



High Speed Railway Impacts on Regional Economy - Lessons Learned in Korea

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A decorative graphic consisting of several parallel, slanted lines in shades of blue and grey, located on the left side of the slide.

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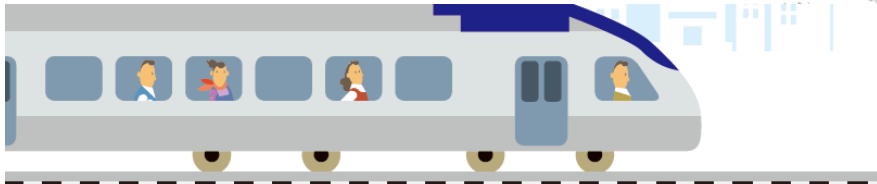
Economic Impacts

Lessons Learned

A decorative graphic in the top left corner consisting of several parallel, slightly curved lines in shades of blue and grey, suggesting a high-speed train or a network.

High Speed Railway Network in Korea

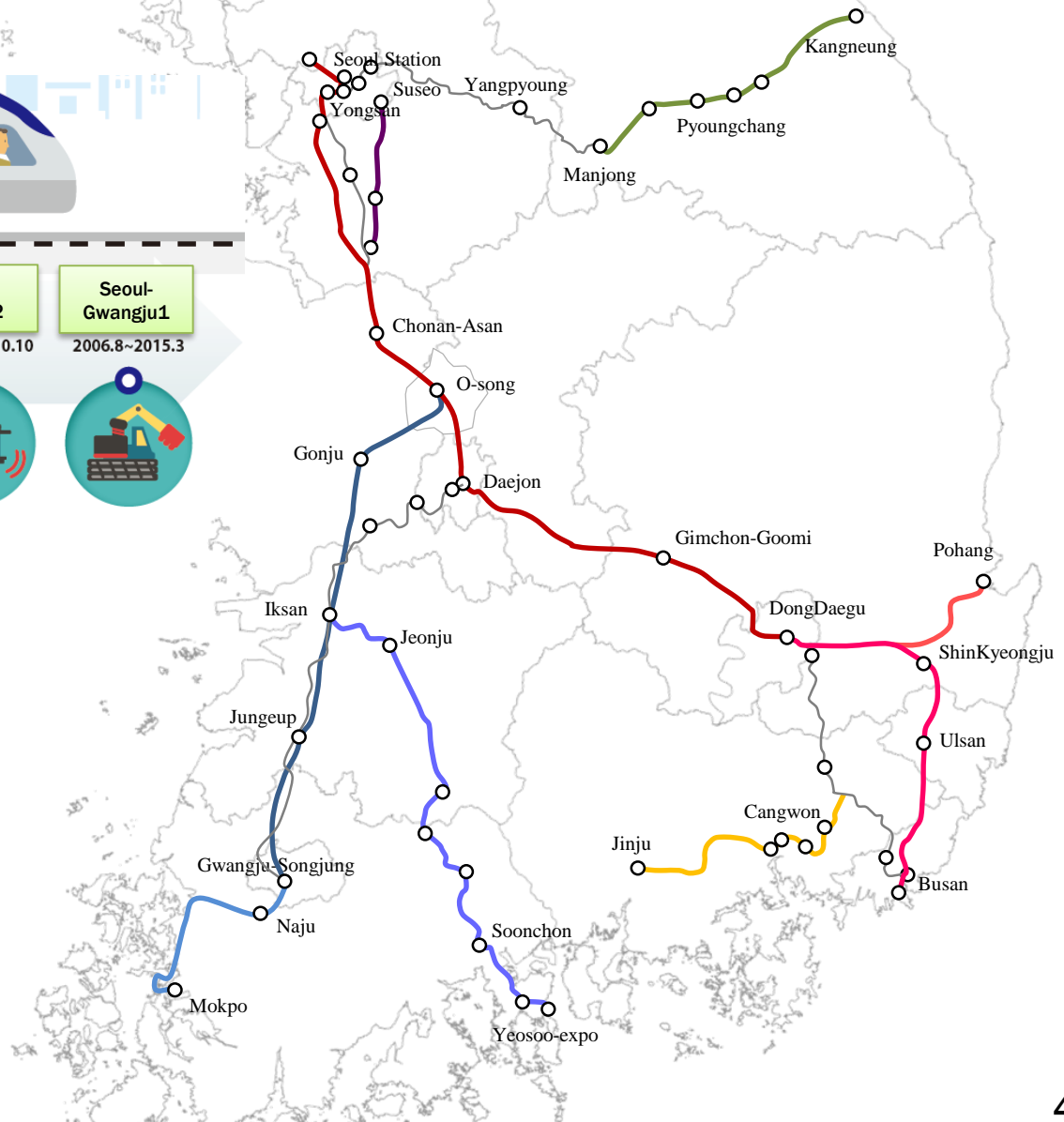
1. High Speed Railway Network in Korea



Feasibility	Plan approval	Seoul-Busan1	Seoul-Busan2	Seoul-Gwangju1
1984.1	1990.6 1993.6~1998.7	1992.6~2004.3	2002.1~2010.10	2006.8~2015.3



- Conventional Speed Railway
- KyeongBu 1(2004)
- KyeongBu 2(2010)
- KyeongJeon(2010, 2012)
- Cheolla(2011)
- Honam 1(2014)
- Donghae(2015)
- Suseo(2016)
- Honam 2(Plan)
- Kangneung(2017)



A decorative graphic in the top-left corner consisting of several parallel, slightly curved lines in shades of blue and grey, creating a sense of movement or a stylized 'K' shape.

Changes in Transport

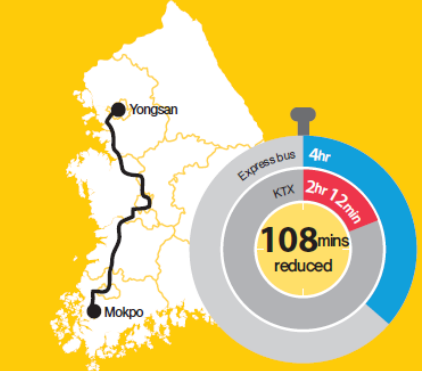
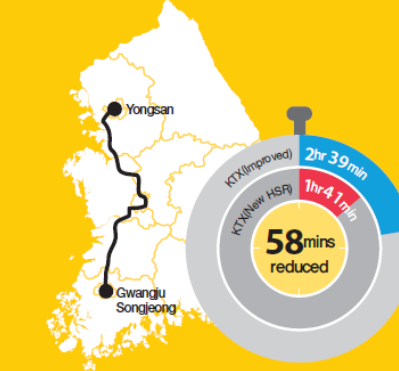
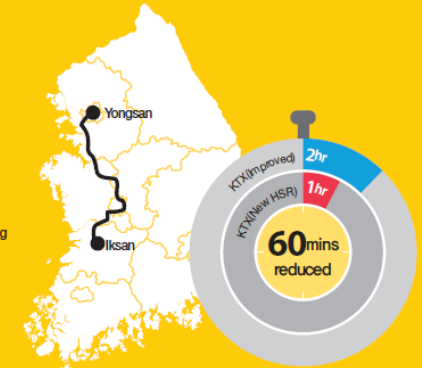
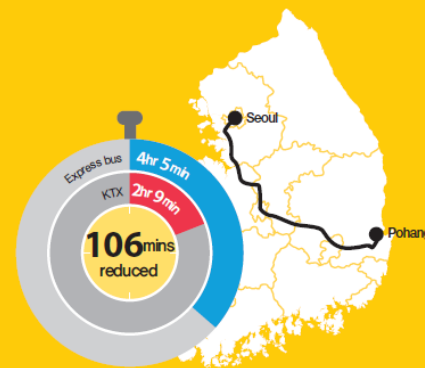
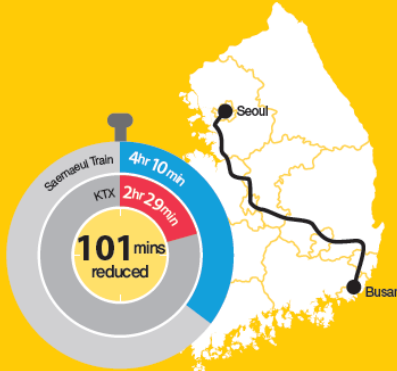
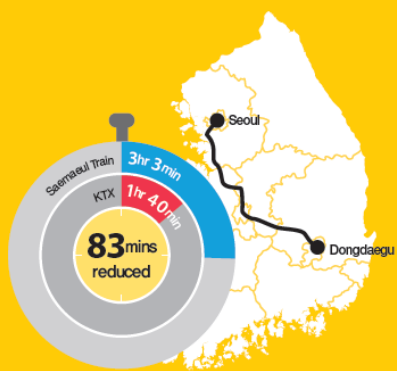
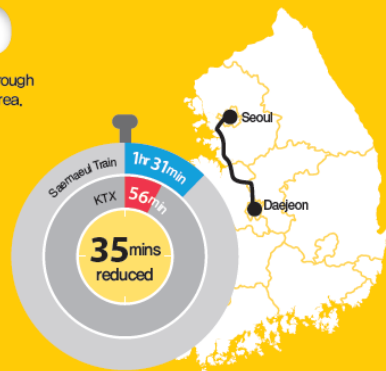
1. Travel Time

■ Time savings

Change in travel times before and after KTX

■ Travel time between cities has been significantly reduced through KTX services, transforming Korea into a large metropolitan area.

- Before KTX operation (Saemaeul Train or express bus time)
- After KTX operation (KTX time)



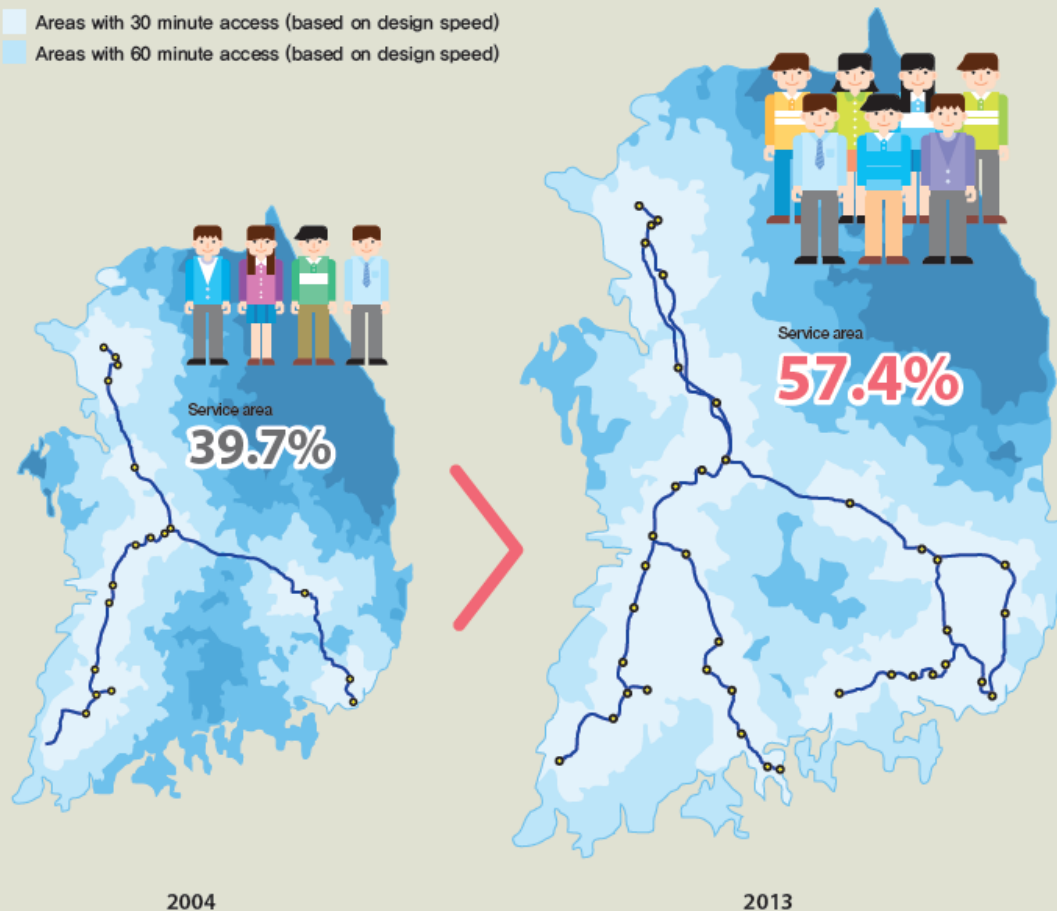
2. HSR Covered Area

■ Coverage

Expansion of KTX service area

- In 2004, only 39.7% area of the country could be accessible to a KTX station within an hour.
- However, due to the opening of the Gyeongjeon and Jeolla lines, the KTX service area was expanded to 57.4%.

- Areas with 30 minute access (based on design speed)
- Areas with 60 minute access (based on design speed)

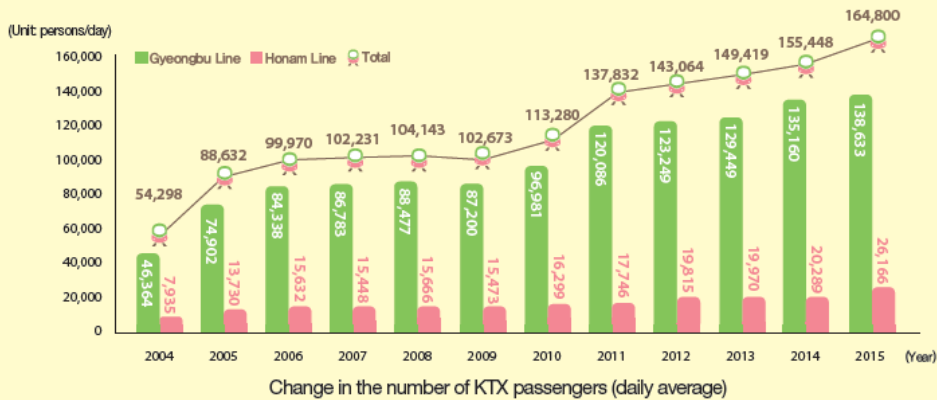
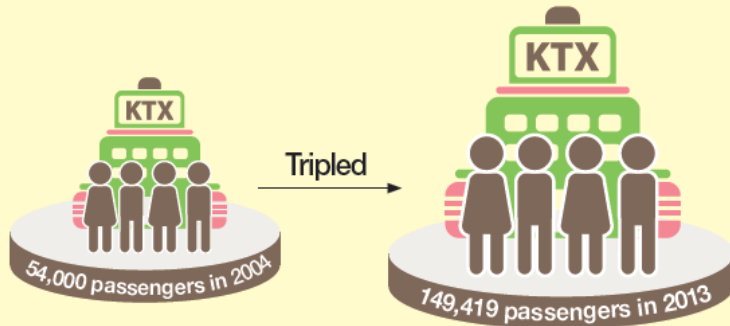


3. Ridership

Ridership

KTX ridership

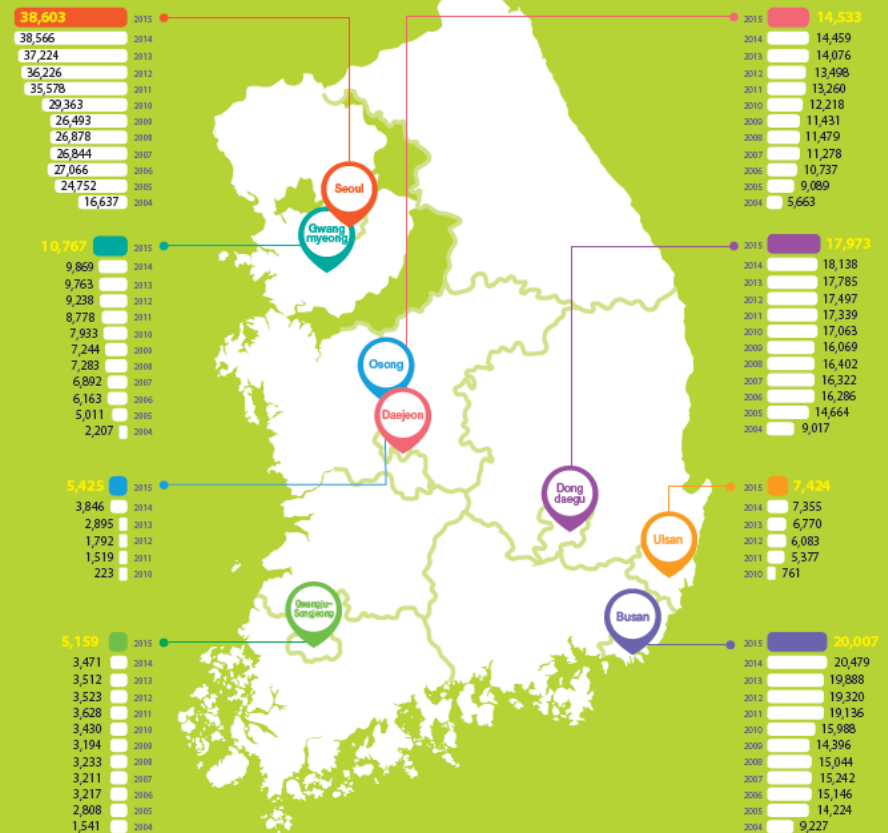
- The number of KTX passengers has increased steadily : it reached 164,000 passengers per day in 2015, which is more than triple the number of passengers in 2004.
- In particular, the number of KTX passengers on the Gyeongbu Line reached 138,633 persons/day, accounting for 84% of all passengers.



※ Source: Korail, KTDB

Trend of passengers on the Gyeongbu Line by KTX station

(Unit: daily average passengers getting on and off)



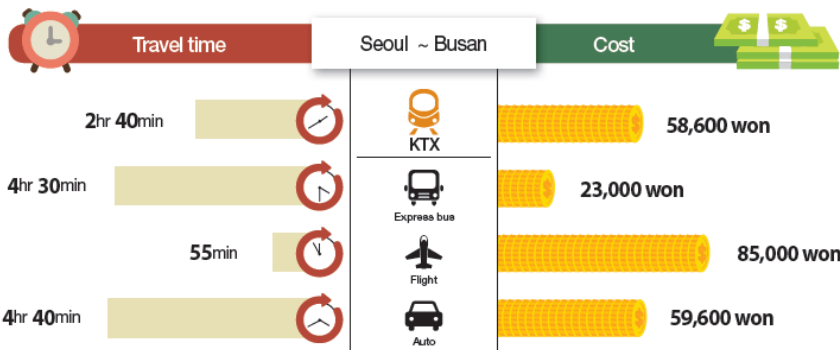
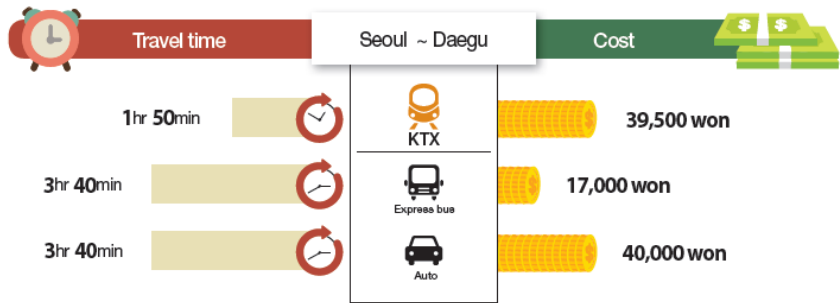
2017 → 216,781/day, 2018 → 232,416/day

4. Transport Mode Share

■ Modal shifts KyeongBu Line (Seoul – Busan)

KTX as a primary mode for intercity trip(Gyeongbu-line)

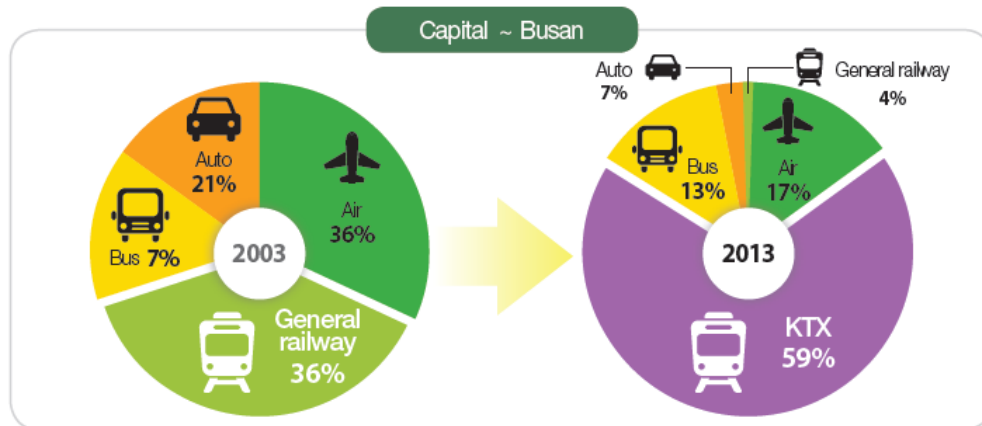
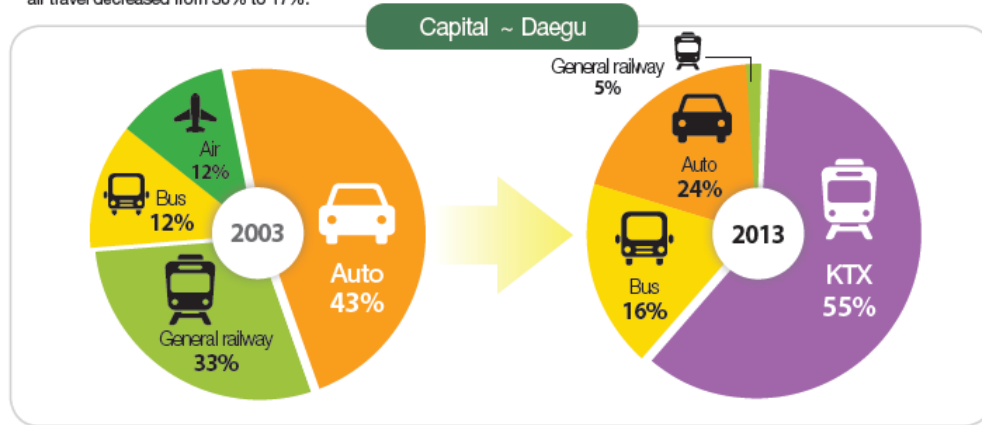
■ Due to its high speed and affordable fares, the KTX became more competitive than other transportation modes such as airplane and express bus.



※ Vehicle calculations are made with the assumption of 1.5 persons per vehicle

■ Modal share of railways (general & express) between Capital and Daegu rapidly increased from 33% to 60% after the Gyeongbu-line went into operation(2004), while demand for air travel decreased and was minimal in 2013.

■ During this period, the modal share of the railways between Capital and Busan also increased from 36% to 63%, and the demand for air travel decreased from 36% to 17%.



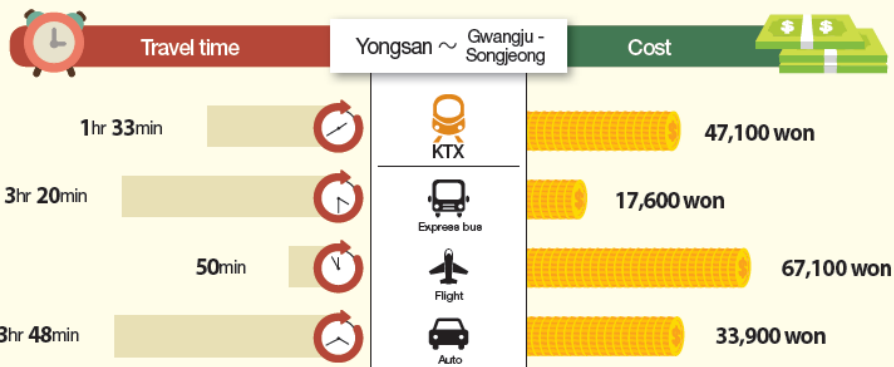
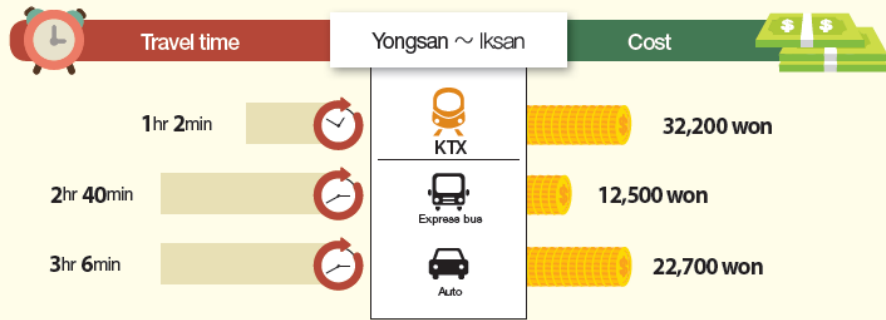
Change in mode share before and after KTX services

4. Transport Mode Share

■ Modal shifts Honam Line (Yongsan - Gwangju)

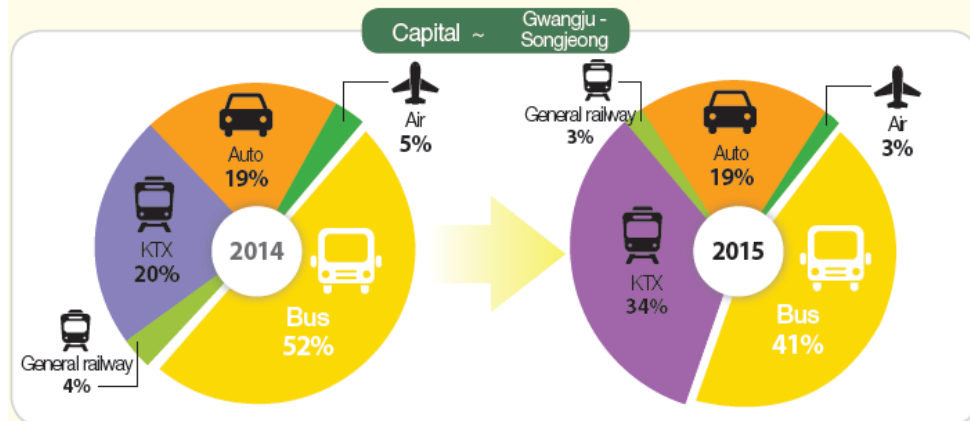
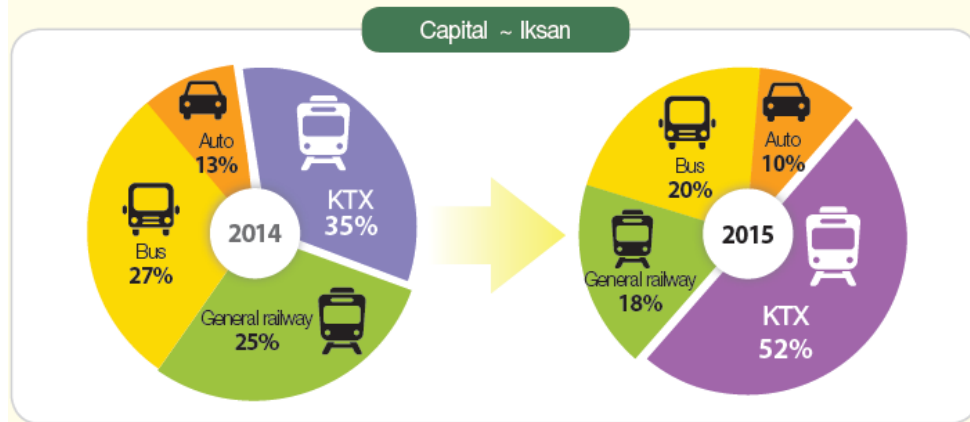
KTX as a primary mode for intercity trip(Honam-line)

■ Based on high-speed and reasonable fares, KTX became more competitive than other transportations(airplane, express bus).



※ Calculation for vehicle is done by applying assumption of 1.5 persons per vehicle.

- Modal share of KTX between Capital and Iksan dramatically increased from 35% to 52% after KTX Honam-line's operation(2015).
- At the same time, modal share of KTX between Capital and GwangjuSongjeong increased from 20% to 34% while the one for air travel decreased from 5% to 3%.



Change in mode share before and after KTX services

5. Station Area Development

■ Multi-modal Transport Complex

- Integrating all transport modes (HSR, local city metro, bus, taxi, etc.) at a multi-modal transport complex
- Local and inter-city traffic increases give new business opportunities
 - Meetings, tourism, conventions, expositions, shopping, etc.

Completed	Planned	In study
<ul style="list-style-type: none">• DongDaegu Station (2016)	<ul style="list-style-type: none">• Ulsan Station• Kwangju-Songjung Station• Iksan Station	<ul style="list-style-type: none">• O-song• Mokpo• Sooseo• Dongtan• Jije• ...

5. Station Area Development

DongDaegu Multi-modal Transport Complex

Setting	<ul style="list-style-type: none"> - Selected as a National Pilot Project(2010) - Integration of KTX, Intercity bus, local bus, metro - Transport infra + shopping, entertainment, education, etc. 		
Project time	- 2010~2016		
Cost	- 1 Billion USD	Developer	- Shinsegae (2 nd largest in shopping)
Physical size	<ul style="list-style-type: none"> - Space : Land 36,000m², Floor 275,000m² - Building : underground 7floors, ground and over 9floors - Facility types : HSR and Bus Terminal, Culture-Education, Theme Park, Department Store, etc. 		



- ✓ Ridership KTX: 17,684,000/yr → 20,785,000/yr (16% ↑)
- ✓ Ridership Metro: 8.7 million/yr → 12.4 million/yr (40% ↑)
- ✓ # Visitor store: 33 million/yr
- ✓ Revenue store: 660 billion KRW/yr

5. Station Area Development

서울경제(2017. 11.22)
[건축과 도시-신세계동대구복합환승센터]흠어진 대중교통역 하나로... 낙후된 구도심에 활기 불어넣다



신세계동대구복합환승센터의 독특한 외관은 거대한 건물임에도 무겁지 않은 느낌을 주고, 복합 시설이 결합된 건축물의 의도를 잘 드러낸다.

KTX동대구역이 위치한 동구는 대구 내에서도 상대적으로 낙후된 곳이었다. KTX역,지하철,고속버스,일반 버스 등의 대중교통 노선이 교차하고는 있었지만 역이 이리저리 흠어져 있어 이용이 불편했다. 구심점이 없다 보니 상권의 활기도 떨어졌다.

이 같은 대구 구도심의 얼굴을 신세계동대구복합환승센터(이하 신세계동대구센터)가 바꿨다. 2017년 한국건축문화대상 우수상 수상작인 신세계동대구센터는 그 자체로 웅장하고 세련된 위용을 드러내면서 동 동시에 이 일대 개발의 촉매제로 역할을 하고 있다.

시작은 2000년대 말 정부가 추진한 국가기간복합환승센터 개발사업이었다. 흠어져 있는 교통결절점(공항·항만·철도·버스·지하철역) 중심으로 복합환승센터를 만들어 연계환승 교통체계를 구축하고 이를 기반으로 도시재생을 유도하기 위한 정책이었다.

신세계동대구센터는 그중에서 처음 완공된 사례이면서 건축적·경제적 측면에서도 가치가 높은 건축물로 평가된다.

영남일보(2017. 12.11)

경제
 동대구역복합환승센터 개장 1년...열차이용객 300만명 가까이 급증

경제일반

f t g+ n g 기사내보내기

인쇄 - +

박광일기자 2017-12-11 [기사기사 더보기](#)

1호선 동대구역 이용객도 폭증
 360여만명 늘어 1238만명 훌쩍

■ 동대구역복합환승센터 효과

HSR



동대구역 열차 이용객
 1786만4000명 → 2078만5000명

Metro



도시철도 1호선 동대구역 이용객
 877만9692명 → 1238만6906명

□ 12월15일로 개장 1주년을 맞는 동대구역복합환승센터와 대구신세계백화점 주변에 유동 인구가 급증하고, 각종 개발사업이 활기를 띠고 있는 것으로 나타났다.

10일 코레일·<주>SR에 따르면 올해 1월부터 11월까지 동대구역에서 열차를 이용한 승객은 모두 2천 78만 5천 명으로 집계됐다. 이는 지난해 같은 기간(1천 786만 4천 명)에 비해 16.3%(292만 1천 명) 늘어난 수치다.

도시철도 이용객도 급증했다. 대구도시철도공사에 따르면 올해 1~11월 도시철도 1호선 동대구역 승·하차 인원은 모두 1천 238만 6천 906명이다. 지난해 같은 기간엔 877만 9천 692명이 동대구역에서 도시철도를 이용했다. 불과 1년 만에 무려 41%(360만 7천 214명)가 늘어난 것이다.

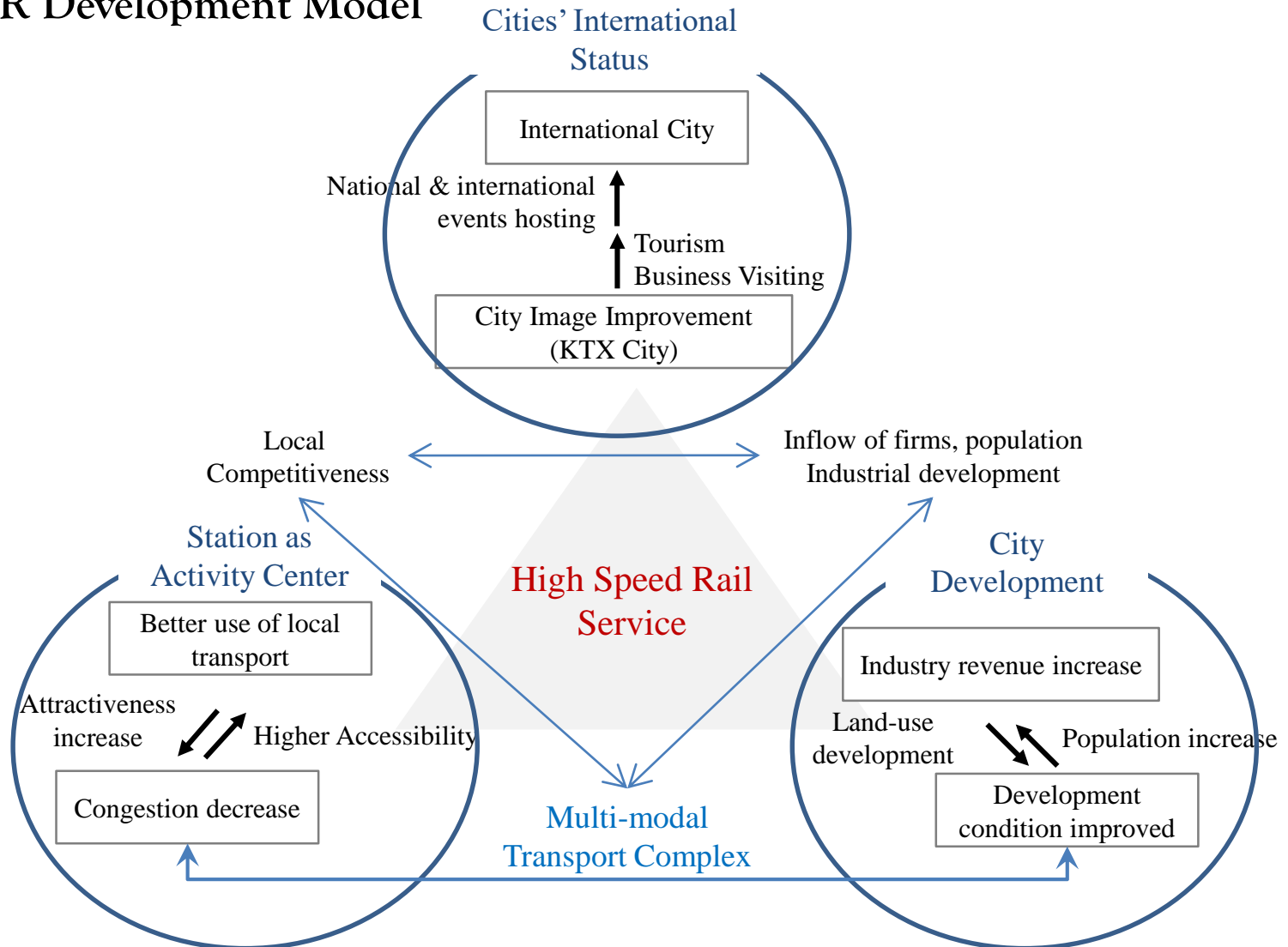
환승센터 주변 도로 여건 등도 크게 개선됐다. 동대구역고가교 개체·확장공사 완공에 따라 동대구로가 왕복 6차로에서 10차로로 넓어졌다. 동대구역 광장도 5배 이상(4천 600→2만 6천 ㎡) 커졌다. 주변엔 대단지 아파트 공사가 진행 중인 데다 최근 재개발 아파트 단지 2곳이 분양에 나서는 등 부동산 개발·거래도 활발하다. 음식점·카페 등 다양한 상업시설도 잇따라 들어서고 있다.

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Economic Impacts

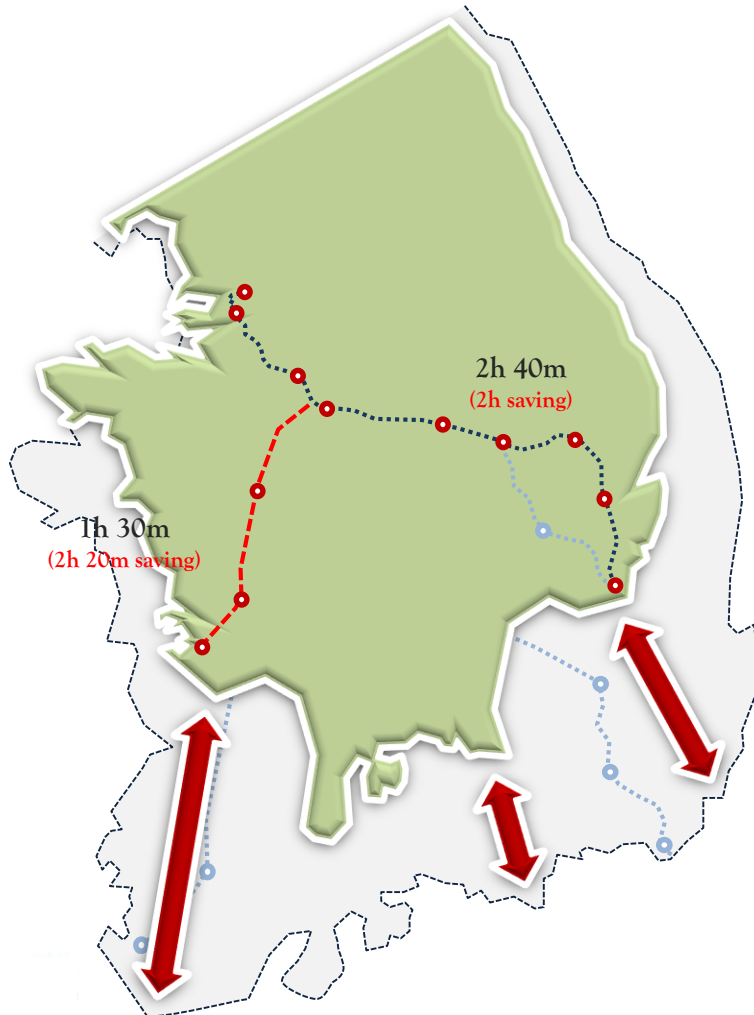
1. Impact on Locality and City

■ HSR Development Model



Removing distance barrier

National territory map shrunk in travel time



Better Accessibility

Business Opportunities in Long-distanced Regions

Employment/revenue Increase in HSR Covered Areas

National Economy Growth

3. National HSR Ridership Increase

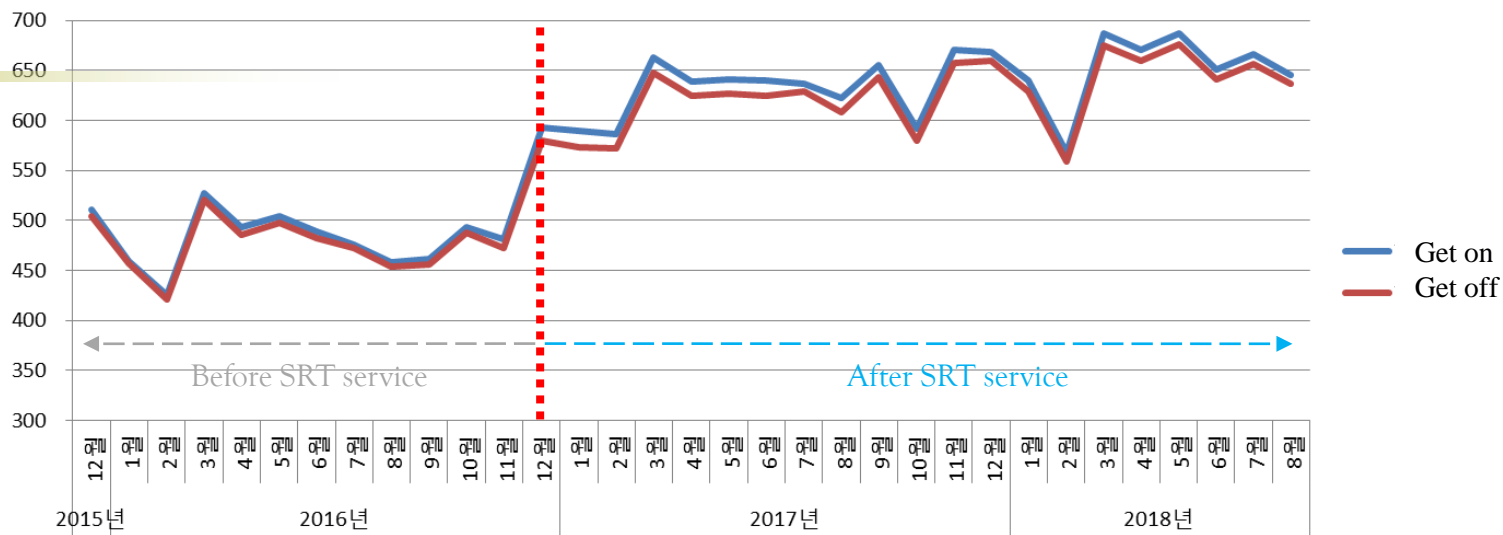
- HSR ridership

- Tour and business travel increased
- In 2018, 400 person-km of HSR on average

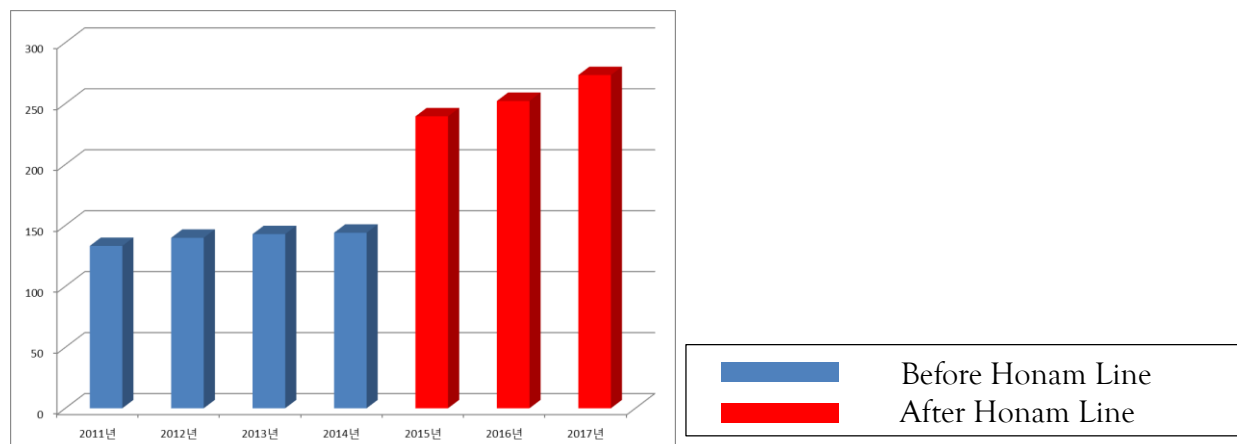
		2011	2012	2013	2014	2015	2016	2017
KTX	Passenger-km (10millions)	1,338	1,389	1,427	1,471	1,539	1,638	1,942
	population (thousands)	50,734	50,948	51,141	51,328	51,529	51,696	51,778
	Passenger-km/population	263.7	272.6	279.0	286.6	298.7	316.9	375.1
구분		2004	2005	2006	2007	2008	2009	2010
KTX	Passenger-km (10millions)	555	886	978	985	999	976	1,082
	population (thousands)	48,584	48,782	48,992	49,269	49,540	49,773	50,516
	Passenger-km/population	114.2	181.6	199.6	199.9	201.7	196.1	214.2

4. Change in Connected Local Metro

Ridership change of Seoul Bundang Line



Revenue change of Gwangju Metro

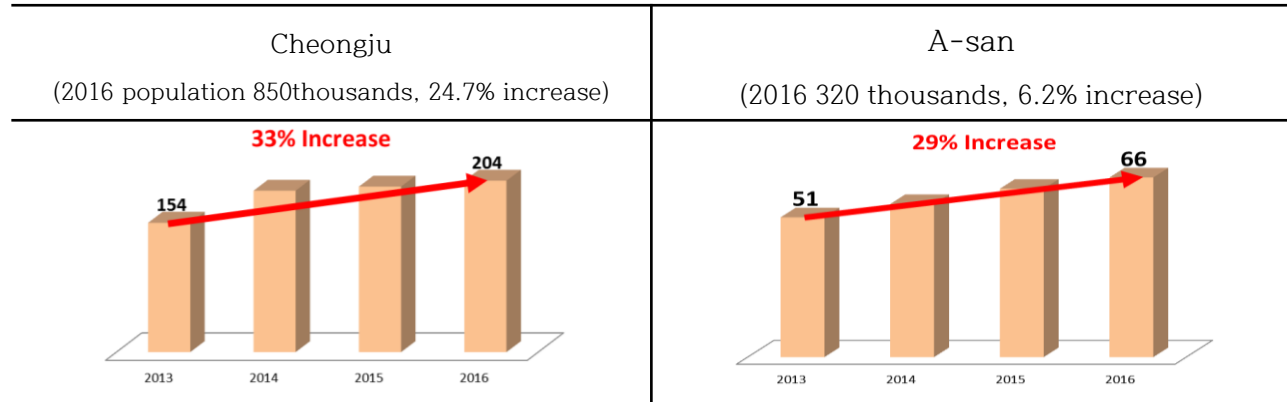


100 million
KRW

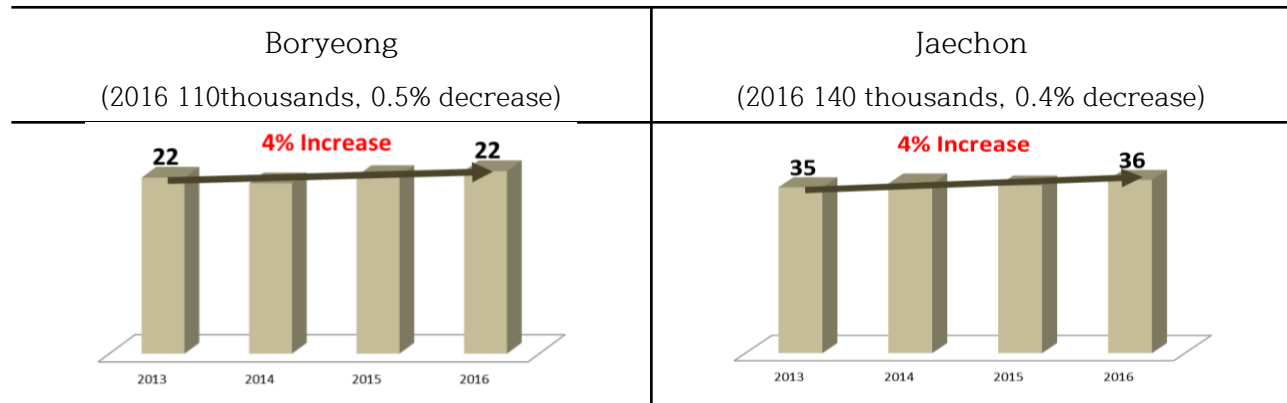
5. Population Change

■ Choongcheong province city population

HSR-connected



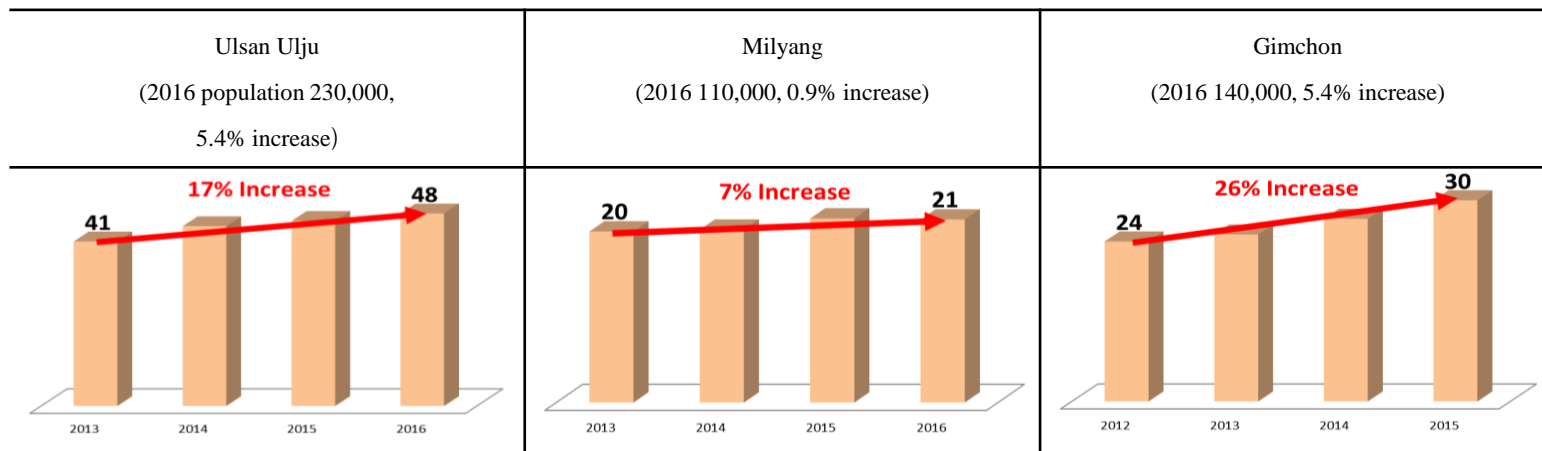
HSR-not-connected



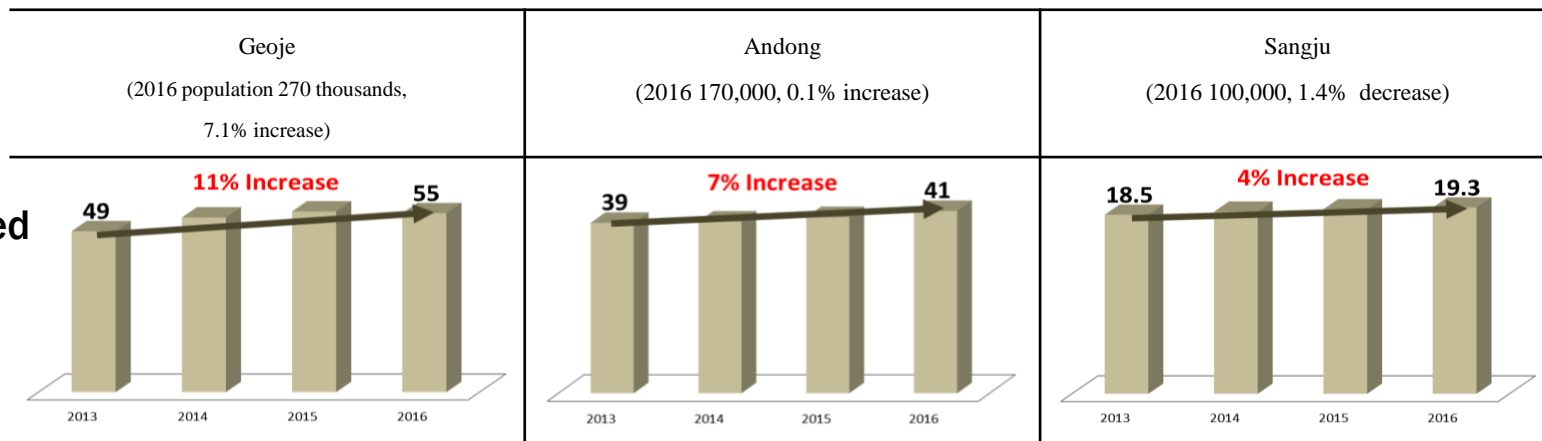
5. Population Change

■ Youngnam province city population

HSR-connected

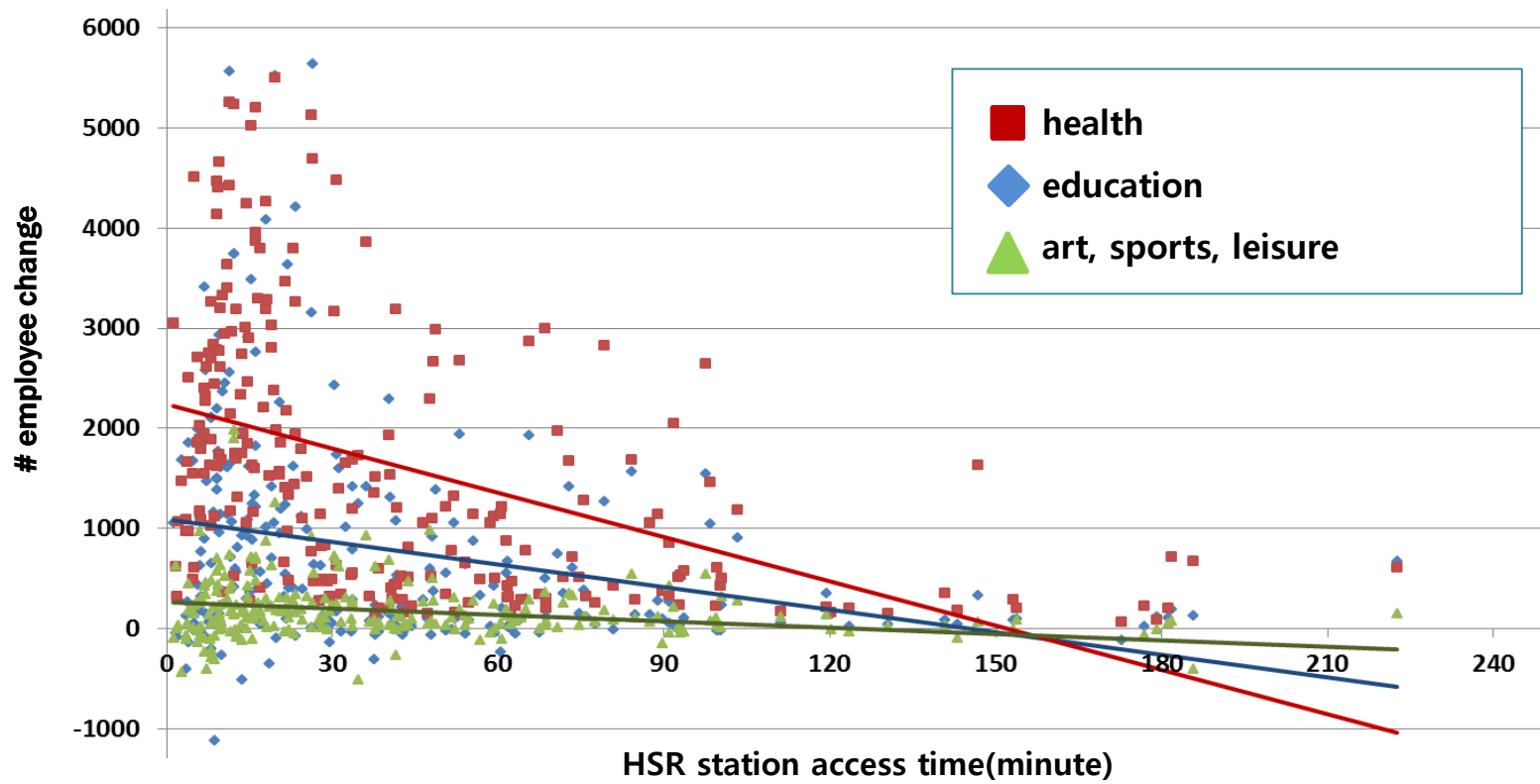


HSR-not-connected



6. Employment Change

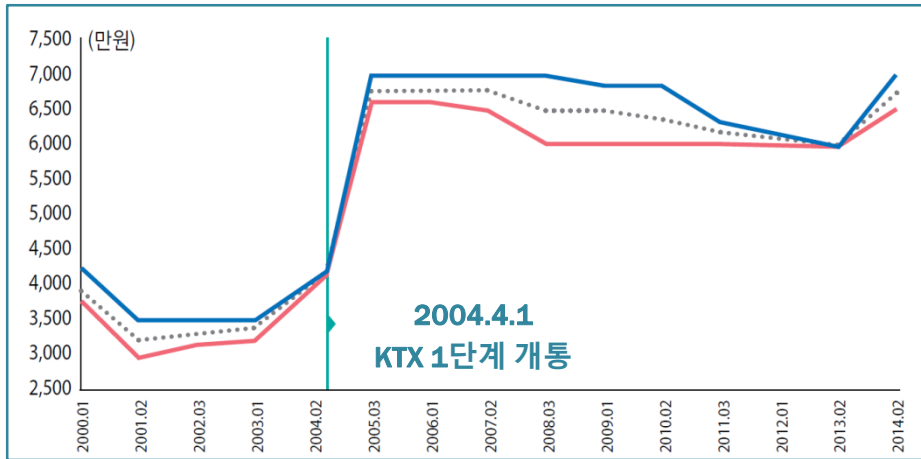
■ Service sector employment increase



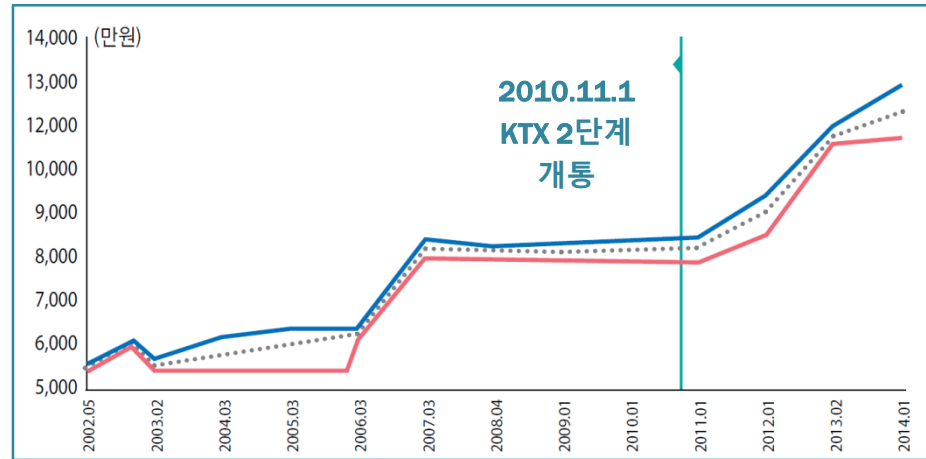
7. Real Estate Price Change

■ Housing apartment price change in HSR coverage

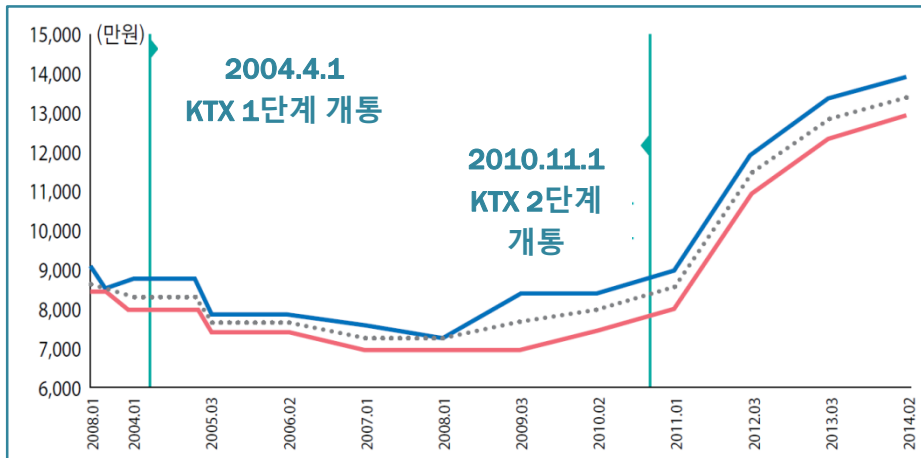
— highest
— Lowest



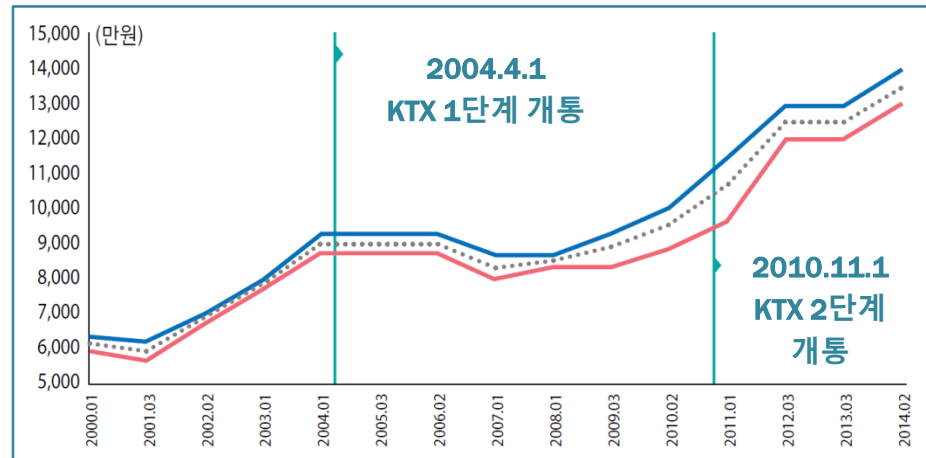
[대구시 동구 신암동 00아파트]



[경주시 충효동 -아파트]



[천안시 쌍용동 xx아파트]




[대전시 중구 대흥동 △△아파트]

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Lessons Learned

- HSR had positive impacts on regional economy
 - Revenue, employment, land price, local transport ridership increased
 - Passengers and visitors provided new business opportunities
- Size of impacts were different at stations
 - Stations located far from city center had limited benefits
- Coordination was crucial for HSR station area development
 - Multi-modal transport complex effect was significant but it needed to overcome many hurdles: coordination of stake holders, legal regulations, development plans (transport, landuse, industry, housing, etc.)

- Creativity is needed for financing station area development project
 - How to share risk and profit among public and private investors
 - How to facilitate land acquisition process
- Local leadership is an essential factor for success
 - DongDaegu multi-modal transport complex was possible thanks to local government's strong leadership



사람·환경·교통의 조화 속에 미래의 삶을 풍요롭게 바꾸는
한국교통연구원

감사합니다
Thank you