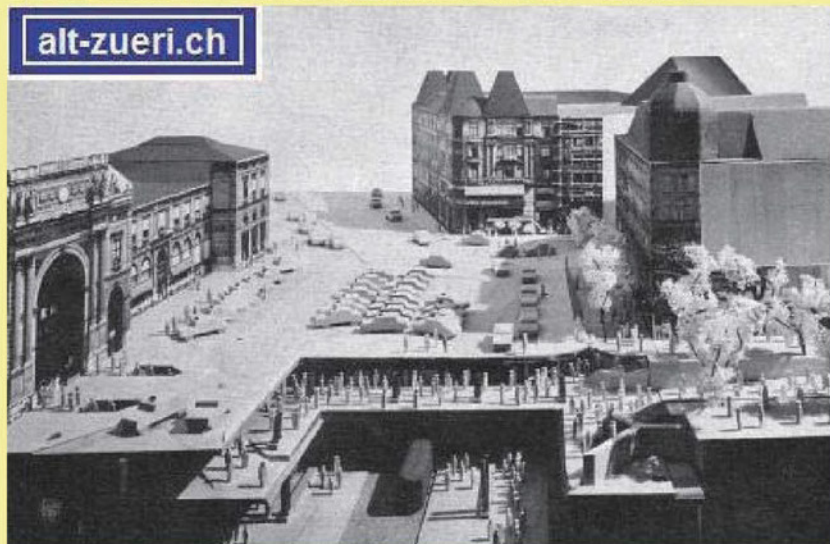
Land use = surface of a village

1960ies: Enthusiasm for cars



New motorways planned through centers of cities
(this one has not been built)

1960ies: Enthusiasm for cars



The planners wanted to gain space for cars by putting pedestrians and tramways underground



Today

1970ies: Criticism awakes



The idea that new roads will attract more cars becomes widespread.

▶ 1970년대 도로가 새로 생기면 차가 더 늘어난다는 인식 공유

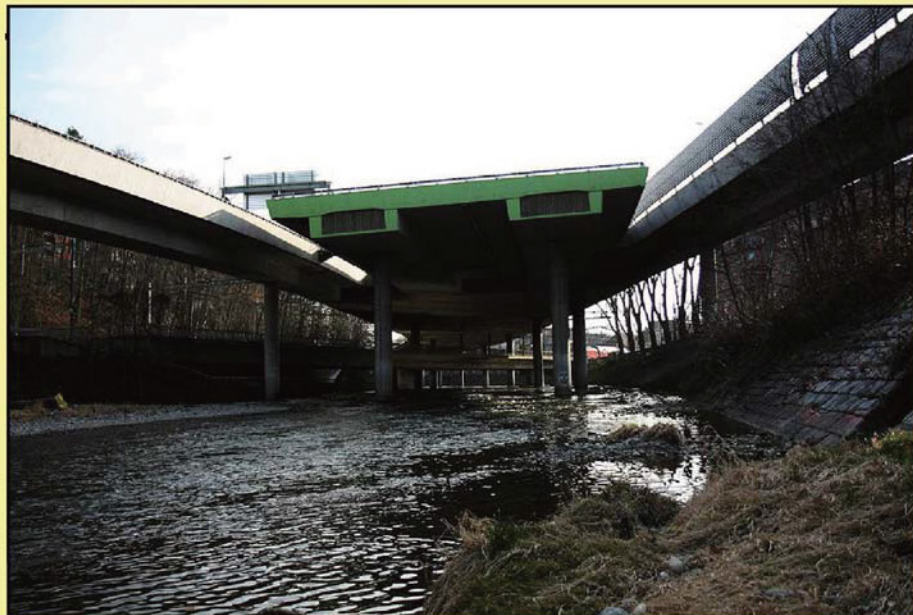
1970ies: Criticism wakes up



This was a flyer for a demonstration against a motorway tunnel into the center of the city.

At the beginning of the movement there were just some small groups of activists.

The tunnel could not be stopped, but on the other side of the river....



The same new motorway was built on a river in the City of Zurich, and after 40 years it still looks like that



This kind of urban aesthetics was simply not accepted by the population. in the city. (Sihlhölzli)

1970ies: Criticism awakes



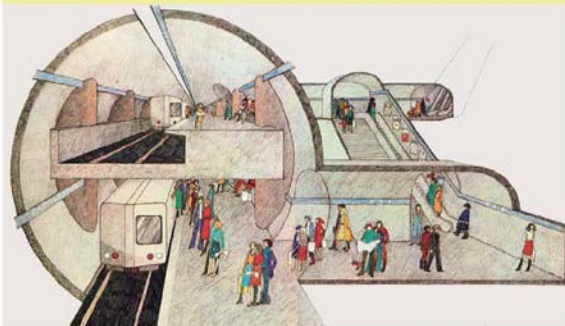
In the 1970ies it became evident that it will never be possible to build streets large enough to absorb all cars. → Daily congestion, noise and air pollution.

▶ 혼잡, 소음, 대기오염의 일상화



In Switzerland it is possible to have national, regional or local voting on planning issues. For many years the construction of a motorway across the city center was an issue. Today, there is a motorway around the inner city.

1970ies: Criticism awakes



A Metro was planned to get rid of the trams on the surface, and use the width of the streets for the cars. The vote was against it.

In order to let the City Gvernment know that the people is not against rail transport an initiative to 300 Millions for the trams was launched and accepted.





1970ies: Zurich becomes a place to see for anyone interested in trams: Advanced technology for the preference at traffic lights (Foto: today)



The first initiatives for better air quality and against lead in the fuel came from collections of signatures in the street, not from Government (there were no converters yet!)

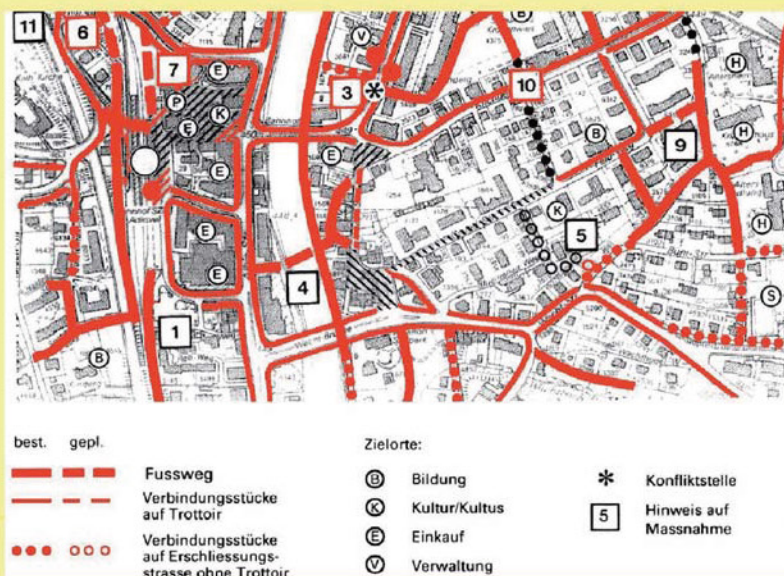
1975: A national movement for the right of the pedestrians wins a referendum!

First, the access on foot was denied by new motorways, but nearly at the same time the value of walking is discovered.

As a result of a national vote against the majority of the political parties, the pedestrians obtain constitutional rights that still last today. The right to walk is a very popular issue even though there is no strong lobby for it.

▶ 보행권 신장운동 전개 (국민투표를 통해 보행권을 헌법에서 인정)

The hiking trails and the footpaths become a national issue



1970ies to 1980ies: New priorities



Increasing conviction that there is a potential for freedom beyond the car. Public transport becomes very popular in cities.

1980ies: Better Protection

The 1980ies are the decade of protection of the environment. The damages have of industrialisation and motorisation have become evident, urgent measures are taken, but the basic mechanisms remain the same.

Many ecological initiatives fail, but the Government picks up some topics, and in particular in transportation progress continues.

There is no car industry in Switzerland

▶ 1980년대 환경보호의 시대

1980ies: Better Protection



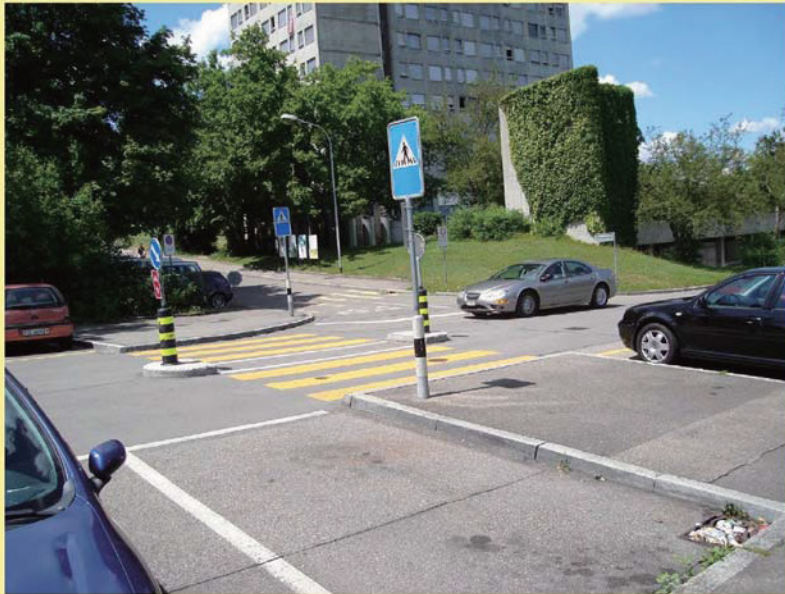
The Protection of residential areas from fast driving cars with bumps becomes a common measure in many cities and towns.

▶ 시각적으로 좋지 않은 고무재질 과속방지턱 근절



Refuge islands to protect pedestrians become more frequent.

▶ 도로 중간에 보행자 대기공간 설치



Refuge islands to protect pedestrians become permanent, and are built wherever possible.

1980ies: Better Protection



The urban population seeks better protection from the cars commuting into the cities.

In many places, Signatures are collected to organise a referendum against the growing number of cars.

1980ies: Better Protection



Parents worried about the safety of their children, reflecting material becomes a standard, but real safety takes more time!

1990ies: «traffic calming»

Many new forms of traffic calming are invented and gradually developed to more **aesthetic public spaces**.

The ugly rubber bumps disappear and street spaces are designed by architects and urban designers.

Streets and squares become attractive places which are nice to stroll and stay.

In the 1990ies many cities and communities have created Zones with **speed limit 30km/h** in residential areas.

▶ 1990년대 교통정온화 기법의 도입, 주택가에서 과속차량 감소

1990ies: «traffic calming»



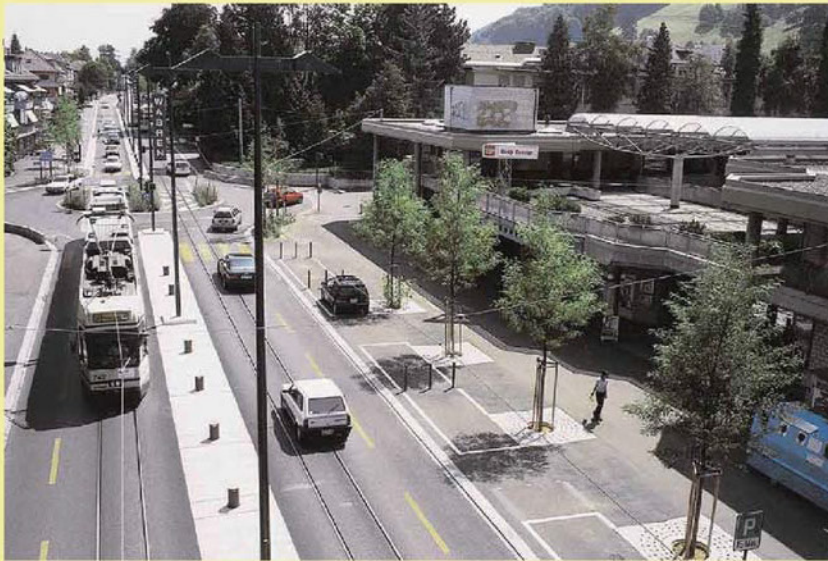
Simple measures (here some trees) break up the linear street space into secluded rooms to keep the speed down. (Heerbrugg)

1990ies: «traffic calming»



Often relatively small measures can change the look of a street, and calm down the speed:

- Refuge island
- Ongoing sidewalk
- Better lighting
- Narrower carriageways
- More trees



New street design: reduction of the lanes,
Noone can drive faster than the tram does
Central stripe for the crossing of Pedestrians.

▶ 차량은 노면전차의 속도에 보조를 맞춰야

1990ies: «traffic calming»



Former subway for pedestrians is no more used. There is a motorway outside the city, the center of the town (Grenchen) is now walkable (20km/h).

▶ 지하철도의 폐쇄

1990ies+: The trams and trains are now the most popular form of transport



(Poster of 1980)

You see a poster in favour of a large train project.

Big sums of tax money are invested with an exceptionally high percentage of yes-votes.



2000년대는 교통안전 강조

2000f: New measures: Road Safety



A number of very bad crashes killing innocent pedestrians led to a popular movement against irresponsible driving. Cut speed from the top!



Crashes with fatal consequences are no more «incidents», but crimes in the perception of the public → Very high speed becomes a crime as a result of a large collection of signatures.

2013: New law on road rage:

If one of these crimes takes place:

- Speeding 30 → 70+km/h ▶ 존 30에서 시속 70km 이상
- In built-up areas: 50 → 100+ ▶ 도시부에서 시속 100km 이상
- On roads: 80 → 140+ ▶ 지방도에서 시속 140km 이상
- On motorways: 120 → 200+ ▶ 고속도로에서 시속 200km 이상
- Dangerous overtaking
- Race on public road

Compulsory consequences even without crash: 사고 발생여부에 상관없이

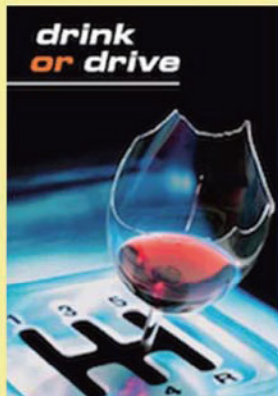
- always 1 - 4 years of prison ▶ 1~4년 징역
- Always cancellation of drivers' license ▶ 면허취소
- Often confiscation of car ▶ 차량압수



Two examples of **confiscated cars** in a police garage. Cars driven out of control are a threat to all. Like a weapon in the hands of a potential murderer, they have to be taken out of the hand of the drivers before someone gets killed.

The confiscated cars are sold by the state.

2000f: New safety measures



Lower limit for driving:
0,8 → 0,5‰

▶ 음주단속기준 0.5%





Publicity against drunk driving addressed at young male drivers:
She says she won't go by car with him!

2000f: New safety measures



After many crashes caused by young drivers, it became harder to get a drivers' licence (2 phases with probation), and easy to loose it.

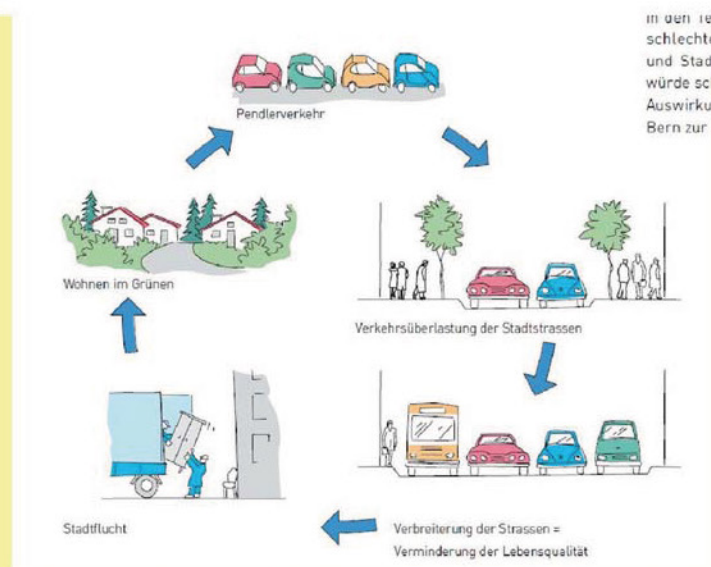
▶ 청년 교통사고가 늘자 면허 취득을 어렵게 하고 1년 내 취소 가능성을 높임

2000f: New safety measures



Senior drivers have used their cars sometimes much too long. Now they have to pass more difficult exams every two years after the age of 70.

▶ 노인들은 70세가 넘으면 2년에 한 번씩 운전능력 평가



The vicious circle of traffic growth has to be broken by comprehensive transportation programs. We can't go on as designed above.

2000f: New money for infrastructure

An important step was the change in the **Federal subsidies**:

- No more single projects are subsidised
- Only multimodal programs, which have to include **all modes** not just cars and Public transport, but cycling and walking as well.
- Regions that present development programs without thinking of walking and cycling receive less or no money.

→ The regional Government plans and builds, but the Federal Government guides.

▶ 단일 교통수단 중심의 사업에 대한 연방정부 보조금 폐지



Before: Ordinary urban setting in St. Gallen.
But: Does the world need to be grey?

▶ 세인트 갤랑의 보행자 우선구역 (레드 카페트)



After: Public space has become a work of art to tell drivers that they have to give priority to pedestrians.



Before: Ordinary urban setting.



The entire space is transformed to look like a hotel lobby or «city lounge» - with cars allowed.



Pedestrians may walk here as they wish. Cars are allowed, but only at very low speed (max. 20 km/h). There are objects made to sit down.

2000f: Rethinking Infrastructure



In front of a trainstation with many pedestrians the street is designed to discourages fast driving. Pedestrians have priority. (Horgen)

▶ 인프라스트럭처에 대한 새로운 접근



This design was made by an artist, not by an engineer. The visual chaos is wanted.

2000f: Rethinking Infrastructure



In front of a railway station Pedestrians have priority. One street is designed in a manner that discourages any driving. (Delémont)

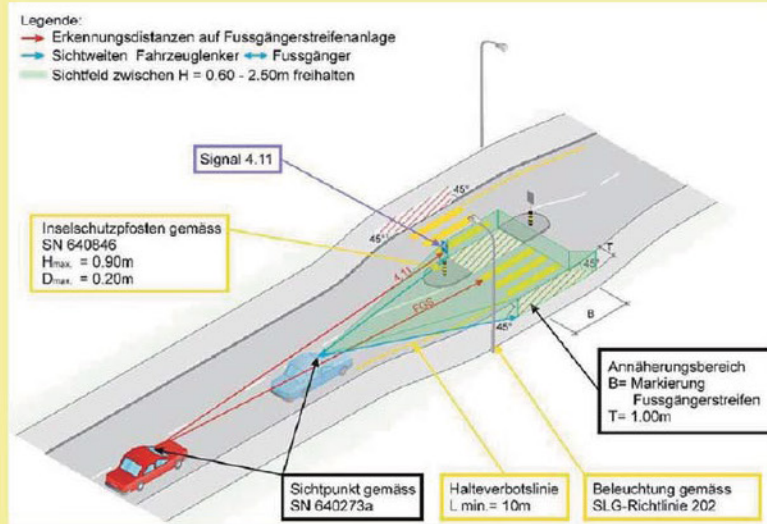
2000f: Rethinking Infrastructure



Useless motorway tunnel trunk after 30 years now becomes probably a bicycle garage (BaZ)

▶ 폐쇄된 터널은 자전거 보관소로

2000f: New Measures Infrastructure: All crossings ought to have a refuge island



Speed adapted to visibility, island, lighting, ...

▶ 횡단보도는 필요한 곳에 설치

Solution if there is no room for a refuge island:
Paint an island !

Situation before: No island, cars
don't stop for children coming
from the left hand side.

The zebra crossing without
island is too dangerous for the
children.

Marked island as a fast,
but preliminary
measure.

Later, a normal island
will be realised.



▶ 모든 횡단보도에 보행섬/대기공간 설치

2000f: Rethinking Infrastructure

Refuge island between two parallel lanes



Zürich-Triemli

Access to a hospital: Slow pedestrians are offered a safety-rest between the two lanes.

Summary

Comfortable walking needs to have a high priority at all levels of planning and financing of all transport infrastructure including motorways.

Pedestrians need a network of footpaths covering the entire area.

A lower level of speed allows a more attractive urban design.

To improve the **Safety** of pedestrians many different measures have to be applied.

Technical solutions are not efficient enough.

The most vulnerable road users need the best protection.

Cut the speed at the top!

The way into the future is on foot
(or on the hands if you like)



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FEDERATION OF
PEDESTRIANS**

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Thank you for your attention



II - 2

International Seminar on Pedestrian Safety Walkable & Safe City

「We all deserve to ask better Walking Environment」

「우리는 더 나은 보행환경을 요구할 자격이 있다」

Sangjin Han

한상진

Korea / Head of Transport Safety Research Group, Korea Transport Institute

한국교통연구원 교통안전연구그룹장 / 한국

We all deserve to ask better WALKING environment

2015. 9.

Sangjin Han
Korea Transport Institute



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8. Conclusions and Discussions 결론 및 토의

Our Walking Environments 우리들의 보행환경

■ Invasion of Cars: Parking everywhere 차의 침범: 도처에 차량 주차

- Footpath 보행로
- Setback 건축 후퇴선



Our Walking Environments

■ No Room for Pedestrians: privatization of public space

보행공간의 부족: 공공공간의 사유화

- Displays 상품진열
- Waste disposal 쓰레기 투척



Our Walking Environments

■ No Room for Pedestrians: space for public facilities

보행공간의 부족: 공공 시설을 위한 공간

- Ventilation 환기구
- Gateway to subways 지하철 출입구



• http://www.ttearth.com/world/asia/korea/busan/seomyeon.htm#_VeQKz_7osaU



• <http://news.naver.com/main/read.nhn?mode=LSD&mid=sec&sid1=102&oid=277&aid=0003353689>

Our Walking Environments

■ Too wide roads or Narrow roads 너무 넓거나, 좁은 도로

- Wide roads bring about wide junctions: difficult to cross

넓은 도로는 넓은 교차로 초래: 횡단 어려움

- Living streets without priority to pedestrians

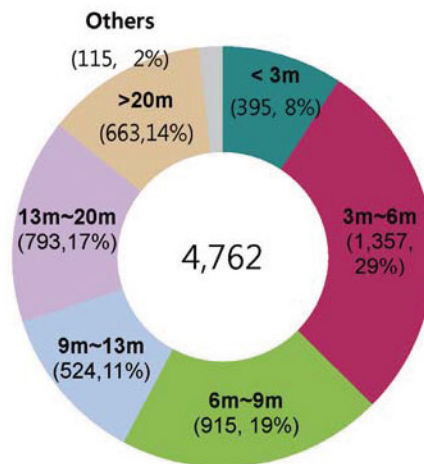
생활도로에서 보행자에게 통행우선권이 없음



Pedestrian Safety Statistics

- 56% of fatalities occurs in road width less than 9m (2014)

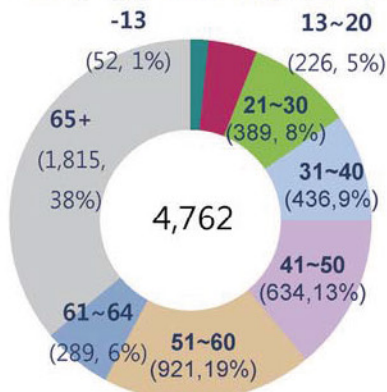
56%는 폭 9m 미만의 도로에서 사망
Fatalities by road width



Pedestrian Safety Statistics 보행안전통계

- 38% of fatalities occurs in the age group over 65 (2014)

65세 이상 노인 사망자수가 38%



- Age group over 65 accounts for only 12.7% of the population
65세 인구비중은 12.7%

- 48% of pedestrian fatalities occurs in the age group over 65
- 보행 사망자의 48%가 65세 이상 노인

- Pedestrian fatalities is 1,910 전체 보행 사망자수 1,910
- Pedestrian fatalities over 65+ is 919 노인 보행 사망자수 919

Implications 시사점

■ Implications 시사점

1. Safer crossings (in wide roads and junctions) 안전한 횡단 (넓은 도로)
2. Safer living streets (in residential areas) 안전한 생활도로 (주택가)

But how we can make it happen? 어떻게 해야 할까?

- 👉 Demand better walking environment! 더 나은 보행환경을 요구!
Who cares for public space, streets? 누가 공공공간과 도로에 책임
Politicians? Governments? Developers? Planners? **People? 시민**
- 👉 No demand, No change!!! 요구하지 않으면 변하지 않는다
- 👉 Watch out! Who Takes the profit? 누가 이익을 가져가는지 관심가져야

Safer Crossing

■ Smaller Blocks, Smaller Roads 작은 블록, 작은 도로

- *Small is Beautiful*: Variety in urban activities 작은 것이 아름답다: 다양성
- in small blocks 작은 블록
- in narrow roads 좁은 도로 👉 **Easy to Cross 횡단 용이**

■ Compact Cities with Public Transport 대중교통을 이용한 압축도시

- Convenient public transports to forget cars 차를 잊을만큼 편리한 대중교통
 - Integration in modes, times, fares(Sharing Transport)
- But Consider Walkable Distance! : 400m 도보권은 400m
 - Sejong city: Is it walkable?

Safer Crossing Example (Median Bus Lanes)

■ Cause of Pedestrian Fatalities 보행자 사망사고의 원인

- Analysis on 12 pedestrian fatalities (Gangnamdaero, '10~'14)
 - 4 jay crossings, 8 normal crossings 12명 중 4명은 무단횡단, 8명은 정상횡단
- Wish to catch up buses on the median bus stops 타고자 하는 버스 잡기
- **Blind Spots (시야제한 사각지대)**
 - either drivers nor pedestrians cannot see each other 운전자, 보행자 서로 확인할 수 없는 상황 발생
 - parking cars/parallel vehicles... 주차 차량/ 나란히 오는 차량

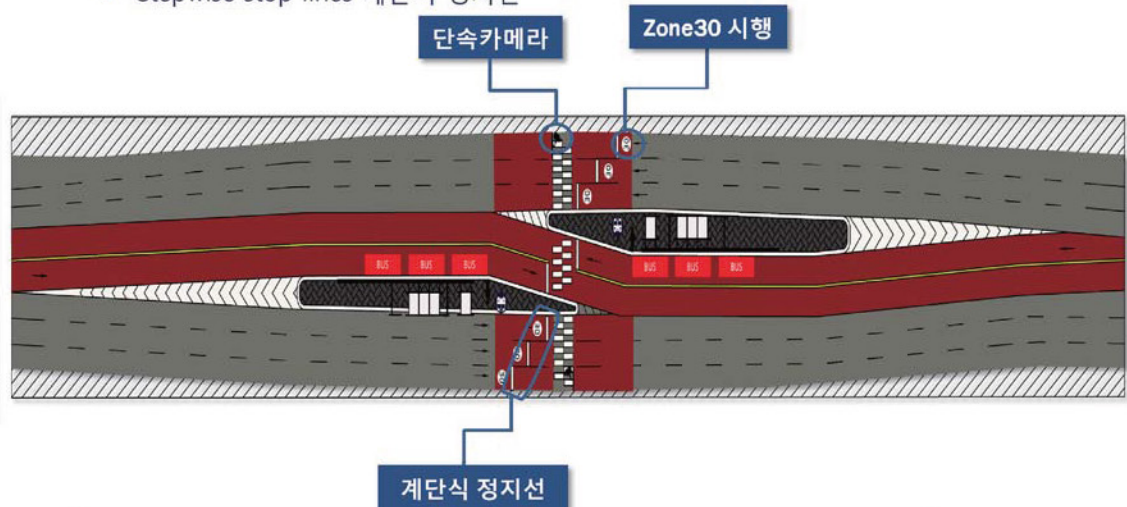
☞ Cannot blame people all the time! 보행자만의 책임 아님

☞ Anyone can be involved with crashes 누구든 충돌사고 가능

Safer Crossing Example (Median Bus Lanes)

■ Safer Design

- Zone 30 around bus stops (95% of survival at 30km/h) 버스 정류장 부 시속 30km 구역 지정
- Speed enforcement cameras/Raised crossings 단속카메라
- Stepwise stop lines 계단식 정지선



Safer Living Streets Example

■ What has been improved in Residential Streets?

- Residential areas developed in 90s 과거 90년대 개발된 단독주택가



Safer Living Streets Example

■ What has been improved in Residential Streets?

- Residential areas developed in 2000s 최근 2000년대 개발된 단독주택가



Safer Living Streets Example

■ No improve during last 40 years 40년간 정체

- We know 우리는 안다

Parking is already limited to residents 주차면 부족
People bring cars to restaurants 근생시설 차량이용
Pedestrians are at risk in this kind roads 보행자 위험

- Developers wish 개발자들은

Streets without parking space 주차면 없는 도로 선호
Higher buildings/More commercial land use 높은 건물
To maximize profit 이익 극대화

👉 Do we deserve to have this living streets in the future?
미래에도 이런 주택가 생활도로를 원하시나요?

Conclusions and Discussions

■ No improve during last 40 years

- We know 우리는 안다

Wide roads cause pedestrian fatalities 광로가 보행자 사고원인
Living streets are dangerous 주택가 생활도로 위험

- We thought 지금껏 생각했다

It is responsibility of people to be safe 사람이 안전책임
Regulation is working for public goods/interests 규제는 공공이익

But

Safety is responsibility of all parties (**Safe System approach**)

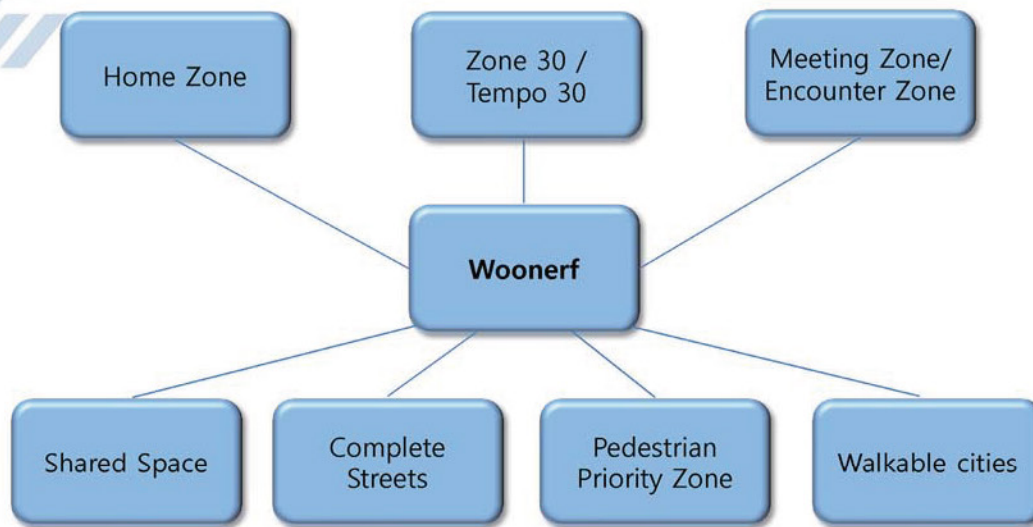
Governments+Developers+Planners+ **People**

안전은 정부, 개발업자, 계획가, 시민 모두의 책임

Profit should be used for better walking environments

No Demand, No Change ! 요구하지 않으면 변화하지 않는다

Conclusions and Discussions



- ☞ People demanded first
- ☞ Walking is health, wealth, greens

Conclusions and Discussions

■ Think! - PPZ concept in the future (Network)





Safeguards against Pedestrian Traffic Accidents

보행 교통사고 위험요인과 예방대책

Session III





III-1

International Seminar on Pedestrian Safety Walkable & Safe City

「Pedestrian Safety : UK Perspective」

「영국의 보행안전 정책 및 사례」

Alan Kennedy

UK / Business and Operations Manager, Road Safety GB

영국도로안전협회 고문 / 영국

Pedestrian Safety: UK Perspective

Alan Kennedy

Business and Operations Manager, Road Safety GB
Managing Director, Willow – Road Safety Management Services

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보행자 안전 : 영국 사례

Alan Kennedy

Business and Operations Manager, Road Safety GB
Managing Director, Willow – Road Safety Management Services

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Outline of presentation

- Casualty data
- Factors in pedestrian casualties
- Organisational Delivery
- Common Facilities
- Education and Training
- Marketing and Communications

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발표 내용

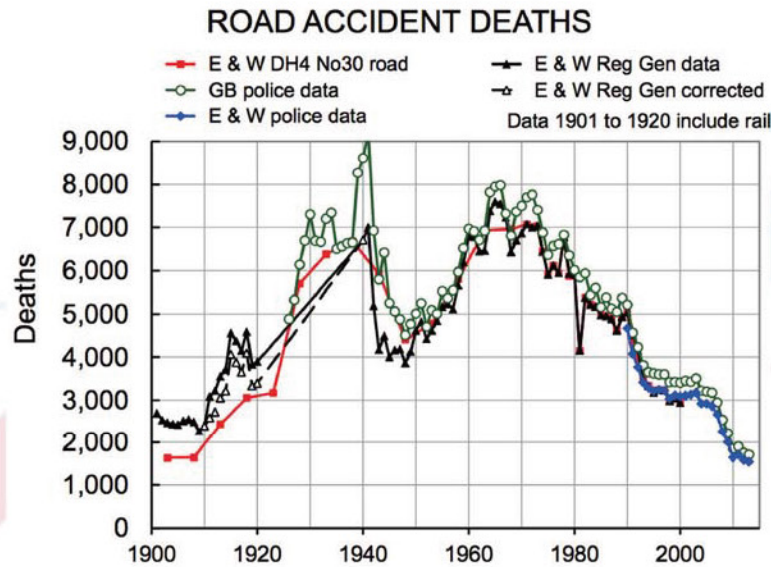
- 사상자 자료
- 보행 중 사고 원인
- 조직적인 이행
- 일반적인 시설
- 교육 및 훈련
- 마케팅 및 홍보

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What does the data tell us?

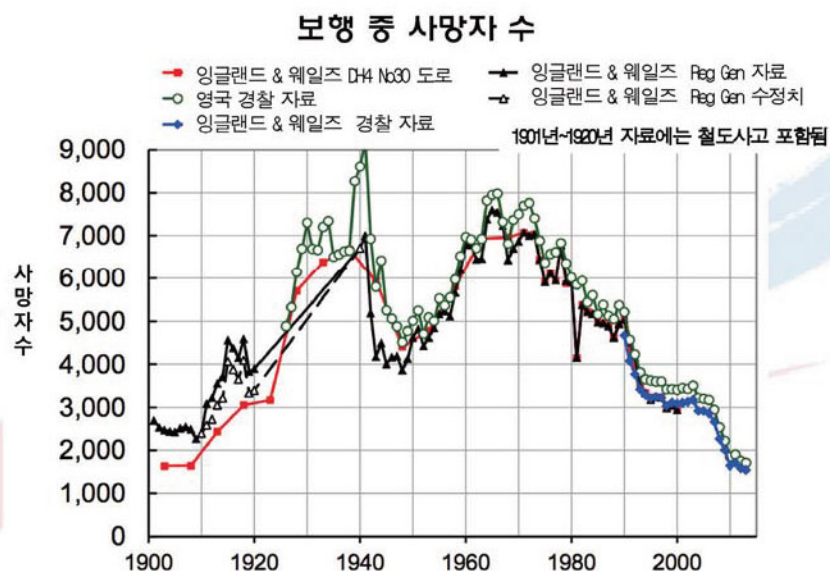


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데이터가 의미하는 것은 무엇인가?



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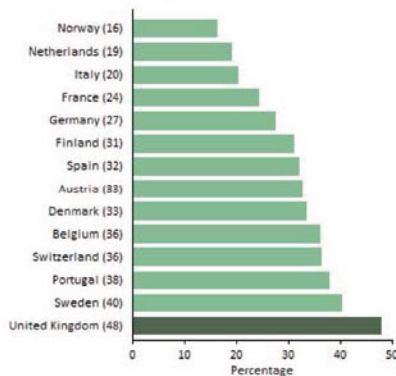
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Association of Korea

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What is the problem?

- UK Government: Department for Transport
 - Cycling (and walking) Delivery Plan 2014

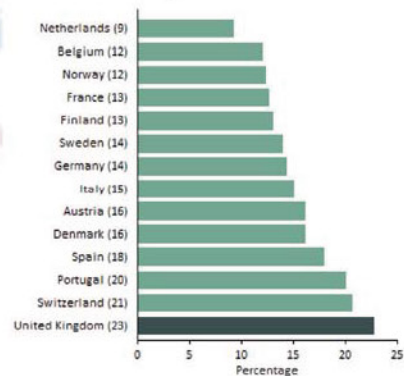
Child Pedestrian Deaths
as a Percentage of All Child Road Deaths
Western European Countries 2008-12



'child' is defined as 0-14 years

www.travelindependent.org.uk

Pedestrian Deaths
as a Percentage of All Road Deaths
Western European Countries 2008-12



www.travelindependent.org.uk

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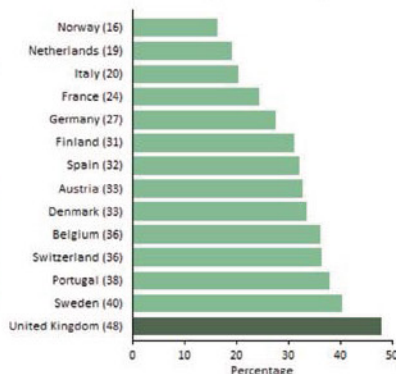
General Insurance
Association of Korea

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무엇이 문제인가?

- 영국정부: 교통국
 - 2014년도 자전거 (및 보행) 전달계획

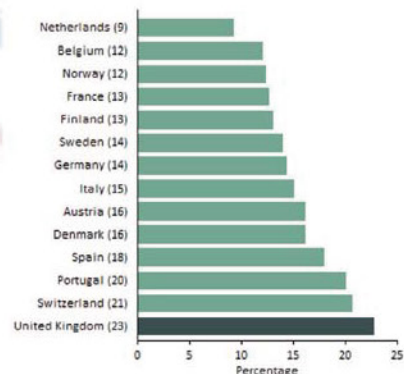
전체 어린이 도로 사망자 중
어린이 보행 중 사망자 비율
서유럽국가 (2008~2012)



'child' is defined as 0-14 years

www.travelindependent.org.uk

전체 도로 사망자 중
보행 중 사망자 비율
서유럽국가 (2008~2012)



www.travelindependent.org.uk

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2014 Headlines

2014 Road Casualty Figures – Initial Analysis

- The number of people killed on our roads increased by 4%
- It is the first rise in seriously injured since 1994
- The rise in 'slight' casualties is significant
- **Pedestrian fatalities were up by 12%**

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2014년도 주요사항

2014년도 교통사고 사상자 수치- 초기분석

- 교통사고 사망자 수 4% 증가
- 1994년 이후 처음으로 중상자 수 증가
- '경상자' 수 증가는 주목할 만한 현상
- **보행자 사망률 12% 상승**

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Factors in Pedestrian Casualties

- Distraction:
 - Mobile phone use
 - Music Device/Headphone
 - Groups/peer pressure
 - Alcohol

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보행 중 사고 원인

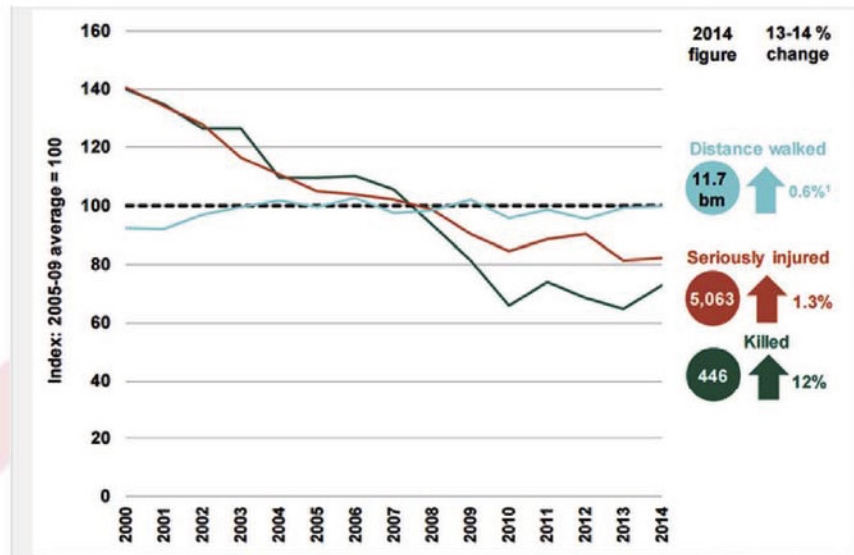
- 주의산만:
 - 휴대전화기 사용
 - 음악기기/헤드폰
 - 그룹/또래로부터 받는 압박
 - 음주

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Pedestrian Casualty Data

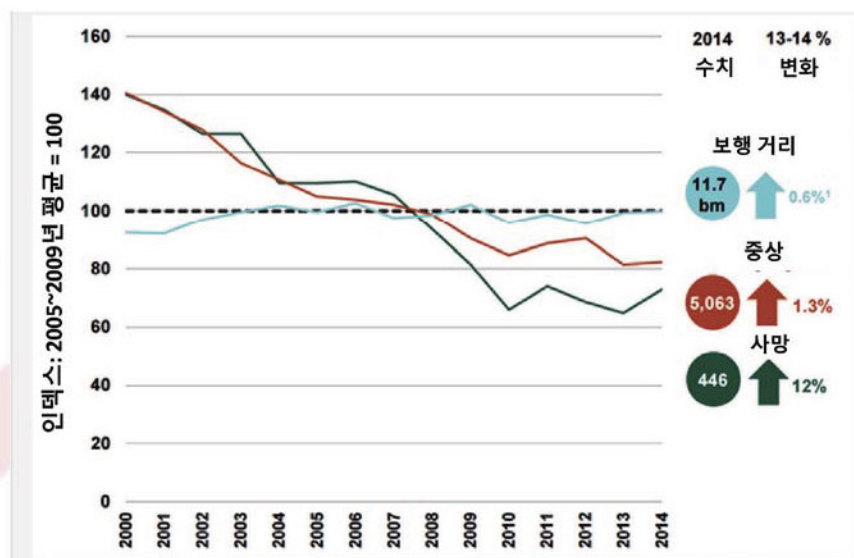


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보행 중 사고 데이터



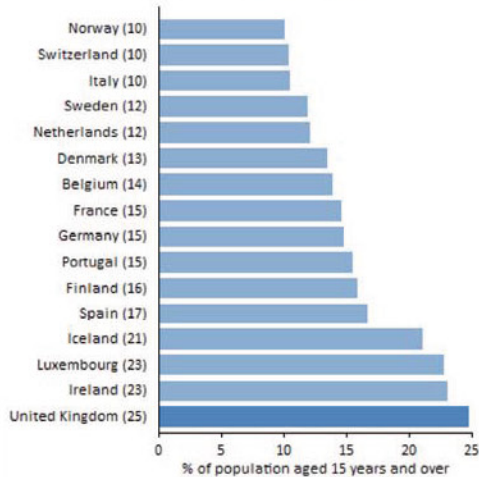
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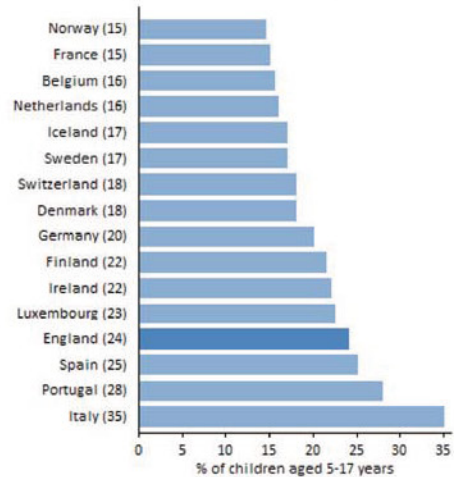
Road SafetyGB

Casualty Data v Health Data

Obesity among adults, 2012 or nearest year
Western European countries



Overweight children, 2010 or nearest year
Western European countries



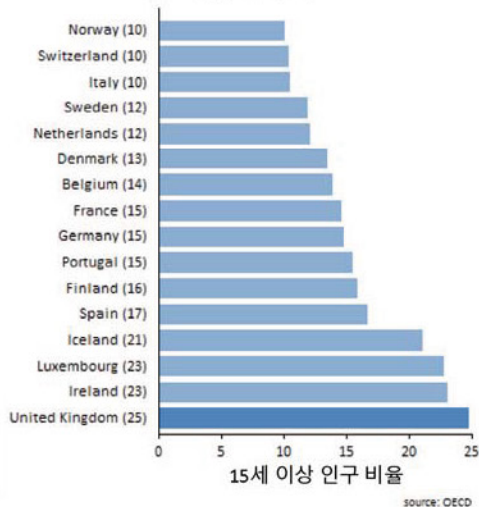
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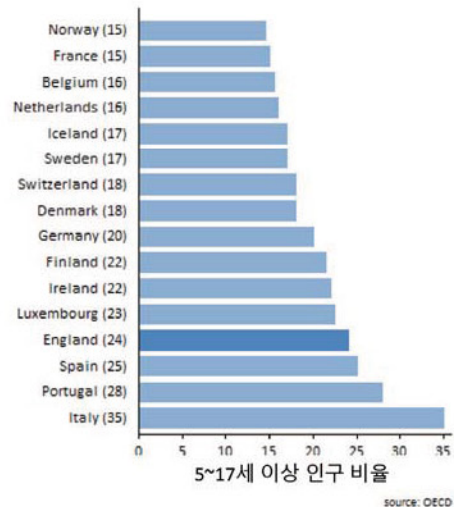
Road SafetyGB

보행 중 사고 데이터와 건강 데이터 비교

성인 비만 (2012~최근)
서유럽국가



비만아동 (2010~최근)
서유럽국가 서유럽국가

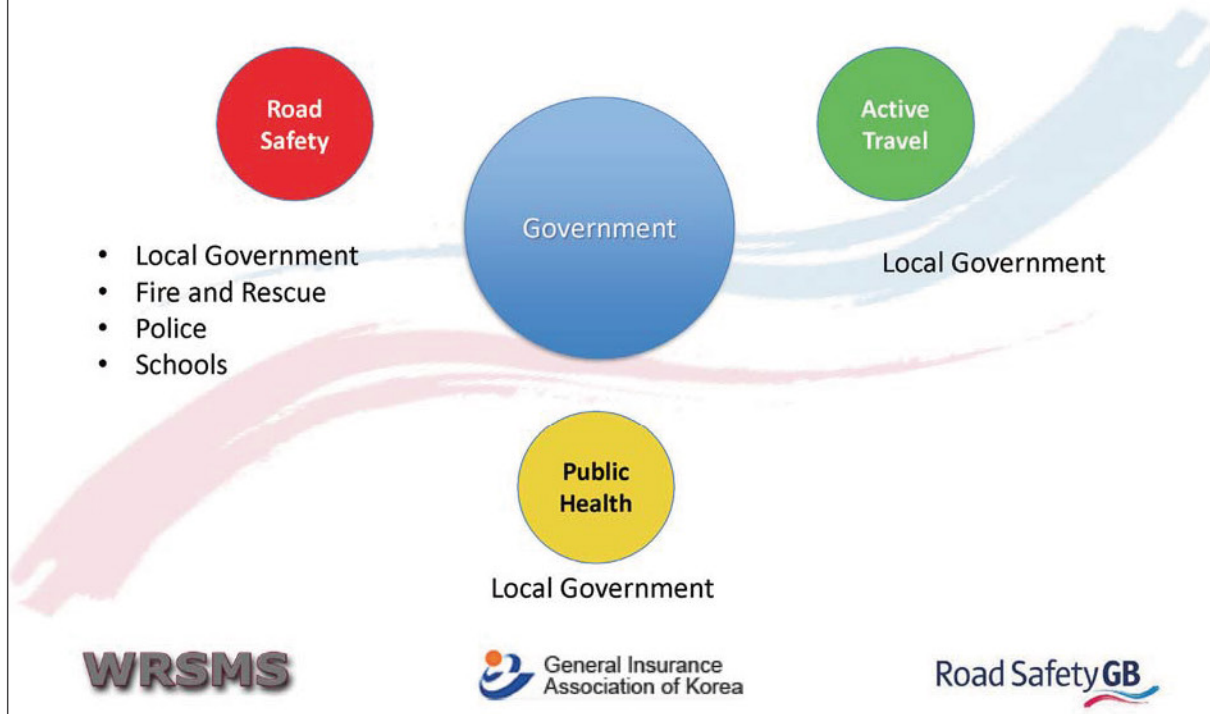


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Organisational Delivery



조직적인 이행



Common Facilities – School Crossing Patrol



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일반 횡단보도시설- 학교 건널목 교통정리원



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Common Facilities - Zebra



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일반 도로횡단시설 – Zebra (횡단보도)



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Common Facilities - Pelican



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일반 도로횡단시설 – Pelican(보행자 신호제어 횡단보도)

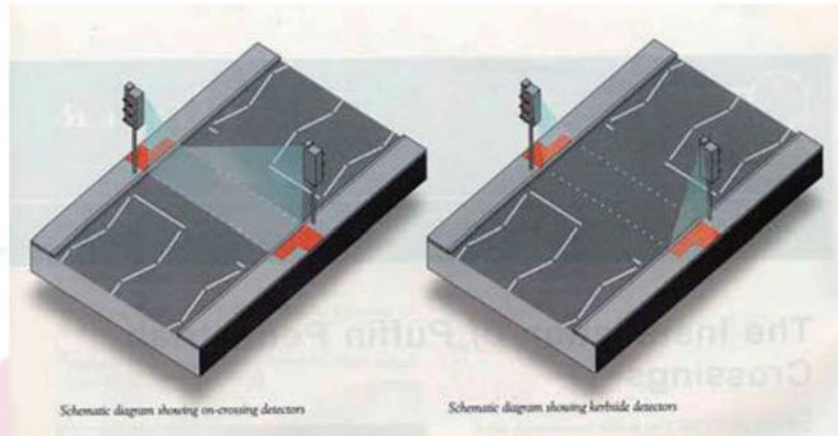


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Common Facilities - Puffin

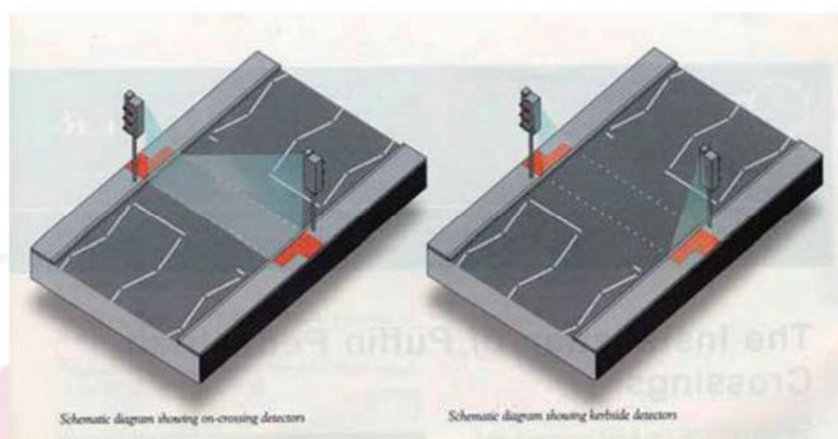


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일반 도로횡단시설 - Puffin (지능형 횡단보도)



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Common Facilities - Toucan



일반 도로횡단시설 - Toucan (보행자와 자전거운전자를 위한 신호체계)



Common Facilities - Countdown



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일반 도로횡단시설 – Countdown (보행 잔여시간 표시 신호등)



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20 mph (12 kph) Zones



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20 mph (12 kph) 속도제한구역



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Education and Training

- Child Pedestrian Training “Kerbcraft”
 - Based on the Drumchapel project: Professor James Thomson, University of Strathclyde



- <https://www.roadsafetyevaluation.com/evaluationtopics/info/kerbcraft-report.pdf>

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교육 및 훈련

- 어린이 교통안전 훈련 프로그램 “Kerbcraft”
 - 드럼채플(Drumchapel) 프로젝트를 토대로 함:
스트래스클라이드대학교 제임스 톰슨 교수



- <https://www.roadsafetyevaluation.com/evaluationtopics/info/kerbcraft-report.pdf>

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Education and Training



Road Safety GB Academy

Set a standard for all who deliver road safety education and training, agreed by the Road Safety Minister in 2012

Provides training for practitioners and focuses on behavioural change

- ◆ Foundation Course (4 days)
- ◆ Behavioural Change (1 day)
 - Trans-theoretical model of change
 - Theory of planned behaviour
 - Cognitive Dissonance Theory
 - Learning styles
 - Positive imagery and messages
 - Planning structured road safety interventions



교육 및 훈련



Road Safety GB Academy

2012년 도로안전장관의 재가를 얻어 모든 도로안전 교육 및 훈련 제공자들을 위한 표준 마련

실무자들에게 훈련을 제공하며 행동변화에 초점을 맞추어 진행

- ◆ 기초과정 (4일)
- ◆ 행동변화 (1일)
 - 변화의 범이론 모형
 - 계획된 행동 이론
 - 인지적 부조화 이론
 - 학습 유형
 - 긍정적 이미지 및 메시지
 - 체계적인 도로안전 교육 계획



Messaging (Campaigns)

- Problems with current road safety messages
 - Experts are often not believed
 - Statistics mean very little
 - Trauma is not 'our reality' – "It won't happen to me"
- Road Safety Messages need to be:
 - Positive
 - Believable
 - Realistic
 - Informative
 - Encouraging

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메시지 (캠페인)

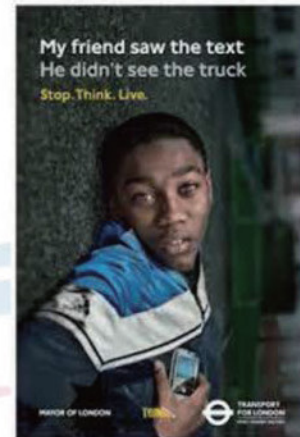
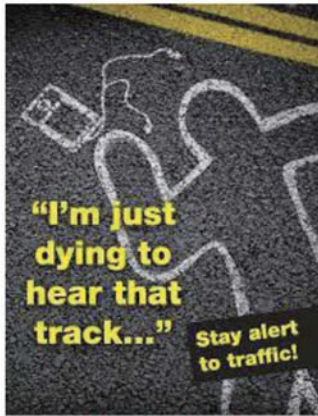
- 현 도로안전 메시지의 문제점
 - 전문가들을 신뢰하지 않는 경우가 있음
 - 통계가 거의 무의미함
 - 트라우마는 '우리의 현실'이 아님 – "내게는 그런 일이 생기지 않을거야"
- 도로안전 메시지는:
 - 긍정적이고
 - 신뢰성 있고
 - 현실적이고
 - 유익하고
 - 격려가 되어야 한다

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Examples of poor messaging



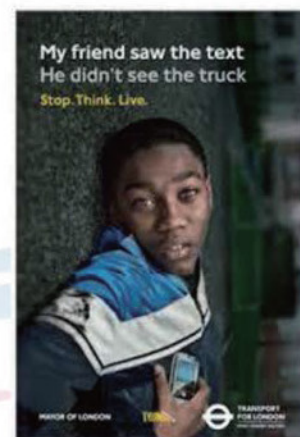
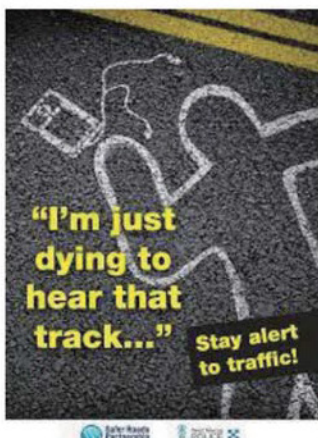
“.....it won't happen to me”

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종지 않은 메시지 사례



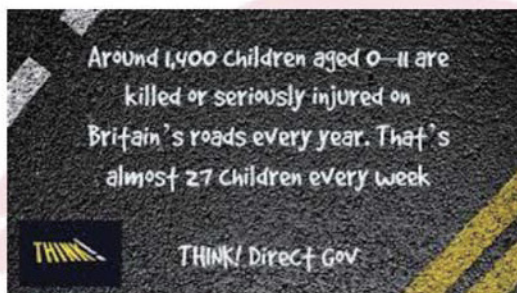
“.....이런 일은 나한테는 일어나지 않아”

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Examples of poor messaging



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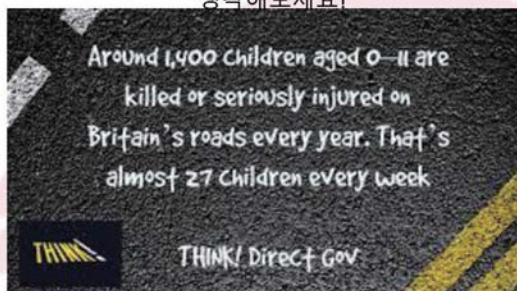
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종지 않은 메시지 사례



영국에서는 매년 0세~11세 어린이 약 1,400명이
교통사고로 사망하거나 중상을 입고 있습니다.
일주일당 약 27명에 해당됩니다
생각해보세요!



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2. 검은색을 입고 죽지 마세요.
어두울 때는 밝은 색이나 반사하는 색의 옷을 입으세요

Better messaging



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좋은 메시지



맑은 정신으로 운전하기
당신이라고 못할 이유가 없죠?

이 표지판이 있는 곳에서는 정지해야 합니다
- 이것은 법입니다.

여러분의 아이의 생명을 위태롭게 하지 마세요

도시를 돌아다닐 때는 안전하게!
자동차, 자전거, 도보, 오토바이?
도로를 공유해요. 책임을 공유해요.



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More information

www.roadsafetyknowledgecentre.org.uk

www.roadsafetygb.org.uk

www.roadsafetygb.org.uk/Academy

Alan Kennedy

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M: +447738946139

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자세한 내용은 아래 웹사이트를 참조하세요

www.roadsafetyknowledgecentre.org.uk

www.roadsafetygb.org.uk

www.roadsafetygb.org.uk/Academy

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M: +447738946139

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III-2

International Seminar on Pedestrian Safety Walkable & Safe City

「An Analysis on the Relationship between Pedestrian Behavior and Accident Characteristics」

「보행자 통행실태와 사고 특성」

Sooil Lee

이수일

Korea / Research Fellow, Hyundai Insurance Research Center

현대해상 교통기후환경연구소 연구위원 / 한국

Analysis of Pedestrian Behavior and Accident Characteristics

September 16, 2015

Hyundai Insurance Research Center

Dr. Lee Sooil

보행자 통행실태와 사고특성

An Analysis on the Relationship between
Pedestrian Behavior and Accident Characteristics

2015. 9. 16

현대해상교통기후환경연구소

이수일 박사

Content of Presentation



- 1 What are Key Issues Concerning Pedestrian Safety?
- 2 What Effects do Smartphones Have on Pedestrian Safety?
- 3 How Safe are Our Community Roads?

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발표내용



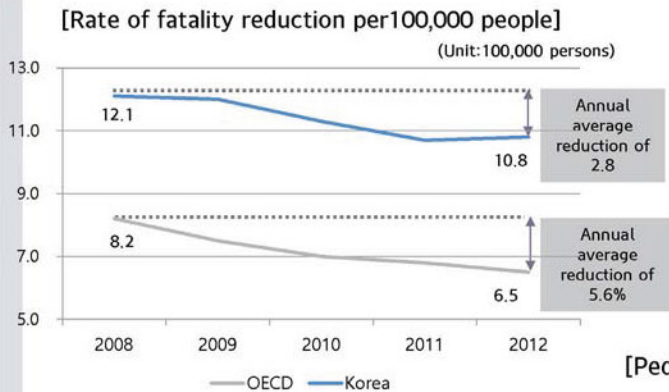
- 1 보행안전의 주요이슈는?
- 2 스마트폰의 보행안전 영향은?
- 3 생활도로의 안전 현주소는?

2/34

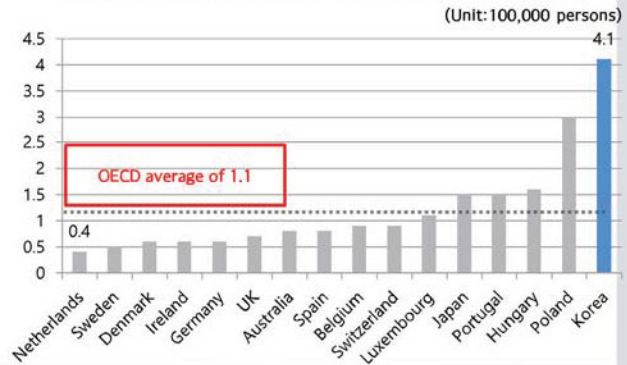
What are Key Issues Concerning
Pedestrian Safety?

보행안전의 주요이슈는?

The Rate of Fatality Reduction is 50% of the OECD Average



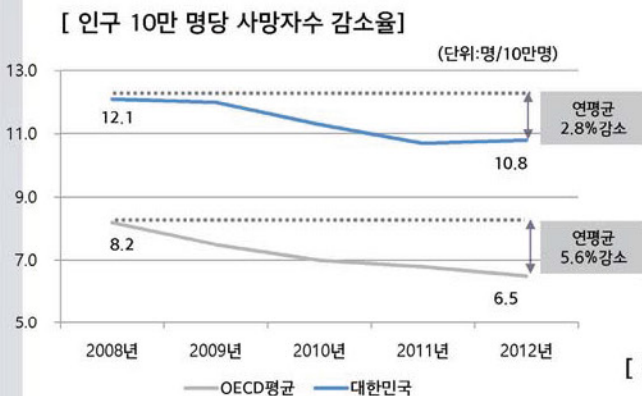
[Pedestrian fatalities per 100,000 people (2012)]



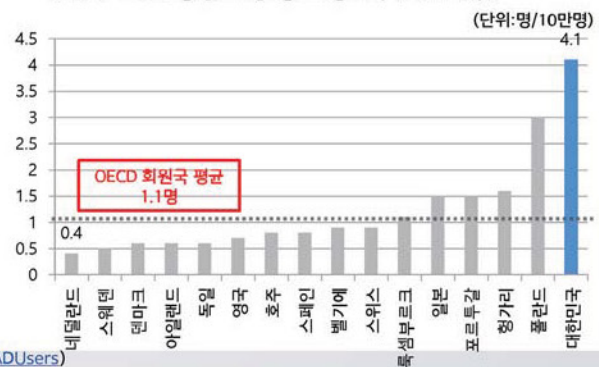
※ Source: International Transport Forum
(<http://internationaltransportforum.org/IRTADUsers>)

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우리나라 사망자수 감소율 OECD의 50%수준



[인구 10만 명당 보행 중 사망자수(2012년)]



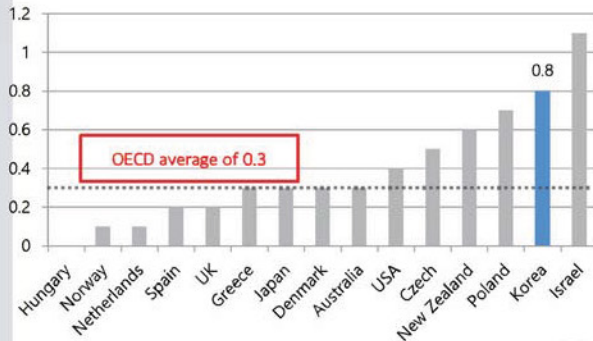
※ 자료: 국제교통포럼(<http://internationaltransportforum.org/IRTADUsers>)

4/34

Deaths of Pedestrians over 65 is Six Times the OECD Average

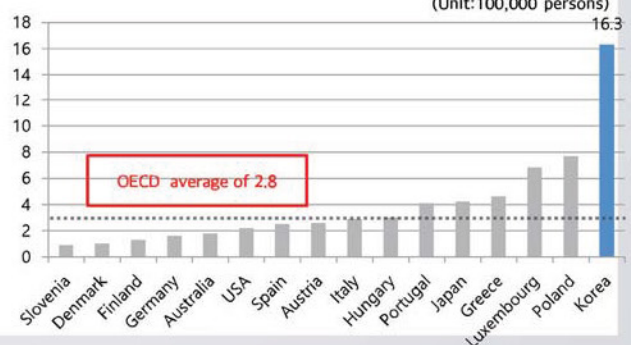
[Deaths of pedestrians under 14 per 100,000 people]

(Unit: 100,000 persons)



[Deaths of pedestrians over 65 per 100,000 people]

(Unit: 100,000 persons)



※ Source : International Transport Forum
(<http://internationaltransportforum.org/IRTADUsers>)

5/34

65세이상 고령자 보행 중 사망자 수 OECD의 6배 수준

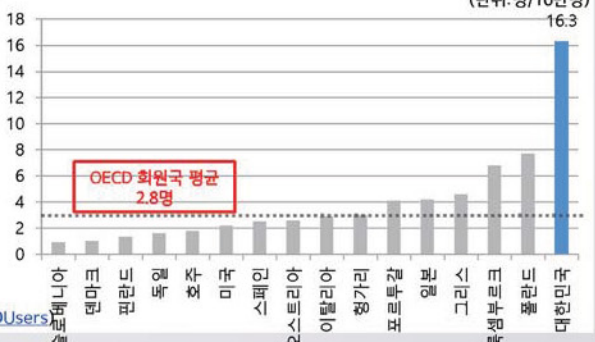
[14세이하 어린이 인구 10만명당 보행 중 사망자수]

(단위:명/10만명)



[65세이상 노인 인구 10만명당 보행 중 사망자수]

(단위:명/10만명)



※ 자료: 국제교통포럼(<http://internationaltransportforum.org/IRTADUsers>)

5/34

Smartphone Penetration Rate and Use While Walking

Penetration rate of smartphones

□ Matters surveyed

- Rate of everyday use: 82%
- Average number of applications installed: 40.1

※ Source: Google, Survey Findings on Consumers' Mobile Behavior Patterns (August 2013)

[Smartphone use rate by location]

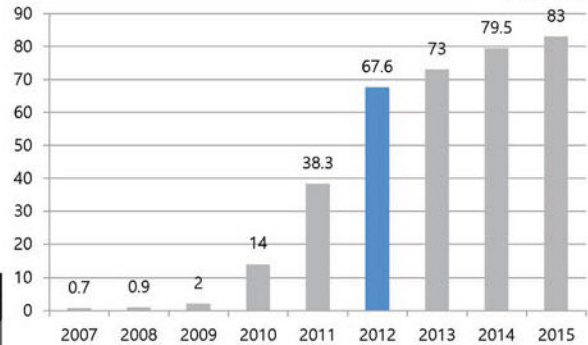
(Unit: %)

	20's	30's	40's	Over 50's	Average
Sidewalks	56.9	39.5	42.5	48.2	45.6
Anywhere	37.9	50.0	46.0	39.3	44.3
Back roads (alleys)	13.8	16.3	21.8	16.1	17.4
Crosswalks	17.2	15.1	9.2	10.7	12.9

※ Source: Hyundai Insurance Research Center, Analysis on Correlation between Smartphone Use and Pedestrian Accidents (December 2013)

[Penetration rate of smartphones]

(Unit: %)



※ Source: KT Economics & Management Research Lab, Survey on Mobile Trends for the First Half of 2015

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스마트폰 보급 활성화와 보행중 사용

스마트폰 보급활성화

□ 조사내용

- 매일 사용하는 비율 82%
- 애플리케이션 설치 수 평균 40.1개

※ 자료: 구글, 소비자 모바일 행동양식 조사결과(2013.8)

[장소별 스마트폰 사용비율]

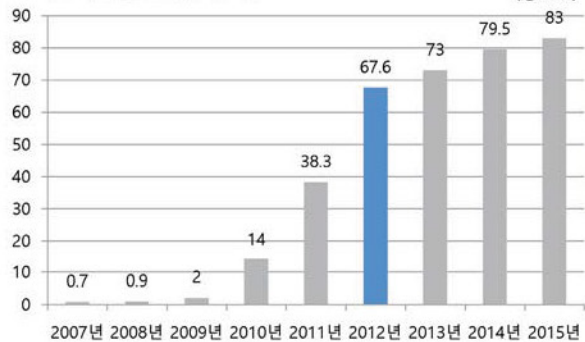
(단위: %)

구 분	20대	30대	40대	50대 이상	전체
보도	56.9	39.5	42.5	48.2	45.6
장소에 상관없이	37.9	50.0	46.0	39.3	44.3
이면도로(골목길)	13.8	16.3	21.8	16.1	17.4
횡단보도	17.2	15.1	9.2	10.7	12.9

※ 자료: 현대해상교통기후환경연구소, 스마트폰 사용과 보행사고 상관관계 연구(2013.12)

[스마트폰 보급률 추이]

(단위: %)



※ 자료: KT경영경제연구소, 2015년 상반기 모바일 트렌드조사

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The "Walk on the Right" Campaign Has Created a Habit of Walking on the Right on Back Roads



Public Campaign to Walk on the Right



□ Background

- April 29, 2009: Plans for a public campaign announced at the 12th meeting of the Presidential Council on National Competitiveness
- October 2009: Pilot campaign for public transit facilities
- July 1, 2010: Roll out

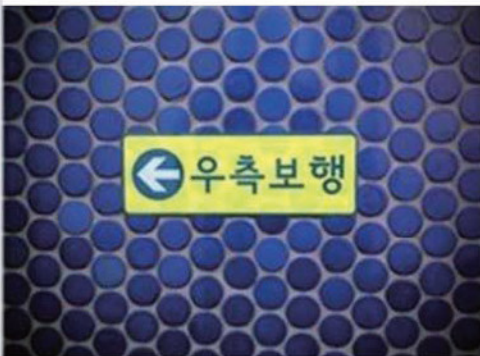
※ Source: Official blog of the Ministry of Land, Infrastructure and Transport at <http://korealand.tistory.com/971>

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우측보행 대국민 홍보에 의한 이면도로 통행습관화



우측보행 대국민 홍보



□ 추진경위

- 2009.4.29 : 제12차 국가경쟁력 강화위원회 발표
- 2009. 10월 : 대중이용 교통시설 시범운영 캠페인
- 2010.7.1 : 전면 확대 실시

※ 자료 : 국토교통부 공식블로그 <http://korealand.tistory.com/971>

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Sub-conclusion



- Pedestrian fatalities is four times higher than the OECD average, and most commonly occur among children and the aged.
- The risk of pedestrian accidents has increased as a result of the use of smartphones while walking.
- Collisions of vehicles and pedestrians on back roads has increased due to the habituation of walking on the right side of the street.

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소 결



- OECD 비해 보행중 사망자수가 4배 높고, 특히, 어린이 · 고령자 사망자 많음
- 보행중 스마트폰 사용에 따른 사고위험성 증가
- 우측통행 습관화로 이면도로 차량과 보행자 상충 증대

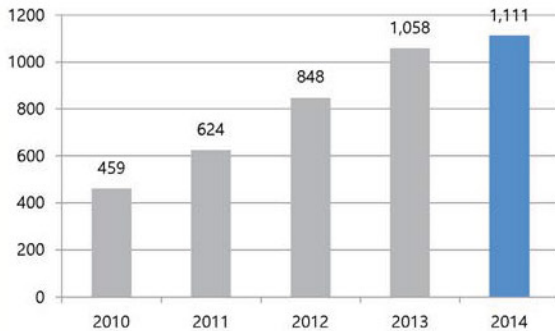
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What Effects Do Smartphones Have on Pedestrian Safety?

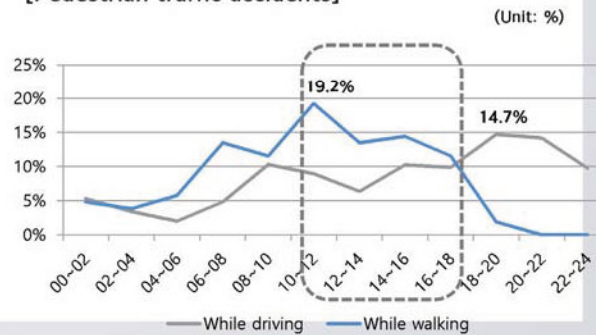
스마트폰의 보행안전 영향은?

Smartphone-related Accidents Have Increased by 2.4 Times

[Traffic accidents using smartphone] (Unit: number of cases)



[Pedestrian traffic accidents] (Unit: %)

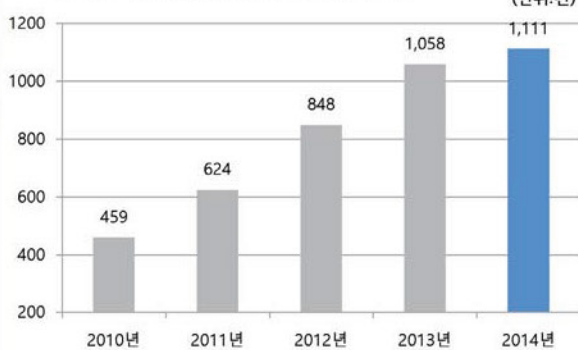


※ Source: Customer Accident DB of Hyundai Marine & Fire Insurance (2010 - 2014)

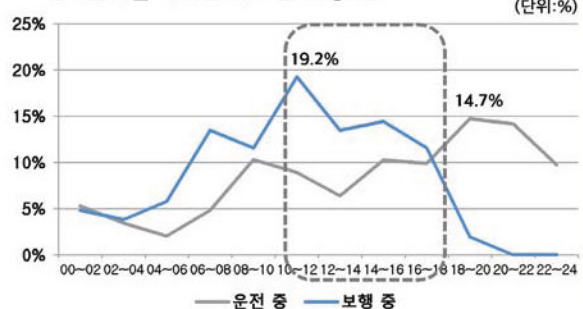
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스마트폰 관련 사고 2.4배 증가

[스마트폰 사용 차대인 사고건 추이] (단위:건)



[시간대별 차대인 사고건 구성비] (단위:%)

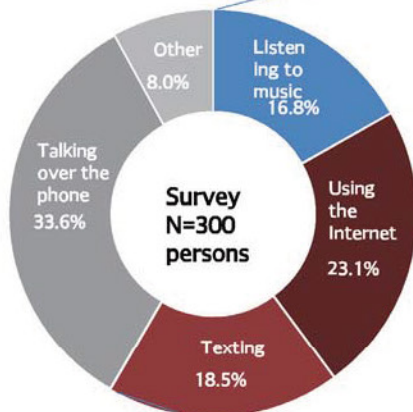


※ 자료: 현대해상 고객사고DB(2010년~2014년)

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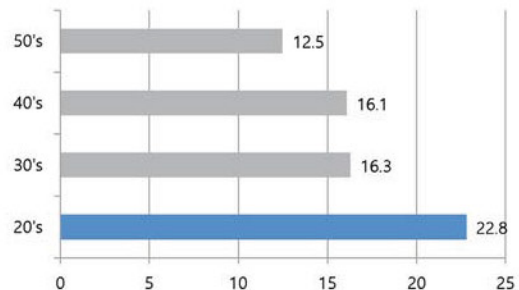
About 50% of Pedestrians Use the Internet or Text while Walking

[Smartphone functions used while walking]



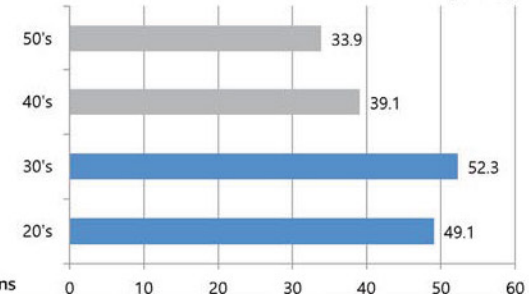
[Listening to music while walking]

(Unit: %)



[Use of the Internet or texting while walking]

(Unit: %)

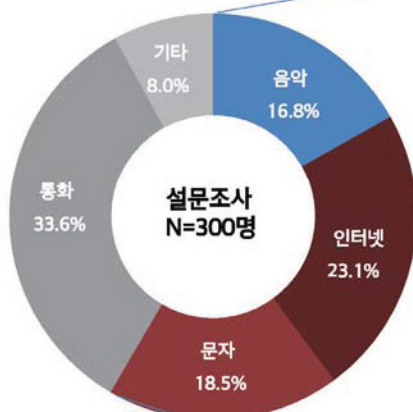


※ Source: Hyundai Insurance Research Center, Survey on 300 Pedestrians

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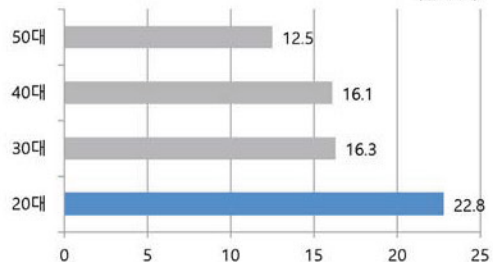
설문결과_ 보행중 인터넷·문자 사용경험 50%에 육박

[보행중 스마트폰 사용기능 구성비]



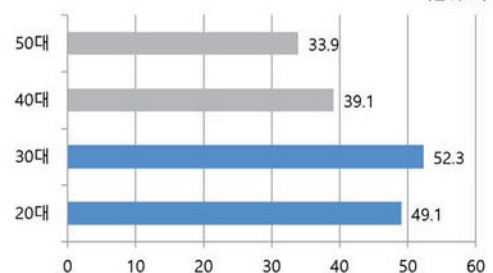
[보행중 음악감상 구성비]

(단위: %)



[보행중 인터넷·문자사용 구성비]

(단위: %)



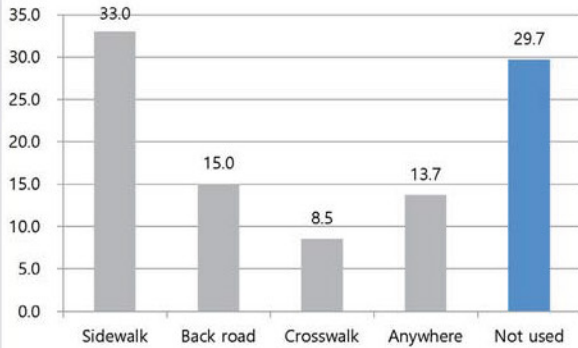
※ 자료 : 현대해상교통기후환경연구소, 보행자설문조사 300명

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70% of Elementary Students use Smartphones while Going to and from school

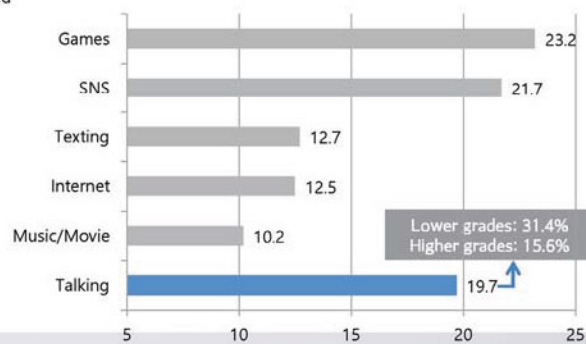
[Places where smartphones are used while going to & from school]

(Unit: %)



[Smartphone functions used while walking]

(Unit: %)



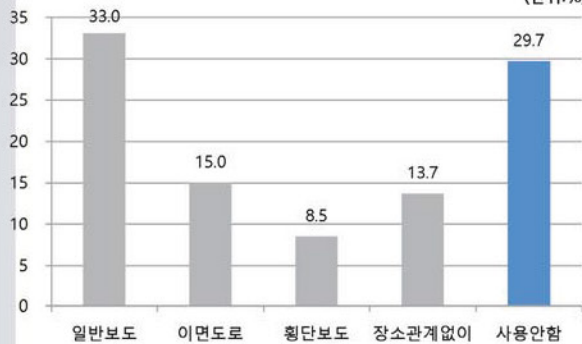
※ Source: Hyundai Insurance Research Center, Survey on 3,410 Elementary Students

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설문결과_ 초등학교생 등하교시 스마트폰 사용경험 70%

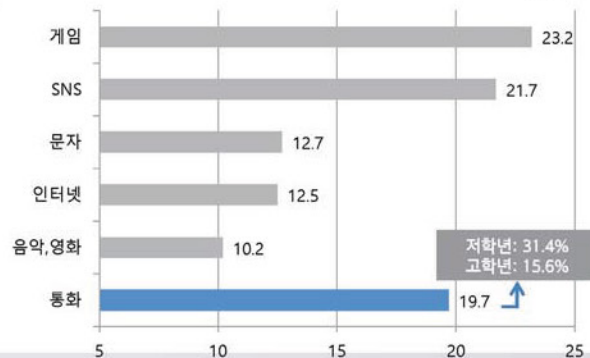
[등하교시 스마트폰 사용 장소]

(단위: %)



[보행중 스마트폰 사용기능 구성비]

(단위: %)



※ 자료 : 현대해상교통기후환경연구소, 초등학교생 설문조사 3,410명

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24% of Pedestrians Use Smartphones on Crosswalks

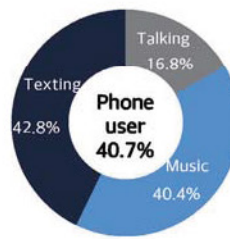


[Use of smartphones while walking]

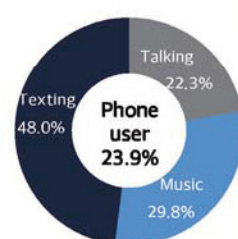
Category	Sidewalk			Crosswalk		
	Use	Do not use	Total (headcount)	Use	Do not use	Total (headcount)
Teenager - 20's	50.4%	49.6%	1,156	29.8%	70.2%	1,226
30's - 40's	31.8%	68.2%	807	19.9%	80.1%	740
50's - 60's	7.2%	92.8%	251	4.1%	95.9%	218
Total	40.7%	59.3%	2,214	23.9%	76.1%	2,184

※ Source: Hyundai Insurance Research Center, Survey on 4,398 pedestrians near Gangnam Subway Station
(2,214 persons on sidewalks; 2,184 persons on crosswalks)

[Sidewalks]

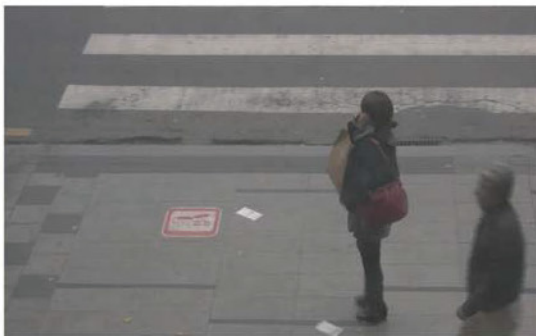


[Crosswalks]



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보행중 스마트폰 사용실태_ 횡단보도 24% 이용

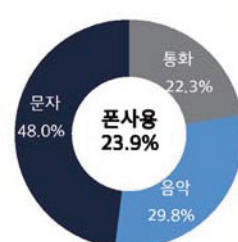
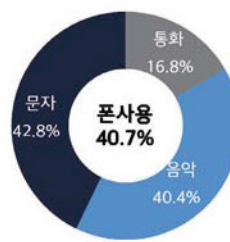


[보행중 스마트폰 사용실태]

구분	일반보도			횡단보도		
	폰사용O	폰사용X	합계(명)	폰사용O	폰사용X	합계(명)
10~20대	50.4%	49.6%	1,156	29.8%	70.2%	1,226
30~40대	31.8%	68.2%	807	19.9%	80.1%	740
50~60대	7.2%	92.8%	251	4.1%	95.9%	218
합계	40.7%	59.3%	2,214	23.9%	76.1%	2,184

※ 자료 : 현대해상교통기후환경연구소, 보행실태조사 강남역부근 4,398명
(일반보도 2,214명, 횡단보도 2,184명)

[일반보도 스마트폰 사용] [횡단보도 스마트폰 사용]



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Perceived Safe Distance Reduced by 50% while Using a Smartphone



(Step 1) Preparation for experiment (waiting)



(Step 2) Start of experiment (Start off and proceed)

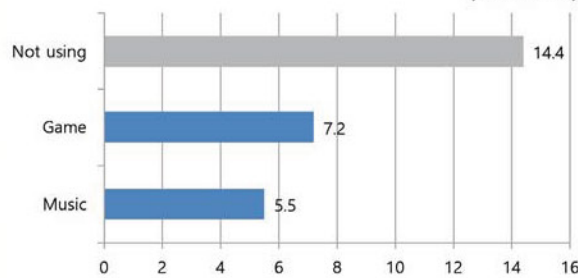


(Step 3) End of experiment (Measurement of perceived distance)



[Perceived distance while using a smartphone]

(Unit: meters)



※ Source: Hyundai Insurance Research Center, Experiment on Perceived Safe Distance by Pedestrians Using a Smartphone

[Rate of reduction in perceived distance by age]

(Unit: %)

	Listening to Music	Playing a Game
20's	41.6	33.3
30's	51.2	41.7
40's	65.3	50.1
50's	80.0	80.0

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H 현대해상 | 60 현대해상 60주년

스마트폰 사용시 평소대비 안전인식거리 50% 감소



(Step 1) 실험준비(대기)



(Step 2) 실험시작(출발, 진행)

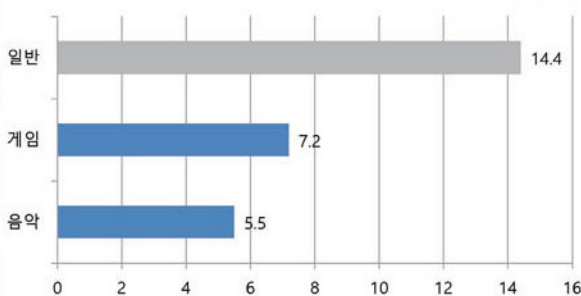


(Step 3) 실험종료(인지거리 측정)



[스마트폰 사용에 따른 인지거리]

(단위:m)



※ 자료 : 현대해상교통기후환경연구소, 보행중 스마트폰 사용 안전인지거리현장실험

[연령대별 인지거리 감소율]

(단위:%)

	음악	게임
20대	41.6	33.3
30대	51.2	41.7
40대	65.3	50.1
50대	80.0	80.0

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A Japanese App that Prevents Smartphone Use while Walking

[Smartphone Use Simulation in Shibuya, Japan]



※ Source: NTT Docomo, an app called Stop Smartphone Use While Walking

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[App to prevent the use of smartphones while walking]



일본의 보행중 사용금지 앱

[일본 시부야 스마트폰 사용시뮬레이션]



※ 자료: NTT Docomo 보행중 사용금지 앱

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[보행중 사용금지 앱]



Sub-conclusion



- Pedestrians habitually use smartphones while walking. The number of recent smartphone-related accidents has increased 2.4 times.
- The increased use of texting and SNS while walking limits a person's visual information, thereby lowering their ability to react to unexpected situations.
- As elementary students, in particular, become more immersed in their smartphones, safety measures are urgently needed.

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소 결



- 스마트폰의 사용 습관이 보행중에도 나타남. 최근 5년간 사고 2.4배 증가
- 문자와SNS 늘어 보행자의 시각정보 제한으로 돌발상황 대처능력 저하
- 초등학생일 경우 보행시 스마트폰에 몰입도가 높아 안전대책 강구 절실

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How Safe Are Our Community Roads?

생활도로의 안전 현주소는?

Absence of Definition for Community Roads



[Functions of Community Roads]

Functional aspect	Most highly accessible roads used directly in daily life such as commuting to school/work and playing
Operational aspect	Roads with no traffic lights and no buses (except community buses)
Scale aspect	Roads of less than 9 meters in width in district zoning, which are within 500 meters of public transit facilities (bus stops, subway stations, etc.) via sidewalks

※ Source: Commentary and Guidance on Rules for Road Structure and Facility Standards

[Definitions of Community Roads in Foreign Countries]

	Highlights
AASHOTO GREEN BOOK	<ul style="list-style-type: none"> Located at the end of collectors, directly accessible to residential areas Two lanes or less, and through traffic not considered
Boston Transportation Department, US	<ul style="list-style-type: none"> Roads directly linked to residential areas Mostly two lanes or less and through traffic not a major function
Leicestershire County Council, UK	<ul style="list-style-type: none"> Roads with low traffic volumes (2,000 vehicles or less daily); heavy vehicle accounting for 5% or less of entire traffic volume (daily traffic volume of 100 vehicles or less); and speed limit of 30mph
Tempo 30-Zone, Germany	<ul style="list-style-type: none"> Called pedestrian-priority roads; including back roads and two-way roads with two lanes or less
Community roads in Japan	<ul style="list-style-type: none"> Roads of 8 meters or less with no room for sidewalks Vehicle speeds are lowered to protect pedestrians.

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생활도로의 정의 부재



[생활도로의 기능]

기능적 측면	접근성이 가장 높은 도로로서 통학·통근·놀이 등 일상생활과 직결되는 도로
운영적 측면	비신호 도로로서 버스통행이 없는 도로(마을버스 제외)
규모적 측면	폭 9m미만 도로로서 지구의 계획내 위치한 도로, 대중교통시설(버스정류장, 지하철역)로 도보접근 가능도로(반지름 500m)

※ 자료 : 도로의 구조·시설 기준에 관한 규칙 해설 및 지침

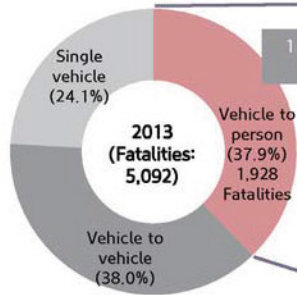
[해외의 생활도로 정의]

	주요내용
AASHOTO GREENBOOK	<ul style="list-style-type: none"> 집산도로의 끝단으로 주거지역에 직접적인 접근이 가능한 도로 차로수가 2차로를 초과하지 않고 통과교통을 고려하지 않음
미국 보스턴의 교통국	<ul style="list-style-type: none"> 직접적으로 주거지와 연결되는 도로 대부분 2차로 이하의 도로로 통과교통이 주 목적이 아닌 도로
영국의 Leicestershire 의회	<ul style="list-style-type: none"> 교통량이 적고(일 통행량이 2,000대 이하) 중차량통행이 전체 교통량의 5%이하(일 통행량 100대 이하)인 제한속도가 30mph인 도로
독일의 Tempo 30-Zone	<ul style="list-style-type: none"> '보행자우선도로'라 불리며, 이면도로와 왕복2차로 미만 도로
일본의 커뮤니티도로	<ul style="list-style-type: none"> 보도의 설치가 곤란한 약 8m이하의 도로 보행자의 안전확보를 위해 자동차 통행속도를 감소시킴

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Overview of Accidents on Community Roads

[Number of deaths by accident type]



11% of total fatalities

[Pedestrian traffic accidents in Seoul]

Vehicle-person accidents (total)

Total: 9,929
Fatalities: 213
Severe injury: 4,790
Minor injury: 4,926

Vehicle-person Accidents (community roads)

Total: 2,540
Fatalities : 19
Severe injury: 1,097
Minor injury: 1,424

Accidents that occurred on community roads in 25 districts in Seoul were analyzed for classification due to the absence of DB for community roads

※ Source: KoROAD Traffic Accident Analysis System (TAAS) (2013)

Accident types were analyzed based on the negligence table for back road accidents, using the Hyundai M&F Ins. Accident DB

Back road accident data

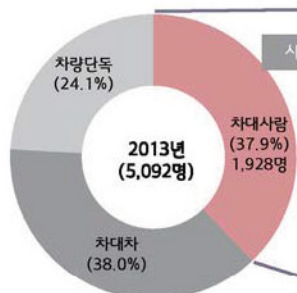
Total: 127,381
Back road: 35,431

※ Source: Hyundai M&F Ins. Accident DB (2010 - 2014)

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생활도로 사고분석 개요

[사고유형별 사망자수 구성비]



사망자수 11%

[서울시 차대사람 사고]

차대사람(전체)

전체건수 : 9,929건
사망사고 : 213건
중상사고 : 4,790건
경사사고 : 4,926건

차대사람(생활도로)

전체건수 : 2,540건
사망사고 : 19건
중상사고 : 1,097건
경사사고 : 1,424건

생활도로관련 DB 미구축으로 서울시 25개구 대상으로 사고내용 통해 생활도로 사고 분류

※ 자료 : 도로교통공단 교통사고분석시스템 TAAS (2013년)

현대해상 사고DB를 이용하여 이면도로 사고의 과실도표자료를 통한 사고유형별 분석

이면도로 사고자료

전체건수 : 127,381건
이면도로건수 : 35,431건

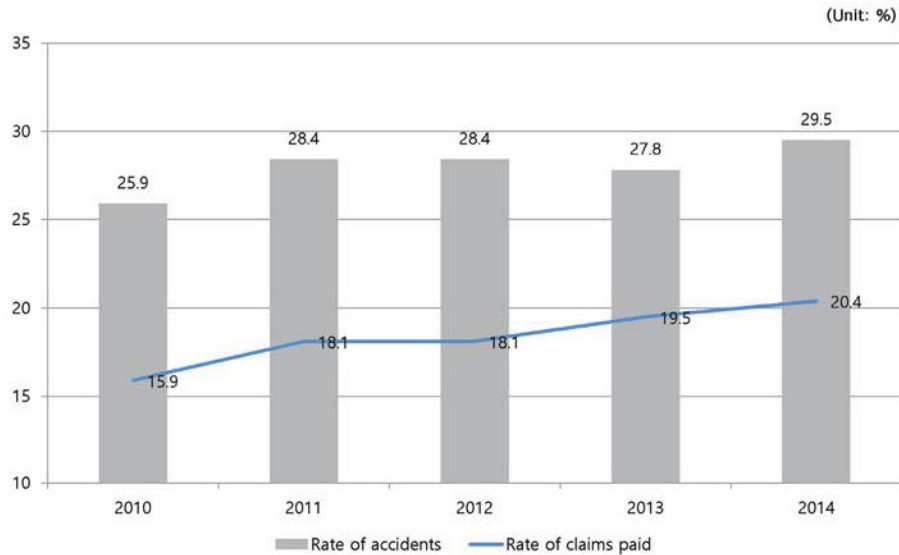
※ 자료 : 현대해상 사고DB (2010년~2014년)

19/34

Continuous Increase in Back Road Car Accidents



[Percentage of back road accidents of total vehicle-person accidents]



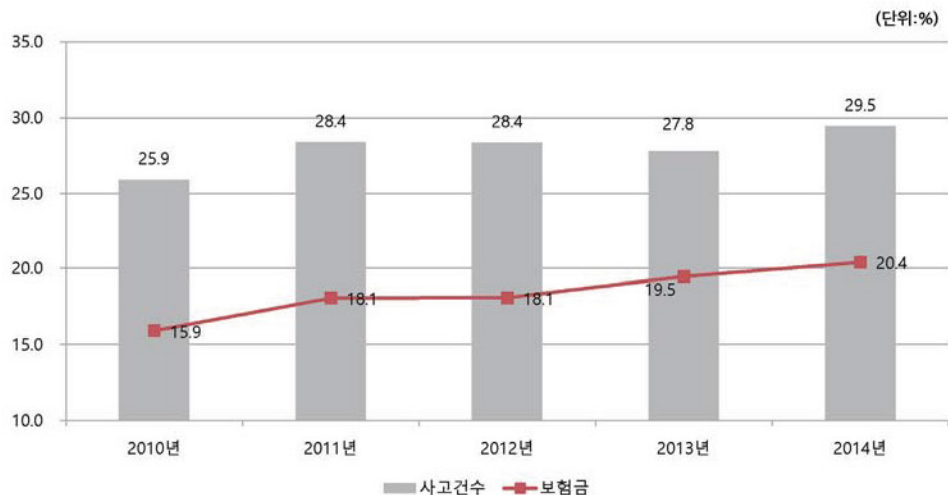
※ Source: Hyundai M&F Ins. Accident DB, Back Road Car Accidents (2010 - 2014)

20/34

이면도로 교통사고 지속증가



[차대인사고 중 이면도로사고 구성비]



※ 자료 : 현대해상 사고DB 이면도로 교통사고 (2010년 ~ 2014년)

20/34

Vehicle-Person Accidents Occur Mostly on Road Edges; Vehicle-Vehicle Accidents Occur Mostly at Intersections

[Vehicle-person accidents]



50.3%
Walking at the edge of the road

17.8%
Walking across the road
with no crosswalk

17.2%
Walking right behind
a vehicle backing up

9.9%
Walking through
an intersection

[Vehicle-vehicle accidents]



57.4%
Collision of two vehicles driving
straight across an intersection

12.2%
Collision between a vehicle on
the left turning left and a
vehicle on the right driving
straight

8.4%
Collision between a vehicle
driving straight on the main
road and a vehicle turning left
from an alley

4.8%
Collision between a vehicle
driving straight on the main
road and a vehicle turning right
from an alley

※ Source: Hyundai M&F Ins. Accident DB, Back Road Accidents (2014)

21/34

차대사람은 가장자리 보행, 차대차는 교차로 사고 많음

[차대사람 사고유형]



50.3%
가장자리 보행

17.8%
통상도로의 횡단

17.2%
후진차직후횡단

9.9%
교차로내횡단

[차대차 사고유형]



57.4%
직각충돌

12.2%
좌측좌회전, 우측직진
측면충돌

8.4%
대로직진, 소로좌회전
측면충돌

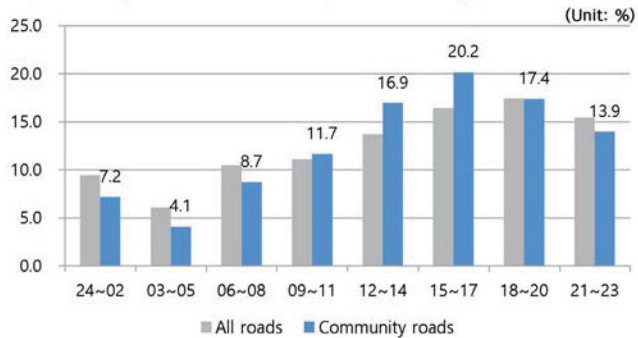
4.8%
대로직진, 소로우회전
측면충돌

※ 자료 : 현대해상 사고DB 이면도로 (2014년)

21/34

Accident Concentration Time_ 15:00 to 17:00

[Vehicle-person accidents by time of day]



[Vehicle-person accidents on community roads by age and time]

(Unit: number of cases)

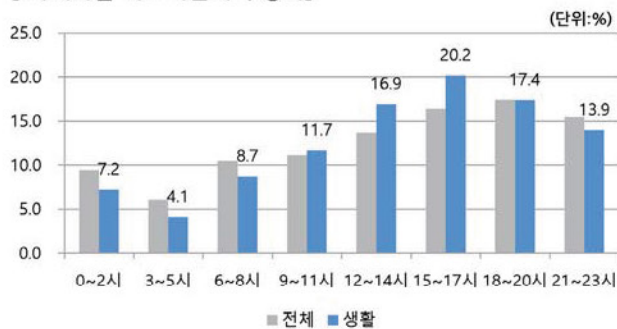
Column label	Age under 7	Age 8~13	Age 14~19	20's	30's	40's	50's	60's	70's & older	Total
24:00 ~ 02:00	1	0	5	56	55	25	28	10	2	182
03:00 ~ 05:00	0	1	4	33	18	9	14	8	17	104
06:00 ~ 08:00	3	22	22	41	23	24	30	20	36	221
09:00 ~ 11:00	3	9	18	31	33	30	56	45	71	296
12:00 ~ 14:00	25	25	17	54	44	44	74	60	87	430
15:00 ~ 17:00	45	67	45	29	57	49	75	65	80	512
18:00 ~ 20:00	22	32	34	59	46	63	90	44	51	441
21:00 ~ 23:00	1	7	20	67	65	71	75	36	12	354
Total	100	163	165	370	341	315	442	288	356	2,540

※ Source: KoROAD TAAS, Vehicle-Person Accidents in Seoul (2013)

22/34

생활도로 주위집중 시간대_ 15~17시

[차대사람 사고시간대 구성비]



[연령대별 시간대별 생활도로 차대인 사고건수]

(단위: 건)

행 레이블	7세이하	8~13세	14~19세	20대	30대	40대	50대	60대	70대이상	총합계
0~2시	1	0	5	56	55	25	28	10	2	182
3~5시	0	1	4	33	18	9	14	8	17	104
6~8시	3	22	22	41	23	24	30	20	36	221
9~11시	3	9	18	31	33	30	56	45	71	296
12~14시	25	25	17	54	44	44	74	60	87	430
15~17시	45	67	45	29	57	49	75	65	80	512
18~20시	22	32	34	59	46	63	90	44	51	441
21~23시	1	7	20	67	65	71	75	36	12	354
총합계	100	163	165	370	341	315	442	288	356	2,540

※ 자료 : 도로교통공단 교통사고분석시스템 TAAS 서울특별시 차대인 사고 (2013년)

22/34

Victims of Community Road Traffic Accidents: Mostly Children and the Aged



[Vehicle-person accident causers by Age]

(Unit: %)

	Community roads	All roads
Teens	3.0	3.4
20's	11.8	10.5
30's	20.6	18.5
40's	24.6	23.6
50's	25.7	26.5
60's	11.0	13.8
70's & older	3.3	3.7

[Vehicle-person accident victims by age]

(Unit: %)

	Fatalities		Cases	
	Community roads	All roads	Community roads	All roads
Teens & younger	15.8	4.3	16.9	13.9
20's	5.3	5.7	14.6	15.3
30's	5.3	7.1	13.4	13.4
40's	5.3	11.4	12.4	14.2
50's	26.3	20.9	17.4	18.1
60's	21.1	15.2	11.3	12.0
70's & older	21.1	35.5	14.0	13.2

※ Source: KoROAD TAAS, Vehicle-Person Accidents in Seoul (2013)

23/34

생활도로 교통사고 피해자_ 어린이와 고령자 비율 높음



[차대인사고 가해자 연령대 구성비]

(단위: %)

	생활도로	전체도로
10대	3.0	3.4
20대	11.8	10.5
30대	20.6	18.5
40대	24.6	23.6
50대	25.7	26.5
60대	11.0	13.8
70대이상	3.3	3.7

[차대인사고 피해자 연령대 구성비]

(단위: %)

	사망자		사고건	
	생활도로	전체도로	생활도로	전체도로
10대이하	15.8	4.3	16.9	13.9
20대	5.3	5.7	14.6	15.3
30대	5.3	7.1	13.4	13.4
40대	5.3	11.4	12.4	14.2
50대	26.3	20.9	17.4	18.1
60대	21.1	15.2	11.3	12.0
70대이상	21.1	35.5	14.0	13.2

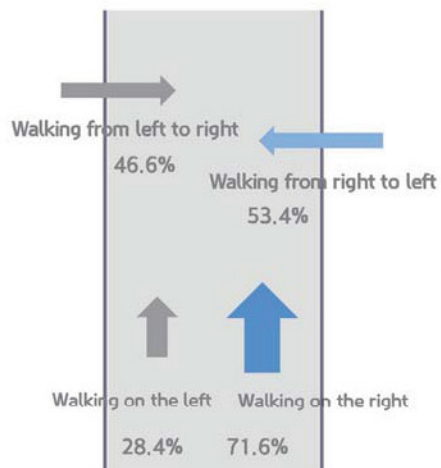
※ 자료 : 도로교통공단 교통사고분석시스템 TAAS 서울특별시 차대인 사고 (2013년)

23/34

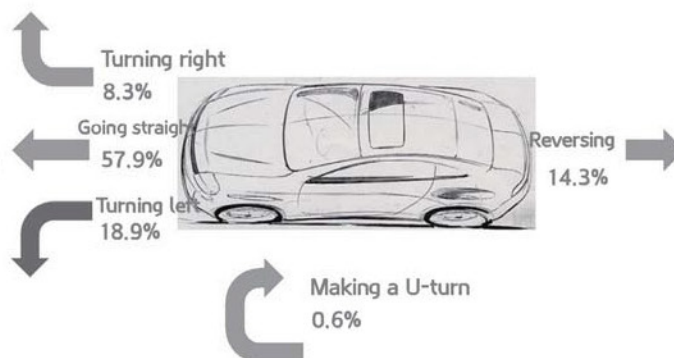
Accidents while Pedestrian Walking on the Right: 71.6% Accidents while Car Turning Left: 18.9%



[Incidence rate by walking direction]



[Incidence rate by vehicle direction]



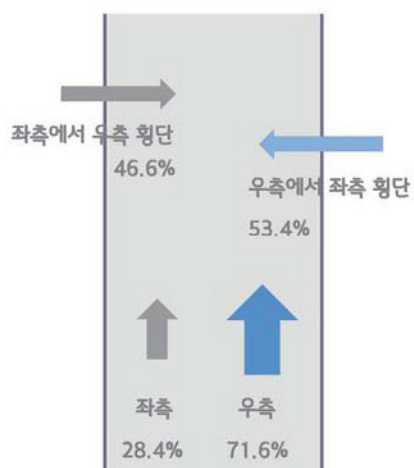
※ Source: KoROAD TAAS, Vehicle-Person Accidents in Seoul (2013)

24/34

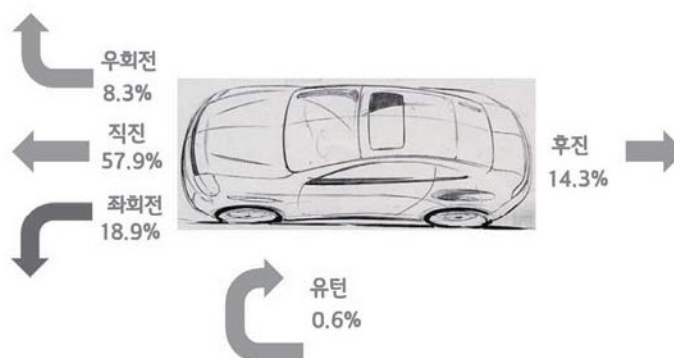
우측보행사고_71.6%, 차량 좌회전사고_ 18.9%



[보행방향별 사고발생 구성비]



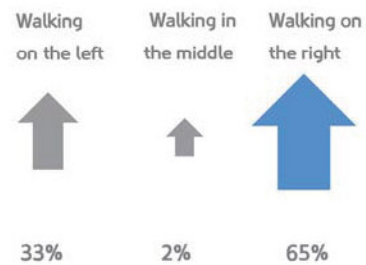
[차량방향별 사고발생 구성비]



※ 자료 : 도로교통공단 교통사고분석시스템 TAAS 서울특별시 차대인 사고 (2013년)

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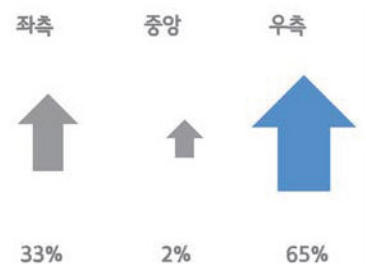
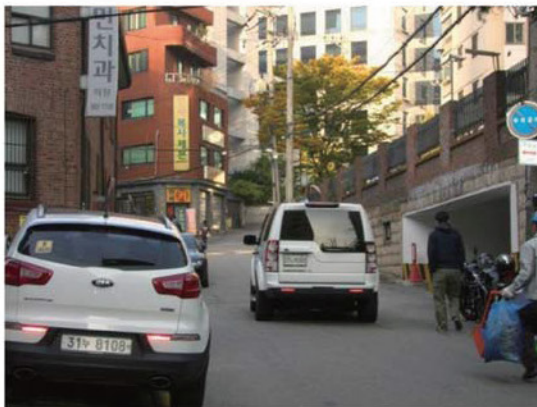
Investigation into Back Road Accidents: 65% Occur while Walking on the Right



※ Investigation: Back roads near Midong Elementary School (07:30 - 09:00)

25/34

이면도로 실태조사_ 우측보행 65%



※ 조사 : 미동초등학교 주변 이면도로(오전7시30분~9시)

25/34

Average Speed on Two-Lane Roads: 32.2km/h



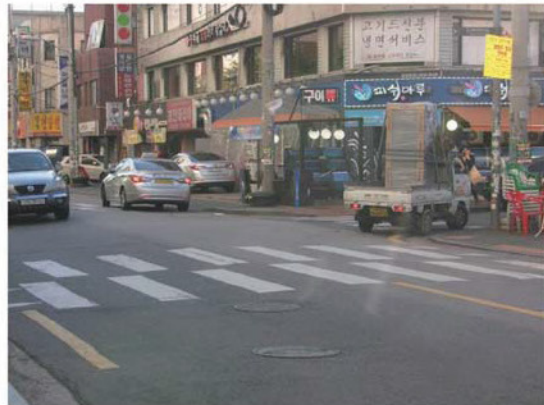
[Speed on two-lane roads]

	25kph and lower	26~30kph	31~35kph	36~40kph	41kph and faster	Total
Passenger vehicles	32	116	124	58	26	356
Motorcycles	0	8	18	16	18	60
Total	32 (7.7%)	124 (29.8%)	142 (34.1%)	74 (17.8%)	44 (10.6%)	416

※ Investigation: Two-lane roads near Hyundai Hometown Apt., Jangan-dong, Seoul (16:00 – 18:00)

26/34

편도1차로 차량 주행속도_ 평균 32.2km/h



[편도1차로 차량 주행속도 조사결과]

	25kph이하	26~30kph	31~35kph	36~40kph	41kph이상	합계
승용차	32	116	124	58	26	356
오토바이	0	8	18	16	18	60
전체	32 (7.7%)	124 (29.8%)	142 (34.1%)	74 (17.8%)	44 (10.6%)	416

※ 조사 : 장안동 현대홈타운 주변 편도1차로 도로(오후4시~6시)

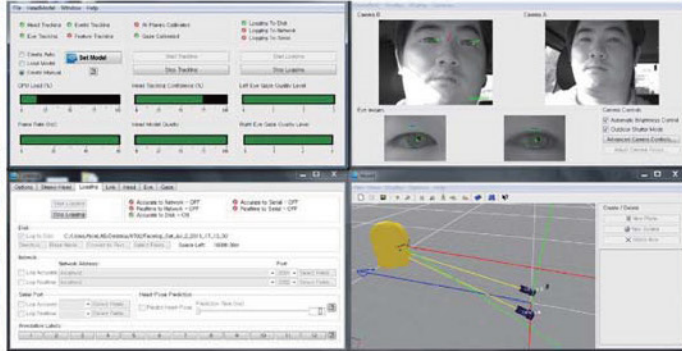
26/34

Experiment on Drivers' Visual Tendencies: Eye Tracker

[Car with installed eye cameras]



[Eye camera program setting]



※ Experiment supported by the Traffic Safety Research Center, University of Seoul

[Subject roads & measurement indicators]

Subject roads	Subject areas	Measurement indicators
<ul style="list-style-type: none"> • Back roads • Urban roads • Urban expressways 	<ul style="list-style-type: none"> • Back roads in Jangan-dong and Jegi-dong • Interrupted roads in Jangan-dong and Jegi-dong • Dongbu Expressway 	<ul style="list-style-type: none"> • Distribution of line of sight • Changes in line of sight over time (up & down, left & right)

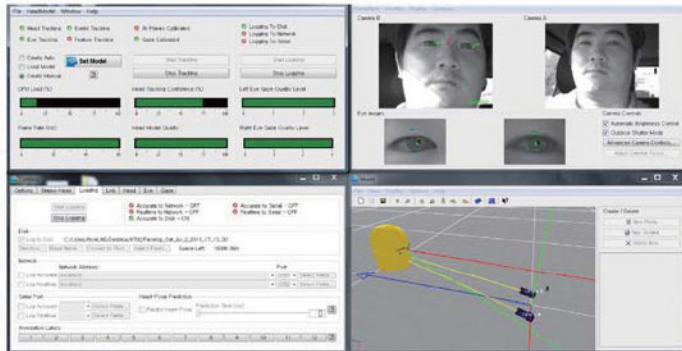
27/34

운전자 시각특성 실험_ Eye Tracker

[Eye camera 장착모습]



[Eye camera 프로그램 셋팅]



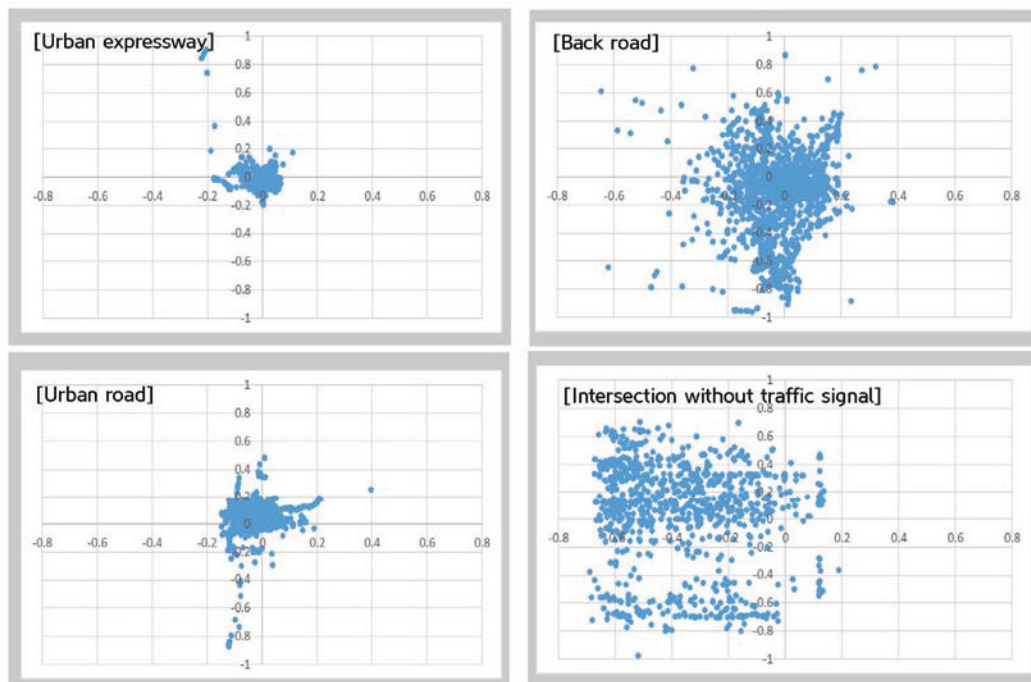
※ 실험지원 : 서울시립대학교 교통안전연구실

[실험대상 도로 및 측정지표]

대상도로	대상지역	측정지표
<ul style="list-style-type: none"> • 이면도로 • 도시부도로 • 도시고속도로 	<ul style="list-style-type: none"> • 장안동, 제기동 이면도로 • 장안동, 제기동 단속류 도로 • 동부간선도로 	<ul style="list-style-type: none"> • 시선방향 분포 • 시간에 따른 시선 변화 (상하, 좌우)

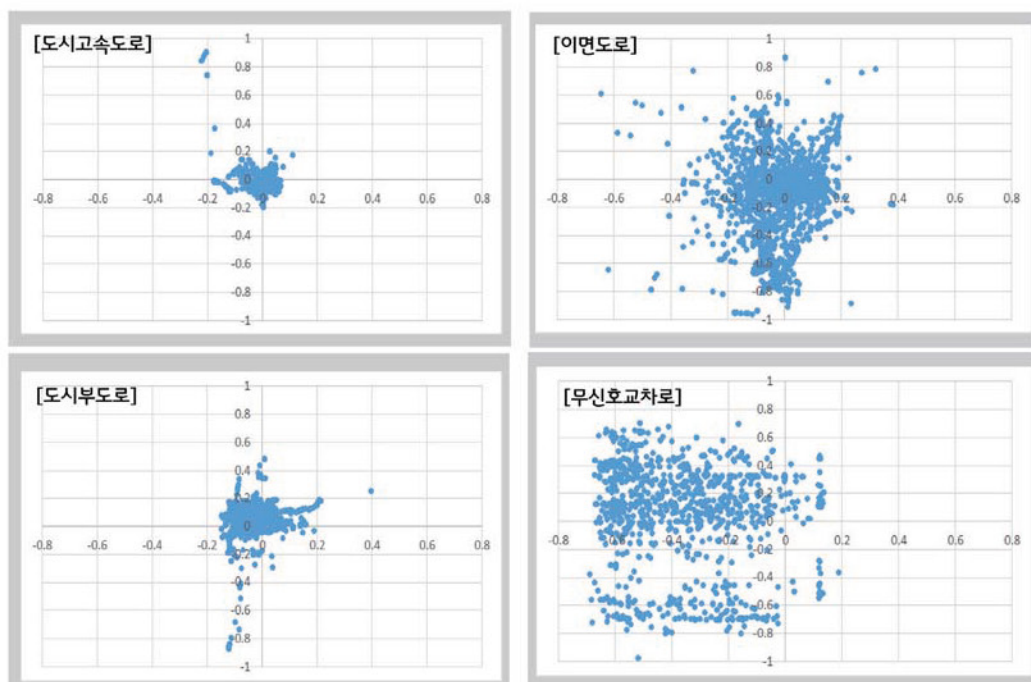
27/34

Visual Workload of Back Road Drivers is 12 Times that of Urban Expressway Drivers



28/34

이면도로 운전자 Workload_도시고속도로의 12배



28/34

Line of Sight Changes: Amplitude & Oscillation Frequency are Greatest on Back Roads



[Line of sight changes over time]

Category	Left and right (+Right: - Left)	Amplitude	Left	Right	Up and down (+Up: - Down)	Amplitude	Up	Down
Urban expressway		0.05	520 35%	969 65%		0.05	347 23%	1143 77%
Urban road		0.1	1513 83%	304 17%		0.15	1495 82%	322 18%
Back road		0.2	1054 61%	683 39%		0.5	531 31%	1206 69%

29/34

시각변화도_ 이면도로에서 진폭, 진동수 가장 큼



[시간흐름에 따른 시각변화]

구분	좌 · 우시선(+우측, -좌측)	진폭	좌측	우측	위 · 아래시선(+위측, -아래측)	진폭	위	아래
도시고속도로		0.05	520 35%	969 65%		0.05	347 23%	1143 77%
도시부도로		0.1	1513 83%	304 17%		0.15	1495 82%	322 18%
이면도로		0.2	1054 61%	683 39%		0.5	531 31%	1206 69%

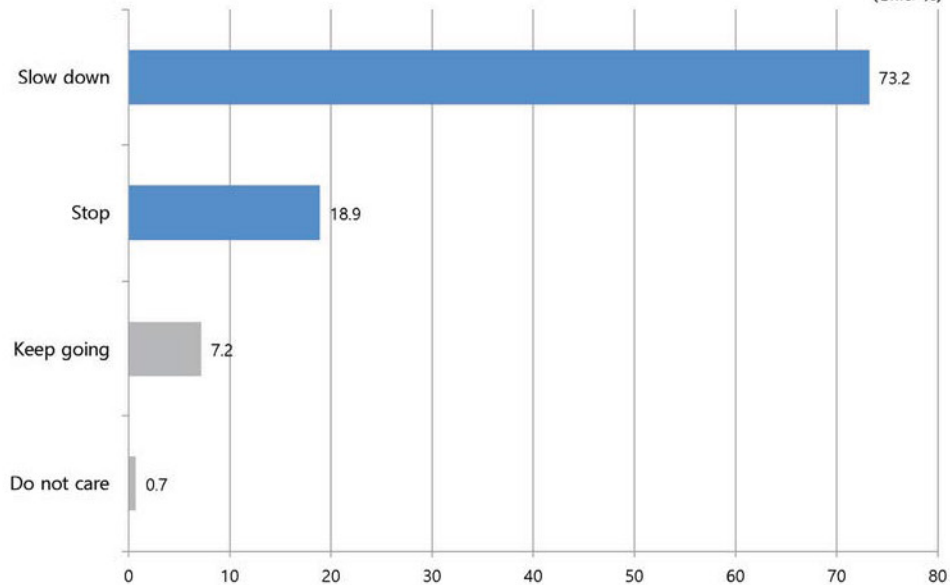
29/34

Only 18.9% of Drivers Stop at Intersections without Traffic Signals

[Stop at intersections without traffic signals]

(Sample size: 1,000 persons)

(Unit: %)



※ Source: Hyundai Insurance Research Center, Survey on Perception of Auto Insurance and Public Awareness of Traffic Safety (December 2014)

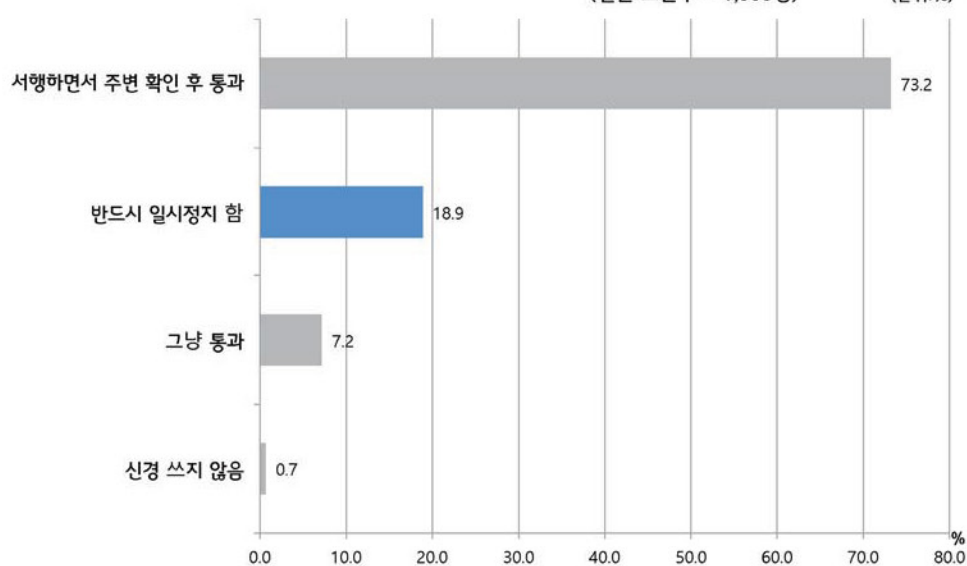
30/34

무신호 교차로 18.9%만 일시정지

[무신호 교차로 일시정지 설문결과]

(설문 표본수 = 1,000명)

(단위: %)



※ 자료 : 현대해상교통기후환경연구소, 자동차보험인식 및 국민교통안전의식조사(2014.12)

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Sub-conclusion



- Community roads need to be managed systematically by defining the meaning and establishing a DB on community road car accidents.
- Consideration is merited on running a time-based parking system for back roads through which parking is controlled during hours when car accidents involving children and the aged occur most frequently.
- Penalties need to be strengthened against drivers who cause accidents on community roads.

31/34

소 결



- 생활도로 정의와 사고DB구축으로 생활도로의 관리체계 필요
- 어린이와 고령자 사고가 많은 시간대의 이면도로 주차의 시간제 주차관리 검토
- 생활도로 사고에 대한 운전자 페널티 확대 필요

31/34

Policy Recommendation

정책 제언

Key Messages



- It needs to be recognized that pedestrian behavior is changing due to advancement of IT, and measures to address such changes need to be taken.
- Safety and the pleasant nature of community roads, which are most closely linked to daily life, need to be improved.
- Policy needs to be considered to strengthen the penalties against drivers who cause vehicle-person accidents.

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Key Messages



- IT발전에 따른 보행환경의 변화 인식 및 대책마련 필요
- 실생활에 가장 밀접한 생활도로의 안전성 · 쾌적성 제고 방안 필요
- 차대사람 사고에 대한 운전자 페널티 확대 정책 검토

33/34

Thank you
for your
attention.

WWW.HI.CO.KR



34/34

Thank you
for your
attention.

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III-3

International Seminar on Pedestrian Safety Walkable & Safe City

「Prevention of Pedestrian Accidents for Neighborhood Streets」

「생활도로 보행사고 원인 및 대책」

Junhan Cho

조준한

Korea / Research Associate, Samsung Traffic Safety Research Institute

삼성교통안전문화연구소 책임연구원 / 한국



Causes of pedestrian accidents and there countermeasures on community roads

September 16, 2015

Cho Jun-han



생활도로 보행교통사고 원인 및 감소대책

2015. 9. 16

조 준 한

Causes of and Countermeasures against Pedestrian Accidents on Community Roads

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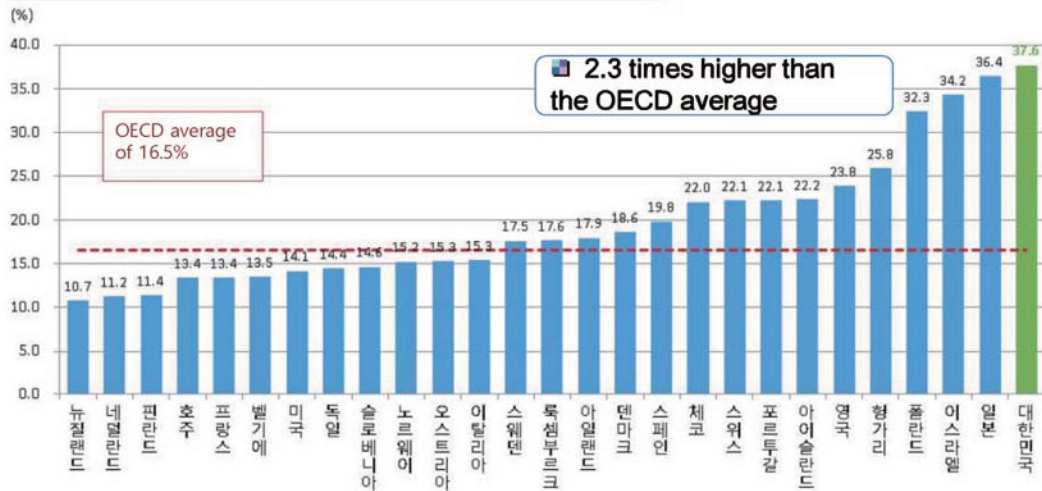
생활도로 보행교통사고 원인과 감소대책

IV

맺음말

I. Current Pedestrian Accident in Korea

Percentage of Pedestrian Fatalities in OECD (as of 2012)

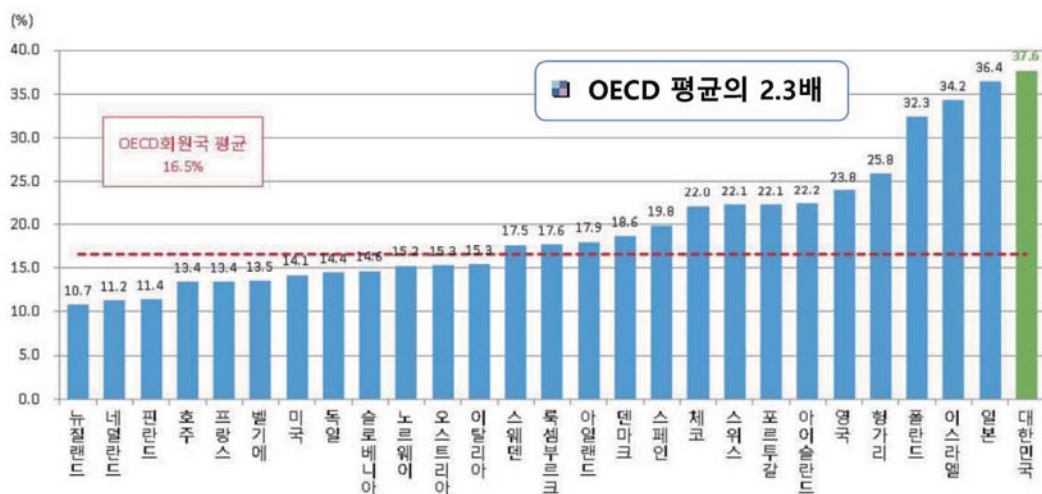


자료 : <http://internationaltransportforum.org/IRTADUsers>, 14.7

3

I. 한국의 보행사고 일반현황

OECD 보행 중 사망자수 구성비 (2012년 기준)



자료 : <http://internationaltransportforum.org/IRTADUsers>, 14.7

3

I. Current Pedestrian Accident in Korea

Traffic Accidents by Year & Type

- Fatalities from vehicle-person collisions: Reduced by an annual average of 2.1% (plateau)
※ Vehicle-vehicle accidents reduced by an annual average of 5.4%
- Fatalities from vehicle-person collisions have been on the increase for the last 3 years (38.7% for 2014)
※ Fatalities from vehicle-person collisions for 2014: 40.2%
- The number of the persons injured in vehicle-person collisions as a percentage of all traffic accidents is increasing.

Accident Type	Category	2009	2010	2011	2012	2013	2014
All accidents (A)	Cases	231,990	226,878	221,711	223,656	215,354	223,552
	Fatalities	5,838	5,505	5,229	5,392	5,092	4,762
	Injured	361,875	352,458	341,391	344,565	328,711	337,497
Vehicle-vehicle	Cases	171,706	167,035	161,681	162,455	155,256	162,181
	Fatalities	2,546	2,402	2,097	2,156	1,933	1,914
	Injured	297,131	288,402	277,190	278,851	264,795	272,147
Vehicle-person (B)	Cases	49,665	49,353	49,701	50,111	49,130	50,315
	Fatalities	2,047	2,010	1,998	1,977	1,928	1,843
	Injured	51,043	50,396	50,907	51,462	50,235	51,590
(B/A)*100	Cases	21.4%	21.8%	22.4%	22.4%	22.8%	22.5%
	Fatalities	35.1%	36.5%	38.2%	36.7%	37.9%	38.7%
	Injured	14.1%	14.3%	14.9%	14.9%	15.3%	15.3%

※ Source: Police accident DB for the last 5 years (2009-2014)

4

I. 한국의 보행사고 일반현황

연도별·사고유형별 교통사고 발생현황

- 차대사람 사망자수: 연평균 -2.1% 감소율(답보상태) ※ 차대차 사고 연평균 감소율: -5.4%
- 차대사람 사망자수 비율: 최근 3년간 증가추세('14년 38.7%) ※ '14년 차대사람 사망자수 비율: 40.2%
- 차대사람 부상자수: 전체사고 대비 점유비율 증가추세

사고유형	구분	2009	2010	2011	2012	2013	2014
전체사고 (A)	발생건수	231,990	226,878	221,711	223,656	215,354	223,552
	사망자수	5,838	5,505	5,229	5,392	5,092	4,762
	부상자수	361,875	352,458	341,391	344,565	328,711	337,497
차대차	발생건수	171,706	167,035	161,681	162,455	155,256	162,181
	사망자수	2,546	2,402	2,097	2,156	1,933	1,914
	부상자수	297,131	288,402	277,190	278,851	264,795	272,147
차대사람 (B)	발생건수	49,665	49,353	49,701	50,111	49,130	50,315
	사망자수	2,047	2,010	1,998	1,977	1,928	1,843
	부상자수	51,043	50,396	50,907	51,462	50,235	51,590
(B/A)*100	발생건수	21.4%	21.8%	22.4%	22.4%	22.8%	22.5%
	사망자수	35.1%	36.5%	38.2%	36.7%	37.9%	38.7%
	부상자수	14.1%	14.3%	14.9%	14.9%	15.3%	15.3%

※ 분석자료: 최근 5년간(2009~2014년) 경찰사고DB

4

I. Current Pedestrian Accident in Korea

Pedestrian Casualties by Accident Type

- Number of accidents: While crossing the road (41.3%) > While walking on the road (9.8%) > While walking on the edge of the road (8.2%)
- Number of fatalities: While crossing the road (52.1%) > While walking on the road (11.3%) > While walking on the edge of the road (6.1%)
- The fatality rate is highest 'while crossing the road' (1.3 times higher than the average)

Accident Type	Number of Accidents	Fatalities		Number of Seriously Injured	Number of Slightly Injured	Number of the Wounded
		Number of Fatalities	Number of Fatalities			
While crossing road	102,523	5,187	5.1	60,366	40,848	2,900
While walking on road	24,256	1,121	4.6	11,994	11,438	982
While walking on edge of road	20,299	605	3.0	8,319	11,593	1,010
While walking on sidewalk	13,398	358	2.7	6,732	7,017	492
Other	87,484	2,689	3.1	40,076	45,998	4,278
Total	247,960	9,960	4.0	127,487	116,894	9,662

Note) Fatality rate = Number of deaths/Number of accidents * 100

※ Source: Police accident DB for the last 5 years (2009-2013)

5

I. 한국의 보행사고 일반현황

보행사고유형별 교통사고 인명피해

- 사고건수 순위: 횡단중(41.3%) > 차도통행중(9.8%) > 길가장자리구역통행중(8.2%)
- 사망자수 순위: 횡단중(52.1%) > 차도통행중(11.3%) > 길가장자리구역통행중(6.1%)
- 치사율: '횡단중' 가장 높아 (평균의 1.3배)

사고유형	사고건수	사망자		중상자수	경상자수	부상자수
		사망자수	치사율			
횡단중	102,523	5,187	5.1	60,366	40,848	2,900
차도통행중	24,256	1,121	4.6	11,994	11,438	982
길가장자리구역통행중	20,299	605	3.0	8,319	11,593	1,010
보도통행중	13,398	358	2.7	6,732	7,017	492
기타	87,484	2,689	3.1	40,076	45,998	4,278
총계	247,960	9,960	4.0	127,487	116,894	9,662

주) 치사율=사망자/사고건수 * 100

※ 분석자료: 최근 5년간(2009~2013년) 경찰사고DB

5

I. Current Pedestrian Accident in Korea

Pedestrian Accidents by Regulation Breached & Accident Type

- Breach of regulations: Failure to drive safely (72.6%) > Failure to avoid pedestrians (13.5%) > Failure to obey traffic signal (7.6%)
- Accident while crossing : Failure to drive safely (59.1%) > Failure to avoid pedestrians(24.4%) > Failure to obey traffic signal (13.7%)

Category	While Crossing road	While walking on road	While walking on edge of road	While walking on sidewalk	Other	Total
Failure to drive safely	60,595	22,462	18,922	4,567	73,564	180,110
Failure to avoid pedestrians	24,999	345	235	3,350	4,527	33,456
Failure to obey traffic signal	14,024	269	216	1,680	2,520	18,709
Crossing centerline	1,185	368	234	342	948	3,077
Illegal U-turn	136	227	214	70	905	1,552
Speeding	480	55	18	13	110	676
Unsafe passage through intersection	277	146	81	19	381	904
Failure to maintain a safe distance	87	57	29	11	164	348
Other	740	327	350	3,346	4,365	9,128
Total	102,523	24,256	20,299	13,398	87,484	247,960

※ Source: Police accident DB for the last 5 years (2009-2013)

6

I. 한국의 보행사고 일반현황

법규위반별·보행사고유형별 보행교통사고건수

- 법규위반항목 순위: 안전운전의무불이행(72.6%) > 보행자보호의무위반(13.5%) > 신호위반(7.6%)
- '횡단중' 사고: 안전운전의무불이행(59.1%) > 보행자보호의무위반(24.4%) > 신호위반(13.7%)

구분	횡단중	차도통행중	길가장자리 구역통행중	보도통행중	기타	총합계
안전운전 의무 불이행	60,595	22,462	18,922	4,567	73,564	180,110
보행자 보호의무 위반	24,999	345	235	3,350	4,527	33,456
신호위반	14,024	269	216	1,680	2,520	18,709
중앙선 침범	1,185	368	234	342	948	3,077
불법유턴	136	227	214	70	905	1,552
과속	480	55	18	13	110	676
교차로 통행방법 위반	277	146	81	19	381	904
안전거리 미확보	87	57	29	11	164	348
기타	740	327	350	3,346	4,365	9,128
합계	102,523	24,256	20,299	13,398	87,484	247,960

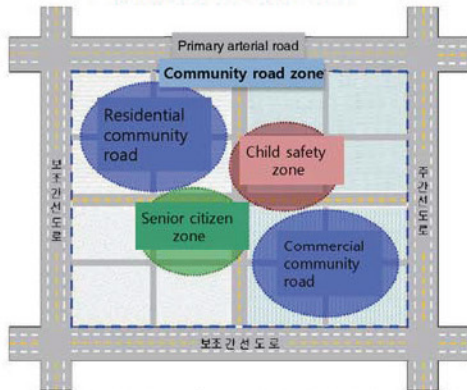
※ 분석자료: 최근 5년간(2009~2013년) 경찰사고DB

6

II. Characteristics of Pedestrian Accidents on Community Roads

Definition of community road

- (National Police Agency) Either collector roads or local roads, which require pedestrian protection, from a functional perspective
- (Kim Do-kyeong) Roads with low volumes of through traffic, low driving speeds, high accessibility, and the first priority given to daily lives of pedestrians/community members
- Different from Woonerf (Netherlands), Home Zone (UK), Community Zone (Japan)
- (this presentation) Roads with a speed limit of 30km/h or less where right of way is given to pedestrians (speed control)



※ Source: Methods to Manage Speed and Install and Operate Traffic Facilities on Community Roads (NPA, 2010)



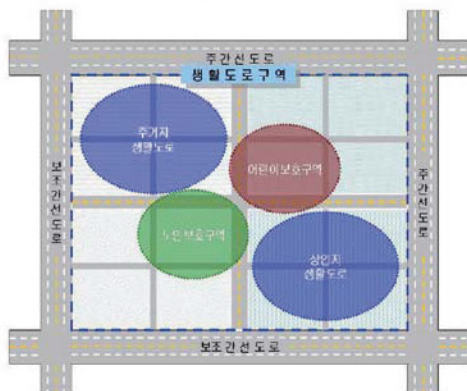
※ Source: Definition of Community Road and the Need for its Modification (Kim Do-kyeong, 2012)

7

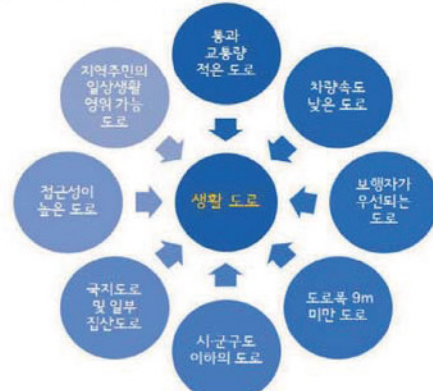
II. 생활도로 보행교통사고 특성

생활도로 개념

- (경찰청) 도로기능상 집산도로와 국지도로 중 보행자 보호가 필요한 도로
- (김도경) 통과교통 少, 차량속도 小, 접근성 大, 보행/지역주민 일상생활 우선도로
- Woonerf(네덜란드), Home Zone(영국), Community Zone(일본)과 다른 개념
- (본 발표) 보행자 통행권이 우선시되는 30km/h 이하 도로(속도관리)



※ 출처: 생활도로 속도관리 및 교통시설 설치운영방안(경찰청, 2010)



※ 출처: 생활도로 정의 및 정비 필요성(김도경, 2012)

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II. Characteristics of Pedestrian Accidents on Community Roads

Criteria for community roads

Size of road



Traffic volume/Speed



Protection zone (30 km/h zone)



※ Community road based on statistical analysis: Roads of a width not exceeding 9 meters
(Roads with no centerline, one-lane one-way roads, two-lane two-way roads)

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II. 생활도로 보행교통사고 특성

생활도로 적용대상

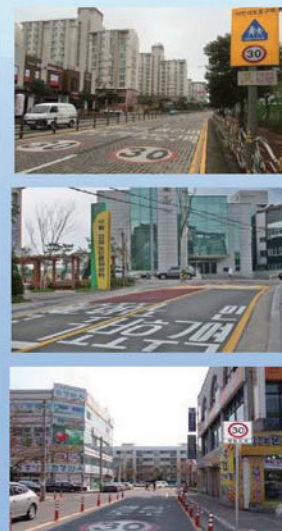
도로규모



교통량/속도



보호구역(30존)



※ 통계분석 상 생활도로: 9m미만 도로(중앙선이 없는 도로, 일방 1차로, 양방 2차로 도로)

8

II. Characteristics of Pedestrian Accidents on Community Roads

Pedestrian Casualties

- Incidence by road width: Less than 6m (32.0%) > Less than 9m (18.9%) > Less than 13m (13.8%) > Less than 20m (11.4%)
- Community road: Incidence accounts for 64.7%; fatalities 55.4%; and casualties 64.4% as a percentage of all accidents.
- The wider the road, the higher the fatality numbers: ※ Fatalities on roads greater than 20m wide is 1.8 times higher than the average for all roads.

Width of Road	Number of Accidents	Fatalities		Number of Seriously Injured	Number of Slightly Injured	Number of the Wounded
		Number of Fatalities	Fatality Rate			
Less than 3m	34,220	1,097	3.2	16,715	16,887	1,460
Less than 6m	79,377	2,606	3.3	38,804	39,310	3,328
Less than 9m	46,883	1,817	3.9	23,698	22,639	1,697
Less than 13m	27,501	1,207	4.4	15,267	12,032	938
Less than 20m	28,230	1,638	5.8	16,190	11,673	932
20m and wider	19,102	1,408	7.4	11,185	7,372	698
Other	12,647	187	1.5	5,628	6,981	609
Total	247,960	9,960	4.0	127,487	116,894	9,662

Note) Fatality rate = Number of deaths/Number of accidents * 100

※ Source: Police accident DB for the last 5 years (2009-2013)

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II. 생활도로 보행교통사고 특성

보행교통사고 인명피해

- 도로폭별 사고건수: 6m미만(32.0%) > 9m미만(18.9%) > 13m미만(13.8%) > 20m미만(11.4%)
- 생활도로: 전체사고 대비 사고건수 64.7%, 사망자수 55.4%, 사상자수 64.4% 차지
- 치사율: 도로폭이 높을수록 증가 ※ 20m이상 도로: 평균 대비 1.8배

도로폭	사고건수	사망자		중상자수	경상자수	부상자수
		사망자수	치사율			
3m미만	34,220	1,097	3.2	16,715	16,887	1,460
6m미만	79,377	2,606	3.3	38,804	39,310	3,328
9m미만	46,883	1,817	3.9	23,698	22,639	1,697
13m미만	27,501	1,207	4.4	15,267	12,032	938
20m미만	28,230	1,638	5.8	16,190	11,673	932
20m이상	19,102	1,408	7.4	11,185	7,372	698
기타	12,647	187	1.5	5,628	6,981	609
합계	247,960	9,960	4.0	127,487	116,894	9,662

주) 치사율=사망자/사고건수 * 100

※ 분석자료: 최근 5년간(2009~2013년) 경찰사고DB

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II. Characteristics of Pedestrian Accidents on Community Roads

Number of Pedestrian Traffic Accidents by Accident Type

- Accident while crossing the road: Less than 6m(27.1%) > Less than 9m(17.9%) > Less than 20m(15.9%) > Less than 13m(14.7%)
- Accidents while crossing community roads account for 56.7% as a percentage of total accidents.

Category	While crossing road	While walking on road	While walking on edge of road	While walking on sidewalk	Other	Total
Less than 3m	11,885	3,685	2,092	3,944	12,614	34,220
Less than 6m	27,823	8,758	3,768	8,817	30,211	79,377
Less than 9m	18,390	5,194	2,055	4,446	16,798	46,883
Less than 13m	15,066	2,421	1,355	1,113	7,546	27,501
Less than 20m	16,271	2,145	1,480	788	7,546	28,230
20m and wider	11,110	1,457	1,078	442	5,015	19,102
Other	1,978	596	1,570	749	7,754	12,647
Total	102,523	24,256	13,398	20,299	87,484	247,960

※ Source: Police accident DB for the last 5 years (2009 -2013)

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II. 생활도로 보행교통사고 특성

보행사고유형별 보행교통사고건수

- '횡단중' 사고: 6m미만(27.1%) > 9m미만(17.9%) > 20m미만(15.9%) > 13m미만(14.7%)
- 생활도로 상의 '횡단중' 사고: 전체 대비 56.7% 차지

구분	횡단중	차도통행중	길가장자리 구역통행중	보도통행중	기타	합계
3m미만	11,885	3,685	2,092	3,944	12,614	34,220
6m미만	27,823	8,758	3,768	8,817	30,211	79,377
9m미만	18,390	5,194	2,055	4,446	16,798	46,883
13m미만	15,066	2,421	1,355	1,113	7,546	27,501
20m미만	16,271	2,145	1,480	788	7,546	28,230
20m이상	11,110	1,457	1,078	442	5,015	19,102
기타	1,978	596	1,570	749	7,754	12,647
합계	102,523	24,256	13,398	20,299	87,484	247,960

※ 분석자료: 최근 5년간(2009~2013년) 경찰사고DB

10

II. Characteristics of Pedestrian Accidents on Community Roads

Number of Pedestrian Traffic Accidents by Type of Violation

- Failure to drive safely: Less than 6m(33.8%) > Less than 9m(19.5%) > Less than 13m(14.7%) > Less than 20m(10.0%)
- Failure to avoid pedestrians: Less than 6m(30.1%) > Less than 9m(19.6%) > Less than 13m(14.8%) > Less than 20m(13.8%)
- Speeding: Most often on community roads (47.3%)

Category	Less than 3m	Less than 6m	Less than 9m	Less than 13m	Less than 20m	20m and wider	Other	Total
Speeding	43	170	107	99	122	130	5	676
Failure to avoid pedestrians	4,379	10,072	6,564	4,937	4,631	2,015	858	33,456
Failure to obey traffic signal	1,276	4,224	2,651	3,043	3,948	3,169	398	18,709
Failure to drive safely	26,450	60,790	35,034	17,950	18,019	12,596	9,271	180,110
Illegal turn	248	559	299	111	97	48	190	1,552
Crossing centerline	460	847	668	397	377	194	134	3,077
Other	1,364	2,715	1,560	964	1,036	950	1,791	10,380
Total	34,220	79,377	46,883	27,501	28,230	19,102	12,647	247,960

※ Source: Police accident DB for the last 5 years (2009-2013)

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II. 생활도로 보행교통사고 특성

법규위반별 보행교통사고건수

- 안전운전의무불이행: 6m미만(33.8%) > 9m미만(19.5%) > 13m미만(14.7%) > 20m미만(10.0%)
- 보행자 보호의무 위반: 6m미만(30.1%) > 9m미만(19.6%) > 13m미만(14.8%) > 20m미만(13.8%)
- 과속: 생활도로(47.3%)에서 가장 많이 발생

구분	3m미만	6m미만	9m미만	13m미만	20m미만	20m이상	기타	합계
과속	43	170	107	99	122	130	5	676
보행자 보호의무 위반	4,379	10,072	6,564	4,937	4,631	2,015	858	33,456
신호위반	1,276	4,224	2,651	3,043	3,948	3,169	398	18,709
안전운전 의무 불이행	26,450	60,790	35,034	17,950	18,019	12,596	9,271	180,110
부당한 회전	248	559	299	111	97	48	190	1,552
중앙선 침범	460	847	668	397	377	194	134	3,077
기타	1,364	2,715	1,560	964	1,036	950	1,791	10,380
합계	34,220	79,377	46,883	27,501	28,230	19,102	12,647	247,960

※ 분석자료: 최근 5년간(2009~2013년) 경찰사고DB

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II. Characteristics of Pedestrian Accidents on Community Roads

Number of Pedestrian Traffic Accidents by Age

- Children under 13 (preschoolers): Most often on community roads (73.8%) (7 of 10 cases)
- Senior citizens age 65 and older: Most often on community roads (64.9%)

Category	연령대별									Total
	Under 13	13-20	21-30	31-40	41-50	51-60	61-64	65 and older	Unidentified	
Less than 3m	4,755	3,675	3,954	3,759	5,206	5,128	1,453	6,288	2	34,220
Less than 6m	10,078	8,472	10,032	8,717	12,172	11,960	3,654	14,291	1	79,377
Less than 9m	6,244	5,066	5,570	4,962	7,078	7,137	2,119	8,705	2	46,883
Less than 13m	2,945	3,307	3,300	3,069	4,335	4,260	1,269	5,011	5	27,501
Less than 20m	2,371	3,385	3,613	3,110	4,361	4,607	1,393	5,388	2	28,230
20m and wider	935	2,304	2,871	2,447	3,194	3,228	905	3,218	0	19,102
Other	1,232	1,097	1,664	1,636	2,117	2,032	614	2,252	3	12,647
Total	28,560	27,306	31,004	27,700	38,463	38,352	11,407	45,153	15	247,960

※ Source: Police accident DB for the last 5 years (2009-2013)

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II. 생활도로 보행교통사고 특성

연령별 보행교통사고건수

- 13세미만(초등학교 이하): 생활도로(73.8%)에서 가장 많이 발생 (10건 중 7건)
- 고령자(65세 이상): 생활도로(64.9%)에서 가장 많이 발생

구분	연령대별									합계
	13세미만	13-20	21-30	31-40	41-50	51-60	61-64	65세이상	불명	
3m미만	4,755	3,675	3,954	3,759	5,206	5,128	1,453	6,288	2	34,220
6m미만	10,078	8,472	10,032	8,717	12,172	11,960	3,654	14,291	1	79,377
9m미만	6,244	5,066	5,570	4,962	7,078	7,137	2,119	8,705	2	46,883
13m미만	2,945	3,307	3,300	3,069	4,335	4,260	1,269	5,011	5	27,501
20m미만	2,371	3,385	3,613	3,110	4,361	4,607	1,393	5,388	2	28,230
20m이상	935	2,304	2,871	2,447	3,194	3,228	905	3,218	0	19,102
기타	1,232	1,097	1,664	1,636	2,117	2,032	614	2,252	3	12,647
합계	28,560	27,306	31,004	27,700	38,463	38,352	11,407	45,153	15	247,960

※ 분석자료: 최근 5년간(2009~2013년) 경찰사고DB

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II. Characteristics of Pedestrian Accidents on Community Roads

Number of Pedestrian Traffic Accidents by Time of Day

- Pedestrian traffic accidents occur during evening rush hours (18:00-21:00) 2.2 times more often than during morning rush hours (06:00 – 09:00)
- Accidents on community roads during evening and at night (18:00-03:00) account for 63.3% of all accidents (due to late activities such as working overtime and get-togethers)

Category	Time Block								Total
	0-3	3-6	6-9	9-12	12-15	15-18	18-21	21-24	
Less than 3m	2,294	1,297	3,186	3,623	4,794	6,407	7,400	5,219	34,220
Less than 6m	6,044	3,241	7,478	8,454	10,868	14,262	16,759	12,271	79,377
Less than 9m	3,483	1,980	4,404	4,816	6,349	8,281	10,195	7,375	46,883
Less than 13m	2,406	1,350	2,947	2,738	3,265	4,344	5,901	4,550	27,501
Less than 20m	2,646	1,564	3,012	2,699	3,162	4,036	5,990	5,121	28,230
20m and wider	2,413	1,556	2,081	1,704	1,821	2,367	3,493	3,667	19,102
Other	867	458	1,065	1,660	2,050	2,384	2,431	1,732	12,647
Total	20,153	11,446	24,173	25,694	32,309	42,081	52,169	39,935	247,960

※ Source: Police accident DB for the last 5 years (2009-2013)

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II. 생활도로 보행교통사고 특성

시간대별 보행교통사고건수

- 출근시간대(6-9시)보다 퇴근시간대(18-21)가 보행교통사고 2.2배 높아
- 생활도로 저녁·밤시간대(18-03시): 전체사고 대비 63.3% 차지(야근, 모임 등 야간활동 많음)

구분	시간대별								합계
	0-3	3-6	6-9	9-12	12-15	15-18	18-21	21-24	
3m미만	2,294	1,297	3,186	3,623	4,794	6,407	7,400	5,219	34,220
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※ 분석자료: 최근 5년간(2009~2013년) 경찰사고DB

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II. Characteristics of Pedestrian Accidents on Community Roads

Word Cloud According to Statistics for Pedestrian Traffic Accidents on Community Roads



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II. 생활도로 보행교통사고 특성

통계로 바라보는 생활도로 보행교통사고 Keyword



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III. Causes of and Countermeasures against Pedestrian Accidents on Community Roads

1. Road environment: Effective walkway width and shared space between pedestrians and vehicles/mixed roads

- Observance of effective walkway width: Minimum of 1.5m; minimum of 2.0m to enable wheelchairs to cross
- Minimize the width of roads and shared/mixed roads: Establish people-centered roads (prevent speeding and illegal parking & stopping)

Problems
&
Solutions



Ⅲ. 생활도로 보행교통사고 원인과 감소대책

1. 도로환경: 유효보도폭 및 보차공존/혼용도로

- 보도의 유효보도폭 준수: 최소기준 1.5m, 휠체어 교행 가능한 최소폭 2.0m
- 차도폭 최소화 및 보차공존·혼용도로: 사람중심 도로환경 구축(과속 및 불법주정차 차단)

문제점
해결방안



III. Causes of and Countermeasures against Pedestrian Accidents on Community Roads

2. Road environment: Facilities to reduce speed and through traffic volume reduction facilities

- Simple safety facilities such as speed bumps and red zones are established
→ Temporary speed reduction
- Failure to observe standards for design and establishment of road safety facilities



Problems

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Ⅲ. 생활도로 보행교통사고 원인과 감소대책

2. 도로환경: 속도저감시설 및 통과교통량 감소시설

- 과속방지턱, 레드존 위주의 단순시설 설치
→ 일시적인 속도감소,
- 안전시설 설치·설계 기준 미준수



문제점

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III. Causes of and Countermeasures against Pedestrian Accidents on Community Roads

2. Road environment: Facilities to reduce speed and through traffic volume reduction facilities

Solutions

- Establish sophisticated road safety facilities
→ Introduce traffic calming and complete streets; and establish rumble strips/block pavement
- Establish raised speed bumps and crosswalks at the entrance to community roads



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Ⅲ. 생활도로 보행교통사고 원인과 감소대책

2. 도로환경: 속도저감시설 및 통과교통량 감소시설

해결
방안

- 단순 도로안전시설 설치 탈피
→ Traffic calming, Complete streets 기법 도입, 노면요철/블럭포장 설치
- 생활도로 진입지점 고원식 과속방지턱 및 횡단보도 설치

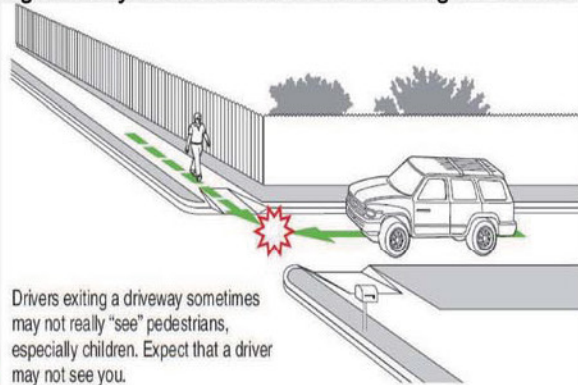


17

III. Causes of and Countermeasures against Pedestrian Accidents on Community Roads

3. Road environment: Right-of-way at unprotected intersections

- Frequent collisions due to failure to secure a clear field of view for the point of intersection
→ Install intersection signs; put crosses on the road; establish raised intersections, etc.
- Right-of-way should be established at unsignalized intersections



Problems
&
Solutions

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Ⅲ. 생활도로 보행교통사고 원인과 감소대책

3. 도로환경: 비보호 교차지점 통행권 확보

- 교차지점 시야 미확보로 인한 충돌사고 빈번
→ 교차로 알리미, 십자표시, 고원식 교차로 등 설치
- 비보호 교차로 통행우선권 확립



문제점
해결방안

18

III. Causes of and Countermeasures against Pedestrian Accidents on Community Roads

4. Traffic management: Speed control and vehicular traffic flow

- Lack of consistency in vehicular traffic flow: Violation of one-way traffic principle
- Poor speed control: Lack of continuity in speed limits; and designation of area-based 30 km/h zones and failure to link the zones to existing protection zones
→ Confusing vehicular traffic, increasing speed gap between road sections in area-based zones; and frequent speeding on community roads

Problems



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Ⅲ. 생활도로 보행교통사고 원인과 감소대책

4. 교통운영: 속도관리 및 차량통행방법

- 차량통행방법의 일관성 부재: 일방통행 원칙 위배
- 속도관리 미흡: 제한속도 연속성 부재, 면단위 30존 지정 및 기존 보호구역과의 연계성 미비
→ 차량통행 혼돈, 면단위 도로구간별 속도편차 증가, 생활도로 상 차량과속 빈번

문제점

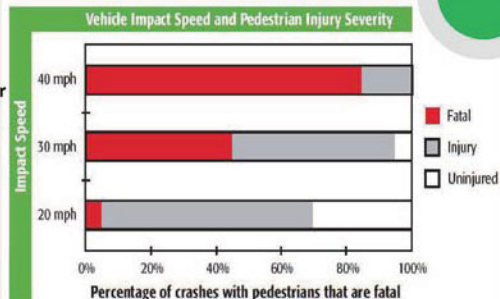


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III. Causes of and Countermeasures against Pedestrian Accidents on Community Roads

4. Traffic management: Speed control and vehicular traffic flow

- Establish rational line- or area-based speed limits
 - Maintain speed limit consistency for each road function
- Lower speed limits on community roads (30km/h or less)
 - Fatality rate at 20mph (32km/h): 10% or less
- Grid-type roads less than 6m wide: Switch to one-way traffic
- Community roads less than 13m wide: Consider introducing two-way left-turn lanes (TWLTL)



Solutions



40 mph



30 mph



20 mph



15 mph

Clear field of view at different speeds (from Oregon Main Street Handbook)

※ Source: Sharing the Road with Pedestrians (ADOT, 2011)

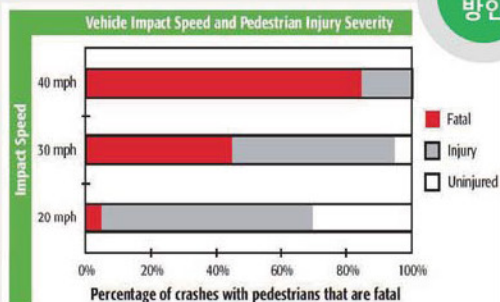
Complete Streets – A Guide for Vermont Communities (VDOH, 2012)

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Ⅲ. 생활도로 보행교통사고 원인과 감소대책

4. 교통운영: 속도관리 및 차량통행방법

- 합리적인 선/면단위 제한속도 설정
 - 도로기능별 제한속도 일관성 유지
- 생활도로 속도하향 (30km/h 이하)
 - 20mph(32kph) 치사율: 10% 이하
- 격자형 6m미만 도로: 일방통행 확대
- 13m미만 생활도로: 양방향 좌회전 차로 (TWLTLs) 적용 검토



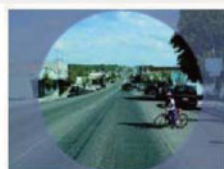
해결
방안



40 mph



30 mph



20 mph



15 mph

Clear field of view at different speeds (from Oregon Main Street Handbook)

※ 출처: Sharing the Road with Pedestrians(ADOT, 2011)

Complete Streets – A Guide for Vermont Communities(VDOH, 2012)

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III. Causes of and Countermeasures against Pedestrian Accidents on Community Roads

5. Traffic management: Illegal parking/stopping

- Frequent pedestrian traffic accidents result from field-of-view obstruction due to illegal parking/stopping
 - Tighten enforcement against illegal parking/stopping (esp. safety zones for the Transportation Vulnerable); and establish speed reduction facilities and 30 km/h zones simultaneously
- Strengthen parking/stopping controls
 - Actively enforce green parking system, common parking lots at residential areas, and shared parking space system; and turn small plots of empty land into parking lots

Problems
&
Solutions



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Ⅲ. 생활도로 보행교통사고 원인과 감소대책

5. 교통운영: 불법주정차

- 주정차로 인한 시야가림 보행사고 빈번
 - 주정차 단속 강화(특히 교통약자 보호구역 내), 속도저감시설 및 30존 병행 추진
- 주정차 관리방안 강화
 - Green Parking, 주택가 공동주차장, 주차공동이용제, 자투리땅 주차장 등 적극 시행

문제점
해결방안



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III. Causes of and Countermeasures against Pedestrian Accidents on Community Roads

6. Pedestrian behavior: Jaywalking

- The distance between two crosswalks is currently 200 meters, which will be relaxed → For community roads, it needs to be 50m -100m.
- Establish more facilities to prevent jaywalking: Install median strips and crash barriers on two-way roads with at least four lanes
- Make it a habit to reduce speed when cars waiting for a green light, in heavy traffic, or when cars are illegally parked/stopped at the roadside, when coming to a community road

Problems & Solutions

Special Report

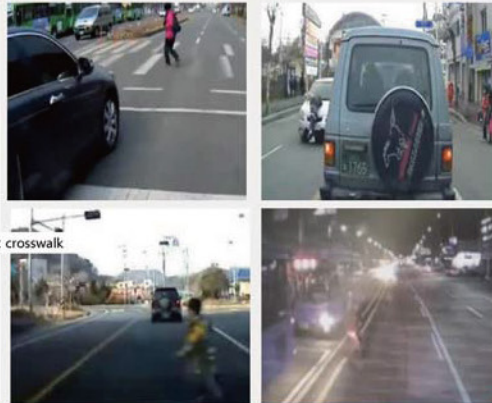
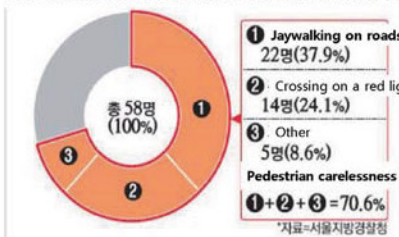
Pedestrians attempting to jaywalk account for 62% of traffic accident fatalities. Careless near home...Use extra caution.

7/14 15:04:22 04:09:01

f 0 0 0 0 0 0

보내기

Pedestrians killed in vehicle collisions in Seoul



Ⅲ. 생활도로 보행교통사고 원인과 감소대책

6. 통행행태: 보행자 무단횡단

- 횡단보도 설치간격 현행 200m 기준 완화 추진 → 생활도로 50~100m 차등화
- 무단횡단방지시설 설치 확대: 왕복 4차로 이상 도로 중앙분리대, 방호울타리 설치
- 생활도로 내 차량 신호대기 시, 교통혼잡 시, 가로변 불법주정차 시: 속도감소 운전 습관화

문제점
해결방안

기획
특집

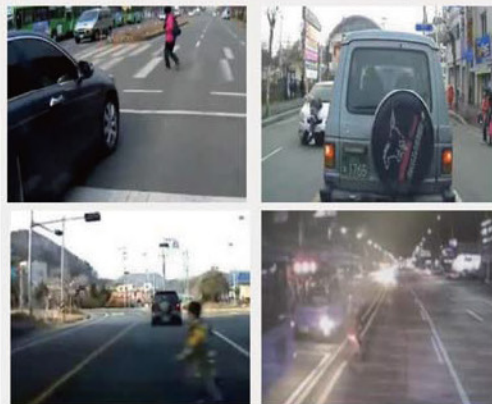
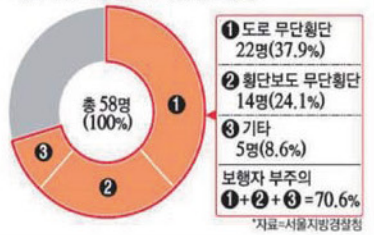
무단횡단 보행자도 설마하다...교통사고 사망자 62% 차지
집주변서 방심 특히 조심할

7/14 15:04:22 04:09:01

f 0 0 0 0 0 0

보내기

서울시내 교통사고로 사망한 보행자



IV. Conclusion

1. Improve community road environment

- ✓ Install more speed reduction facilities and sidewalks
- ✓ Increase walking/crossing facilities for the transportation Vulnerable
- ✓ Improve safety of shared and mixed roads
- ✓ Establish more facilities to prevent jaywalking

3. Raise traffic safety awareness

- ✓ Make it a habit to drive at lower speeds on community roads
- ✓ Comply with the 'Pedestrian First' principle on community roads
- ✓ Conduct campaigns on the dangers of jaywalking
- ✓ Strengthen education to avoid running and to look both ways before crossing roads

Measures to prevent pedestrian traffic accidents and lower pedestrian fatalities to about 3,000 persons

2. People-centered traffic management

- ✓ Designate effective pedestrian-centric zones (area-based)
- ✓ Lower speed limits by establishing 30 km/h, 20 km/h and 10 km/h zones
- ✓ Establish right-of-way at unsignalized intersections
- ✓ Strengthen time-based enforcement against illegal parking/stopping

4. Strengthen evaluation system for pedestrian safety programs

- ✓ Improve effectiveness of government-led pedestrian safety programs
- ✓ Conduct stringent effect analysis upon program completion
- ✓ Develop and disseminate best practices
- ✓ Give incentives to high-performing local governments

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IV. 맺음말

1. 생활도로 환경개선

- ✓ 속도저감시설 및 보도공간 확보 강화
- ✓ 교통약자 보행횡단지원시설 확충
- ✓ 보차공존·혼용도로 시설 개선
- ✓ 무단횡단사고 감소시설 확충

3. 교통안전의식 향상

- ✓ 생활도로 속도 하향 운전 습관화
- ✓ 생활도로 내 '보행자 우선' 원칙 준수
- ✓ 보행자 무단횡단 사고 위험성 계몽
- ✓ 도로횡단 시 '뛰지 말고, 좌우 살핌' 교육 강화

교통사고 사망자
3천명대 진입을 위한
보행사고 감소대책

2. 사람중심 교통운영

- ✓ 합리적인 보행중심 구역 지정(면단위)
- ✓ 30존, 20존, 10존 등 제한속도 하향
- ✓ 비보호 통행우선권 확립
- ✓ 불법주정차 시간제 단속 강화

4. 보행안전 평가체계 강화

- ✓ 정부주도 보행사업 실효성 제고
- ✓ 사업 완료 후 효과분석 강화
- ✓ 사업지 BP사례 발굴 및 전파
- ✓ 우수 지자체 인센티브 부여

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International Seminar on Pedestrian Safety

걷기 좋고 안전한 보행 도시 만들기

Walkable & Safe City