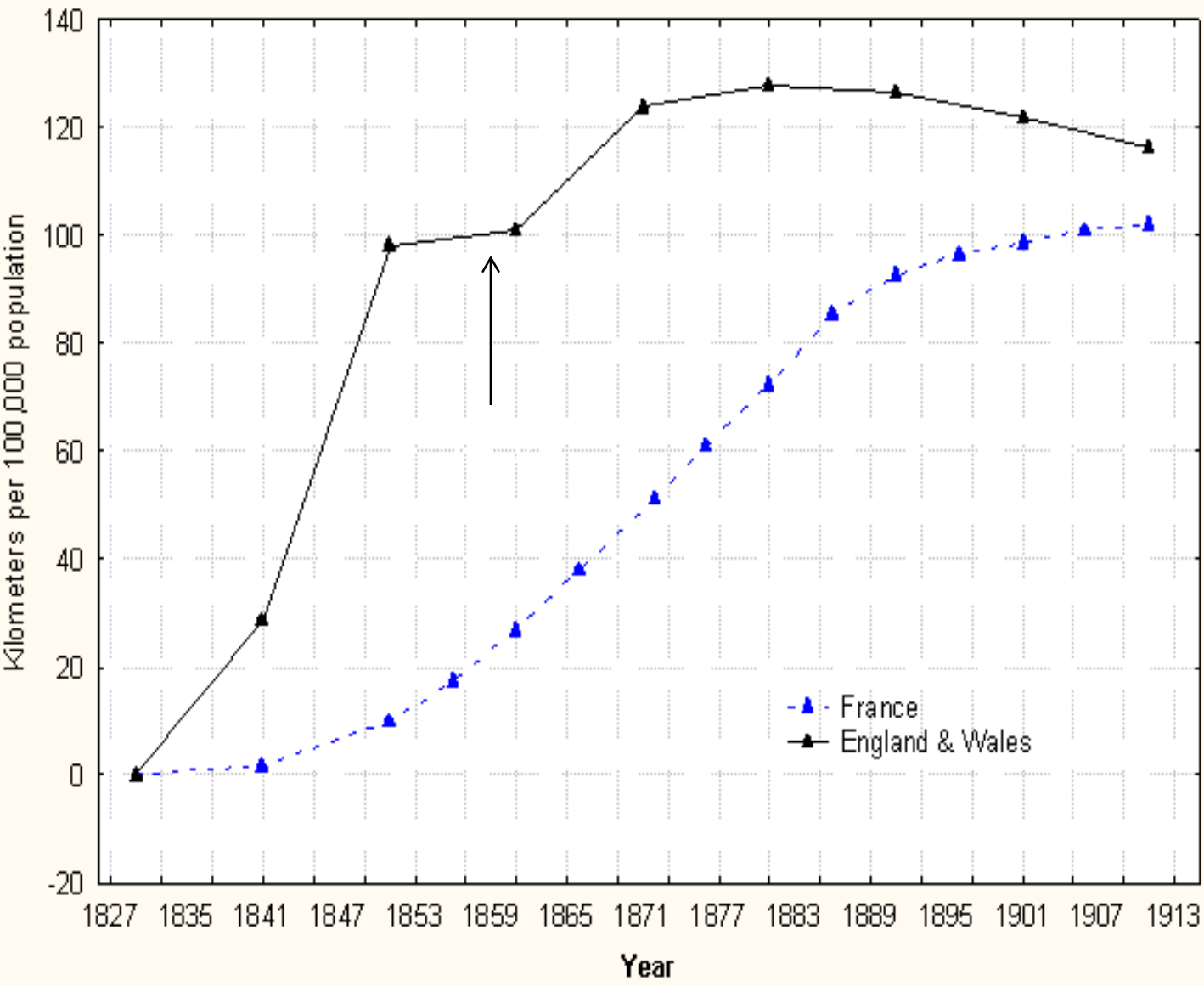
The image features two topographic maps. The upper map shows Great Britain and Ireland, with a dense network of red lines representing railway routes. The terrain is color-coded by elevation, with green for lower elevations and yellow/brown for higher elevations. The lower map shows France, also with red lines for railway routes and color-coded terrain. The railway network in France is particularly dense in the eastern and southern regions. The background is a solid blue color.

# Railways and Uneven Geographic Development, in Britain and France 1840-1914

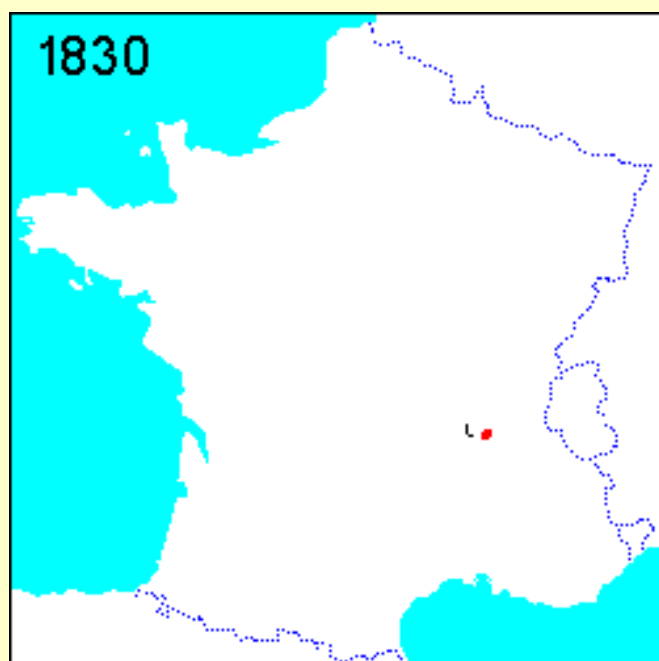
Robert Schwartz  
Mount Holyoke College

The Great Train Race: Britain vs. France  
 Converging paths of development, 1827-1913  
 [rail density=kilometers of rail  
 by 100,000 inhabitants]

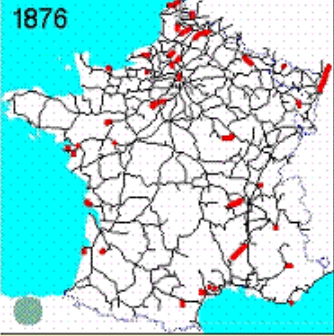
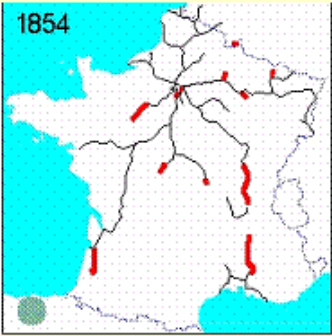
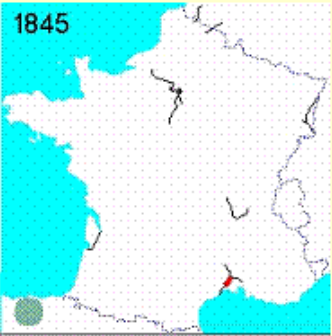
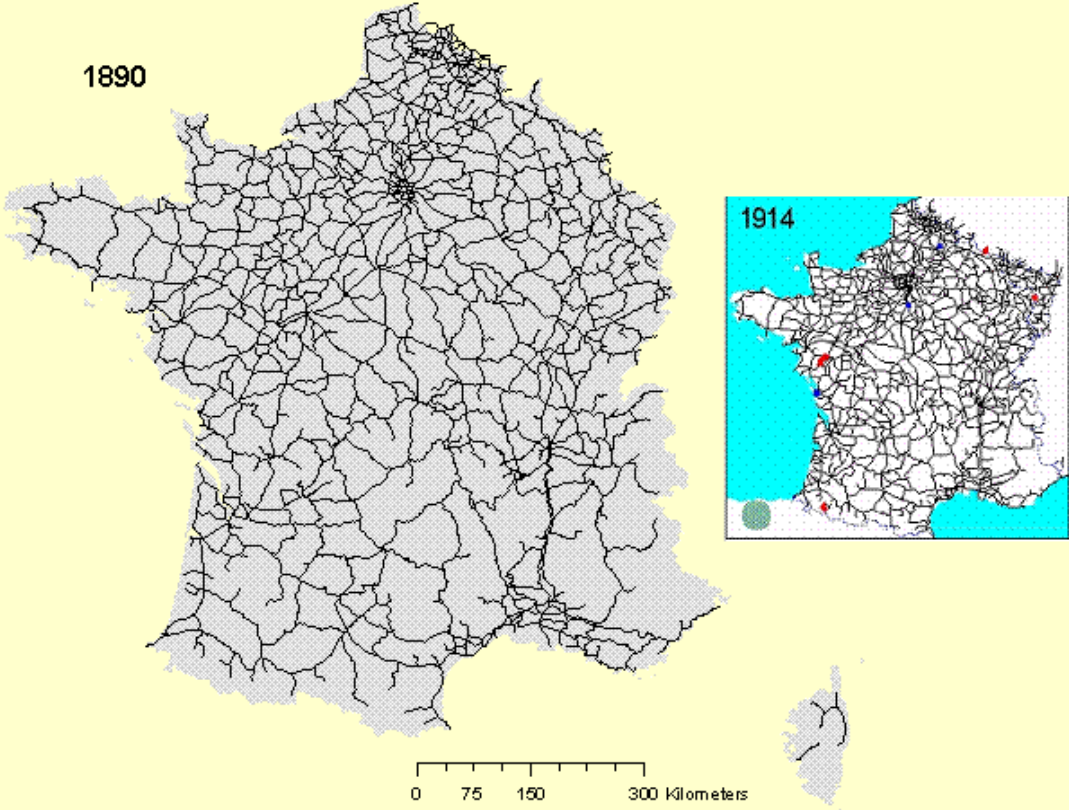
France and England & Wales: Kilometers of Railway per 100,000 people



Average rail density by area  
 England and Wales: 16 km / km<sup>2</sup>  
 France: 7 km / 100 km<sup>2</sup>



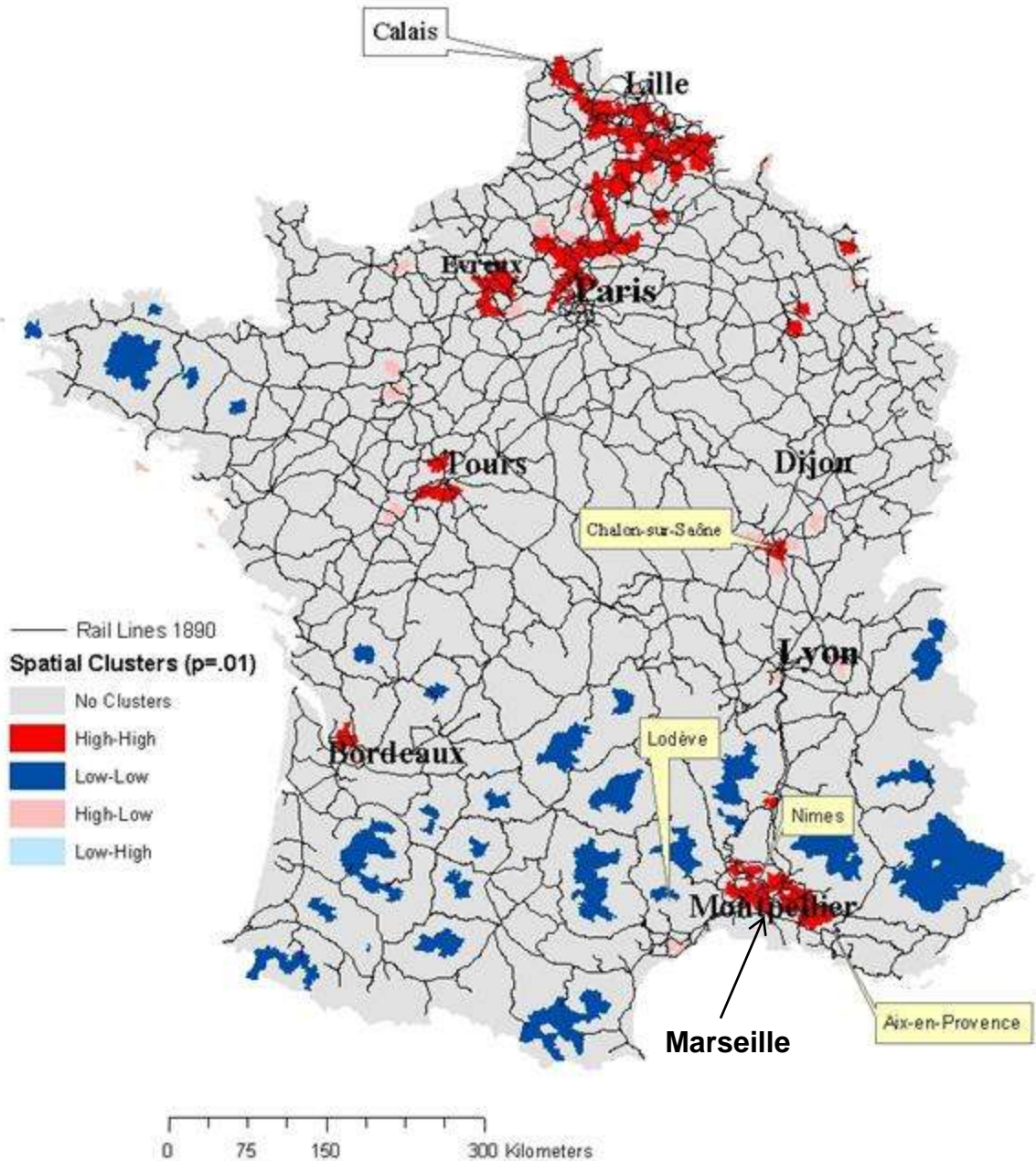
# The Growth of the rail network in France 1827-1914



# Regional Disparities in Rail Transport, 1890

Mapping LISA statistics [local indicator of spatial auto-correlation]

## Uneven Development: Geographic Clustering of Rail Transport in 1890

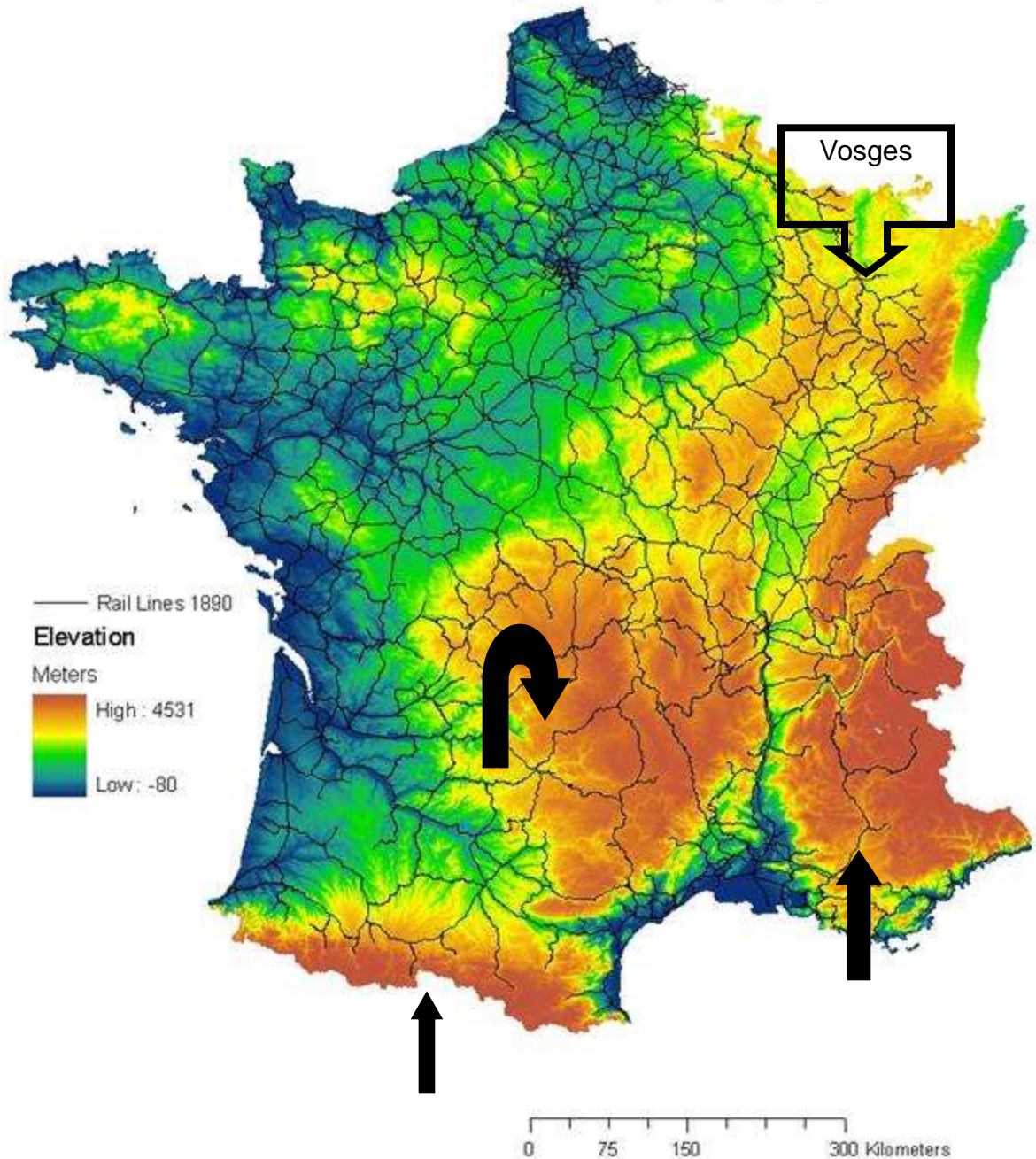


*red* = clusters of high rail density

*blue* = clusters of low or negligible rail density

# Digital Terrain Model: the influence of topography on regional differences in the accessibility of rail transport, 1890

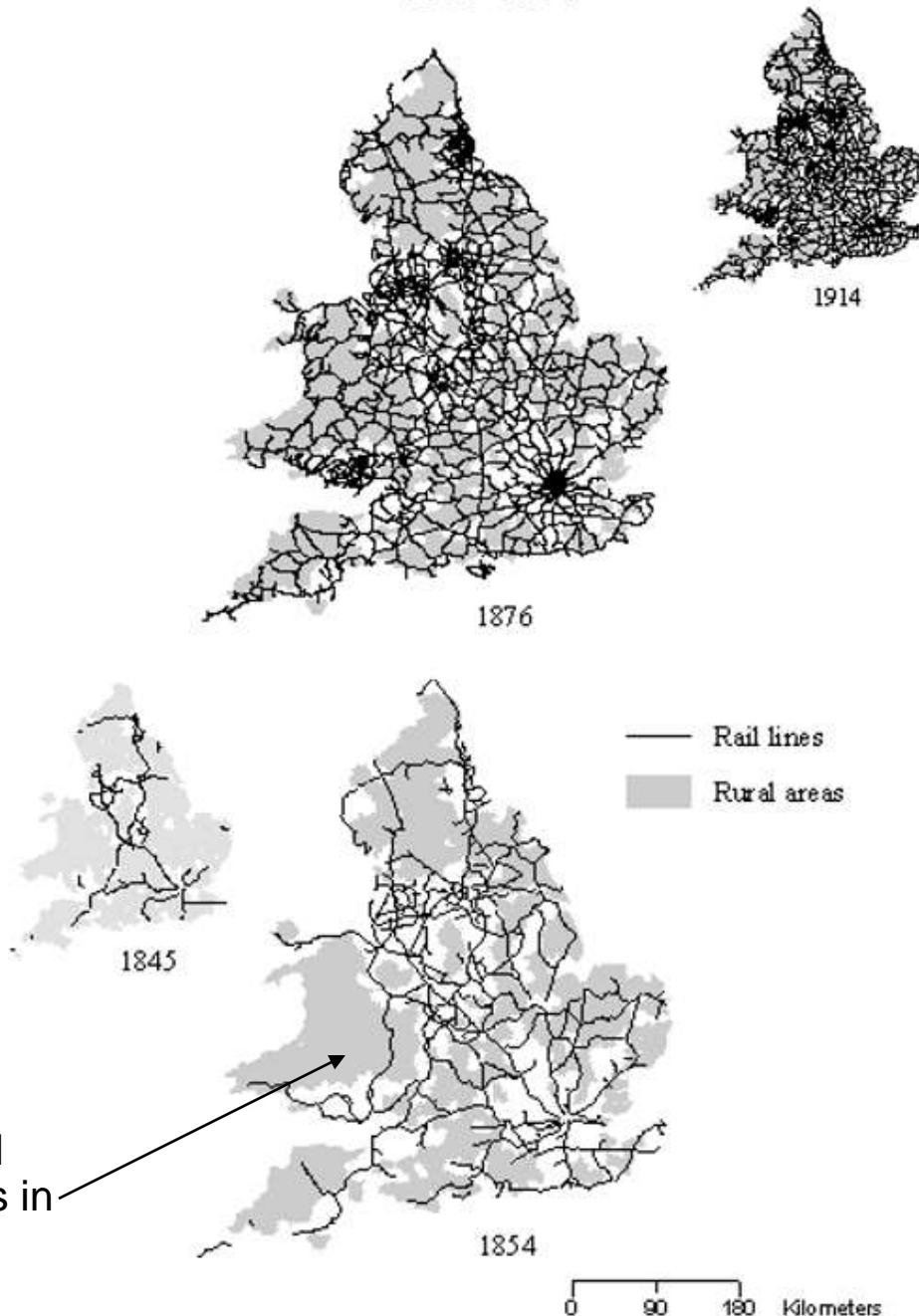
## The Rail System in 1890 and the Challenge of Topography



# The Growth of rail network in England and Wales, 1845-1914

By what period did the railways reach rural areas?

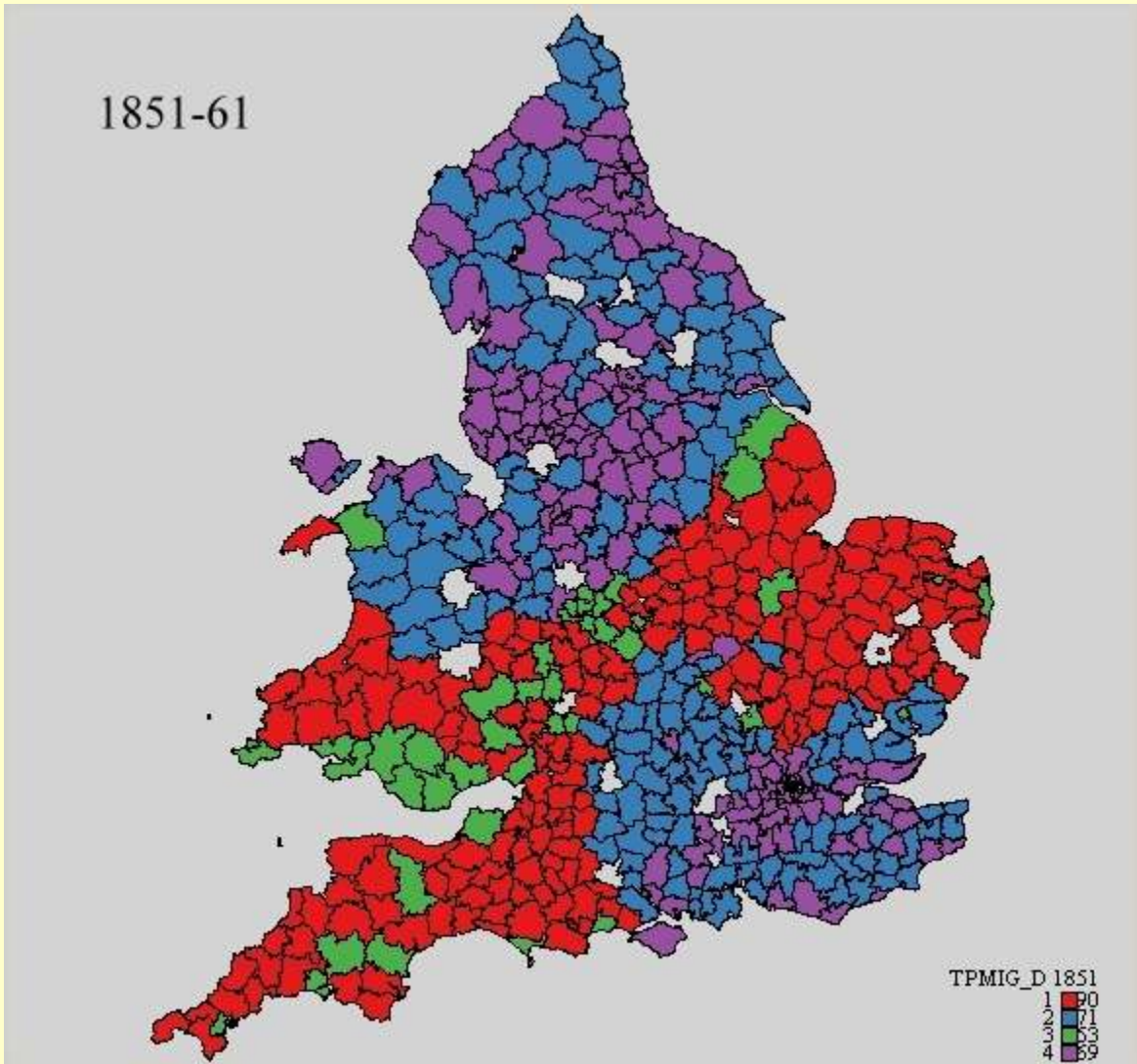
The Growth of the Rail System in England and Wales  
1830-1914



Rural areas in gray

Source: The Victorian Railway GIS

Patterns of spatial auto-correlation of net migration  
by decade,  
1851-61 through 1901-1911  
(results from localized Moran' s I statistics)



Positive spatial auto-correlation

- *red* = high levels of out migration
- *purple* = high levels of in migration

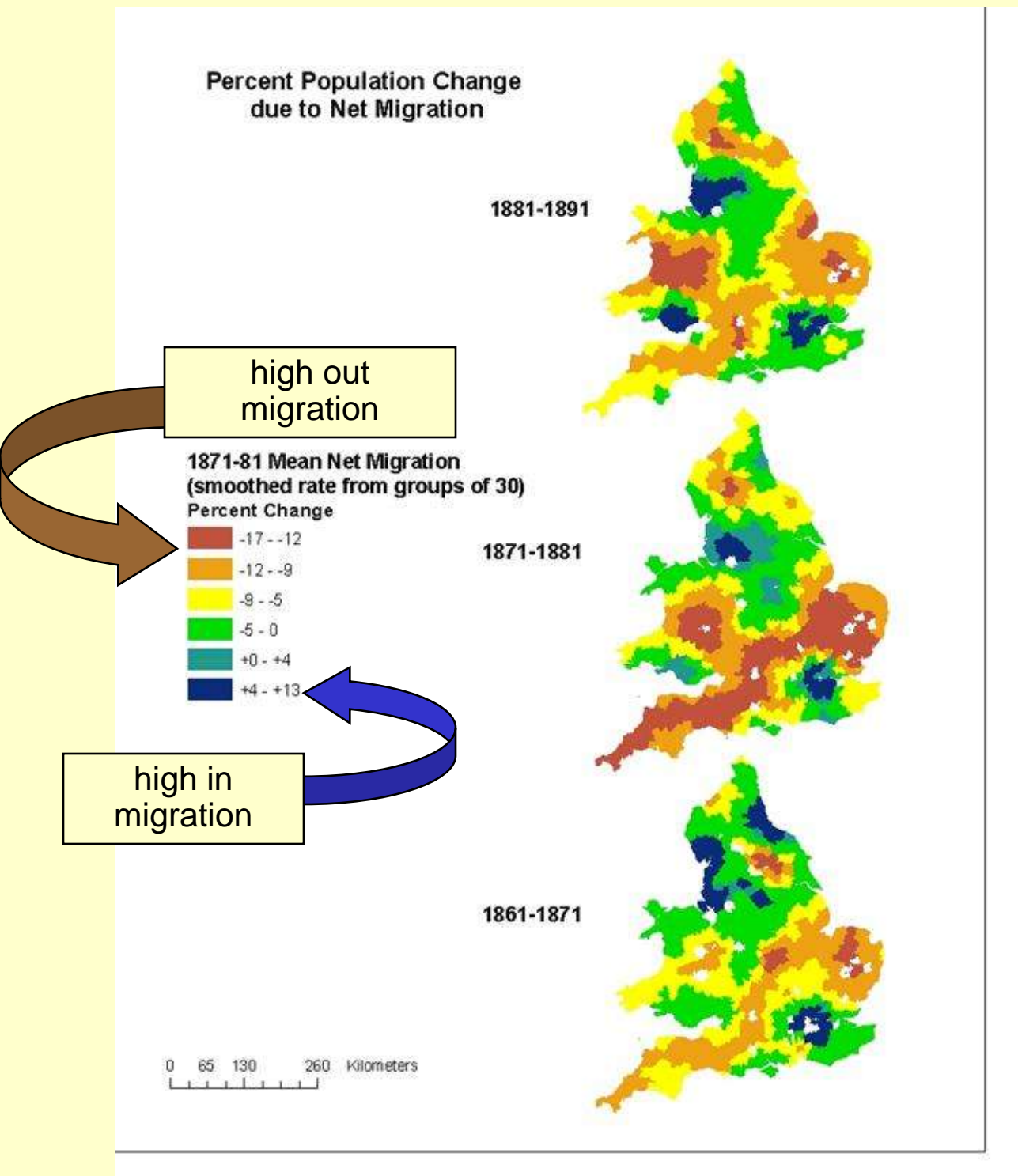
Negative spatial auto correlation

- *green* = weak out migration and strong in migration
- *blue* = high out migration and weak in migration

**Animation**



# England and the Wales: Population Change because of net migration, 1861-91



**net migration** = inter-censusal population change - change from natural increase (births-deaths) during the same period

# Estimating the spatial and temporal relationship between rail transport and net migration: an Geographically Weighted Regression (GWR)

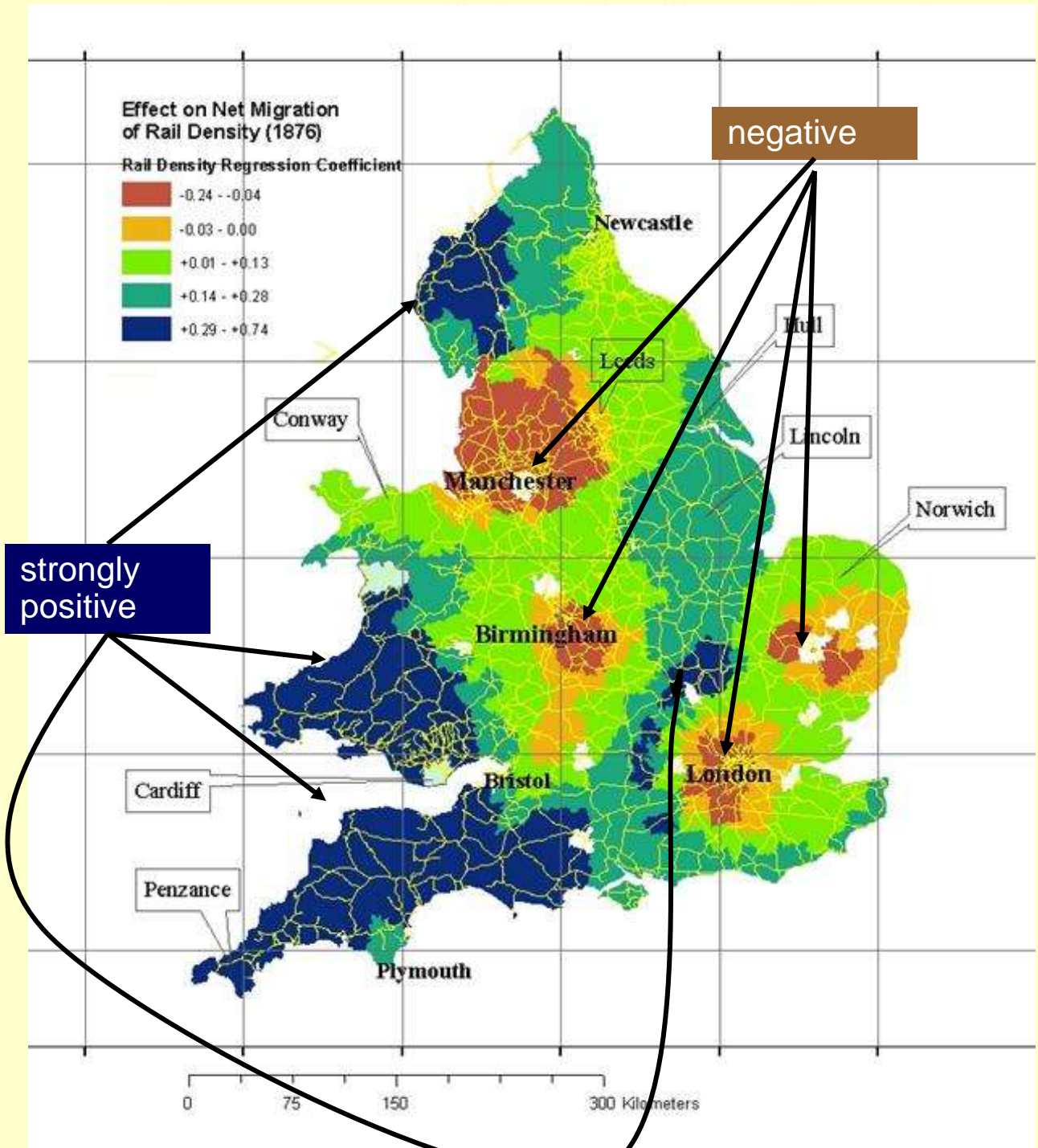
## Model

Population change due to net migration = 1) Rail density + 2) Distance from a major town + 3) Ruggedness of the terrain

Period	The Statistical Significance of rail density (km rail/1000 km <sup>2</sup> of area)	R-Square	N. of Regions
1861-71	Not significant	.24	595
1871-81	Significant	.42	606
1881-91	Significant	.39	616

**Ordinary least-squares regression (OLS) is a global statistical technique: it estimates the model parameters over the whole study area. GWR is a local statistical technique: it estimates model parameters for each of many subgroups or regions, producing a parameter estimate for every subgroup.**

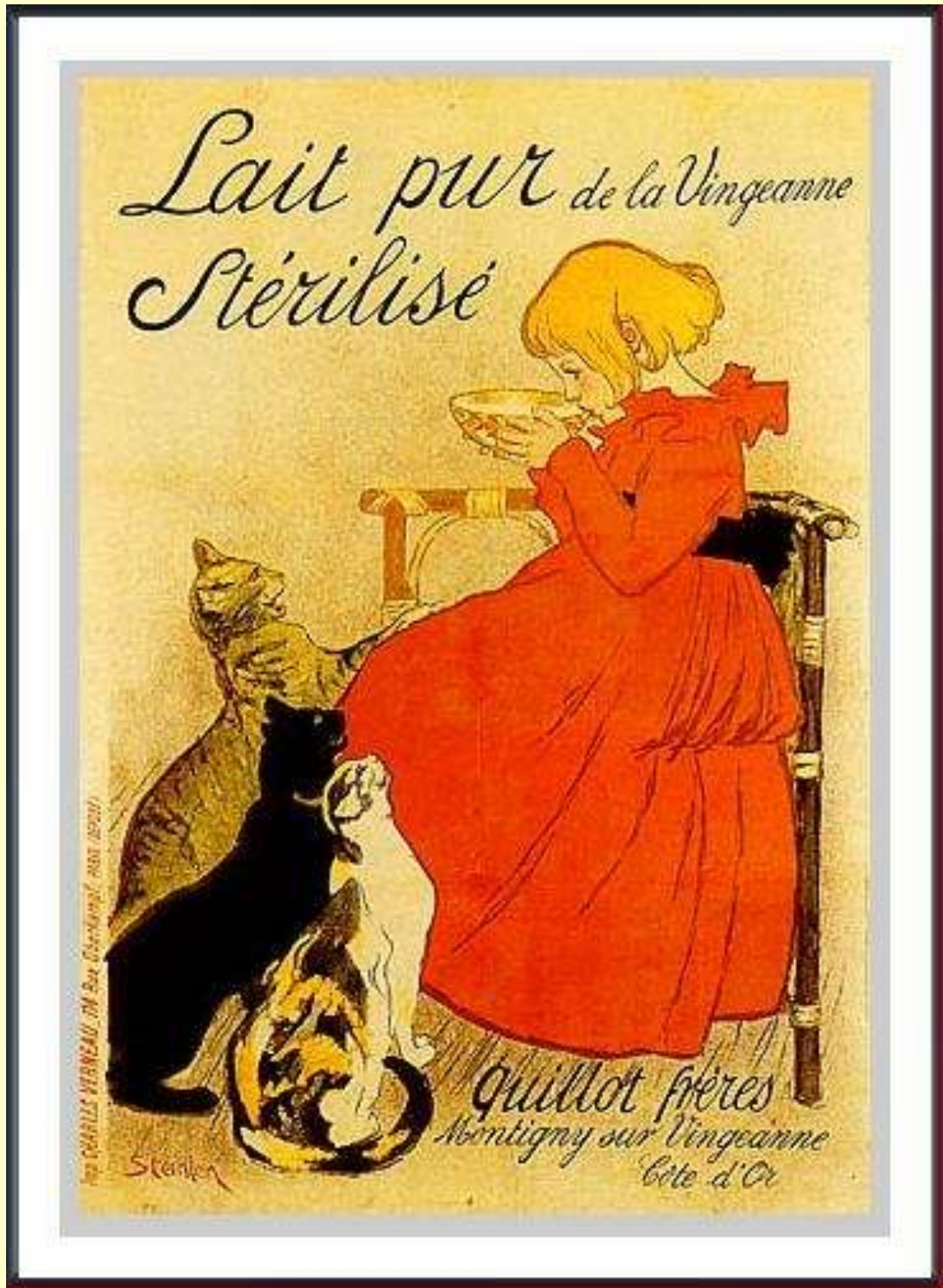
# Spatially varying effects of rail density on net migration 1871-81 (result of GWR analysis)



Interpretation: the relationship between rail transport and population change due to net migration varied significantly in time and in space

**In rural regions:** from 1870s until 1890, a higher rates of rail density fostered new or expanded economic opportunities, which tended to diminish rates of out migration, and especially in parts of central and southern Wales, the southwest and far northwest.

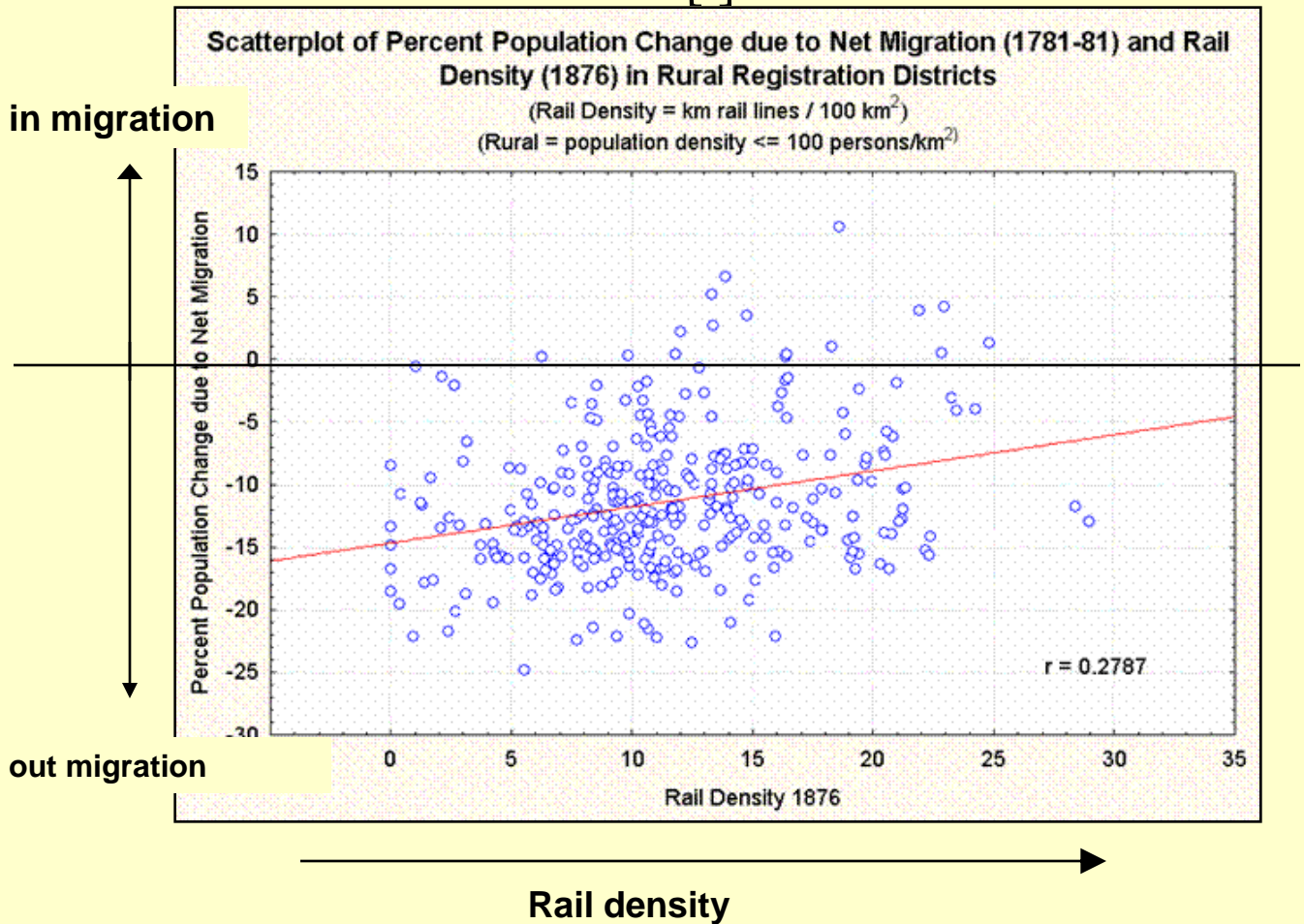
**In urban areas:** rail density was so high that its effect on net migration was probably negligible.



Théophile-Alexandre Steinlen, 1894

# Rail density and the percent population change from 1871 to 1881 due net migration, England and Wales

correlation  $[r] = .28$



**rail density** = kilometers of line of rail by 100 km<sup>2</sup> of area

**net migration** = inter-censu<sup>s</sup>l population change - change from natural increase (births-deaths) during the same period

# Concepts of geographical spatiality

**Connectivité: everything is linked. 1) horizontally 2) vertically**

**Dynamic connectivity and changing spatial identities:** the alteration of one part of a spatial system is going to affect other parts

Displacement of a city in the existent hierarchie, e.g ., Aix-en-Provence

L' development and regional concentration of milk industry

The geographical restructuring of the agrarian local and numerous

In England of 1880s, the novel of Thomas Hardy, *Tess of the D'Urbervilles*

identity: Thenisseian, a Burgundian, Francais

# LIPTON'S

# TEAS.

Tea Merchant,  
BY SPECIAL APPOINTMENT



TO HER MAJESTY  
THE QUEEN.



FINEST THE  
WORLD CAN  
PRODUCE

**1/7** PER LB.

NO HIGHER PRICE.

**RICH PURE  
& FRAGRANT**

**1/7** and **1/4** PER LB.





**Banbury's Patent Cotton's Combs Class.**  
 The Best for Best Price, or Best or Wheel Driven.



CLASS OF MACHINE	Price	Weight	Speed
Standard Model	£ 10 0	100 lbs	1000
Improved Model	£ 12 0	120 lbs	1200
Large Model	£ 15 0	150 lbs	1500
Very Large Model	£ 20 0	200 lbs	2000

**Collection of Superior Sewing Machines.**



Model	Price	Weight
Model A	£ 5 0	50 lbs
Model B	£ 7 0	70 lbs
Model C	£ 10 0	100 lbs

**Oil Cane Presses.**



Model	Price	Weight
Model A	£ 15 0	150 lbs
Model B	£ 20 0	200 lbs

**Iron Mill, or Sizer.**



**B. SAMUELSON,**  
 BRITANNIA IRON WORKS,  
**BANBURY, OXON,**  
 (Successor to the Late James Gardner.)

CLASS 3-STAND 180-GREAT EXHIBITION  
 ENGINEER, IRON FOUNDER,  
 AND

AGRICULTURAL MACHINERY MAKER,  
 SMITH, AND WHEELWRIGHT.

Prices, Weights, and Communications, in 1850, at  
 the English and Scotch Fairs, and all the  
 principal County Shows.

Item	Price
Iron Oil Press (single)	£ 10 0
Iron Oil Press (double)	£ 15 0
Iron Oil Press (triple)	£ 20 0

**Best's & Sutherland's Sewing Apparatus**

**BONE MILLS.**

**PURCHASE AND FRESH STEAM ENGINES  
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**EARLY PATENT STEAM ENGINES**  
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**Boiler and Combustion Parts, &c., &c.,**  
 for all the purposes of the steam engine.

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**FENCING, PILLARS**

**RAILROADS AND COLUMNS.**

**Design and drawing of any description for Mechanical,  
 Mining, and general purposes.**

**SIX-FOUR BARRETT'S OILS.**

**BROWN'S PATENT REDUING CHAIRS.**  
 Patent No. 11,411.

**MASSIVE PORTLAND CEMENT, &c., &c.**

**HART'S HULL AND LITTLE TABLES.**

**HOPWOOD'S PATENT MANGLE.**

Model	Price	Weight
Model A	£ 10 0	100 lbs
Model B	£ 15 0	150 lbs

**Line Drilling Machine.**



**Banbury's Improved Spinning Frame, or  
 Through-Drum Frame.**



Model	Price	Weight
Model A	£ 10 0	100 lbs
Model B	£ 15 0	150 lbs

**Best's of Banbury's Class.**



**FOR THE PURPOSES OF THE STEAM ENGINE.**

**TABLES OF STEAM ENGINES.**

Model	Price	Weight
Model A	£ 10 0	100 lbs
Model B	£ 15 0	150 lbs

**Rotary Mills.**



Model	Price	Weight
Model A	£ 10 0	100 lbs
Model B	£ 15 0	150 lbs

**Water Rigs.**

**WITH IMPROVED ADJUSTMENT ATTACHED.**



10317726



**BIBBY'S DAIRY CAKES**  
CAKETTES or MEAL

	1908	JULY				1908
SUN.	5	12	19	26		
Mon.	6	13	20	27		
Tue.	7	14	21	28		
Wed.	1	8	15	22	29	
Thu.	2	9	16	23	30	
Fri.	3	10	17	24	31	
Sat.	4	11	18	25		

**UNEQUALLED for MILK PRODUCTION**

10418546

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cultural change

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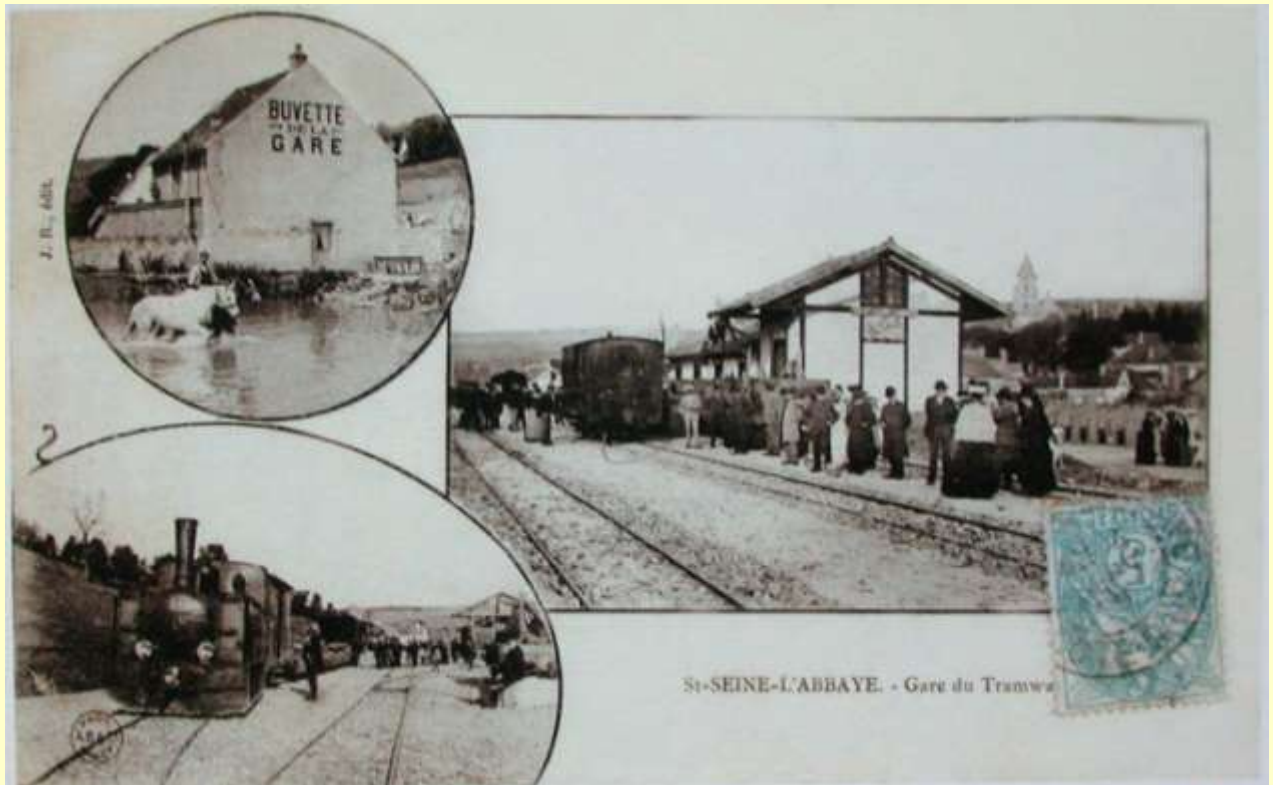
## The city in the country



1905: A group of Dijonnais bourgeois arrives at St Saine l' Abbaye by the narrow gauge railway running from Dijon to Châtillions-sur-Seine.

# Destination: Saint Seine l'Abbaye

Population in 1905: 550





# BLACKPOOL



Health & Pleasure, Glorious Sea

10174747  
MIDLAND RAILWAY

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## GREAT CENTRAL RAILWAY. BLACKPOOL



FOR GORGEOUS SIGHTS

10172168  
FOR PARTICULARS OF TRAIN SERVICE, FARES AND OTHER INFORMATION  
APPLY AT ANY GREAT CENTRAL STATION

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# CHEMINS DE FER DE L'OUEST ET DE BRIGHTON

**FLEURS, FRUITS & PRIMEURS**

à destination de **LONDRES**

Organisation d'un nouveau service journalier **ACCÉLÉRÉ** entre **PARIS-S<sup>t</sup> LAZARE & LONDRES** pour le transport des fleurs, fruits, primeurs et autres marchandises à grande vitesse. Les marchandises déposées à la gare Saint-Lazare assez à temps pour partir par le train de 4 heures de l'après midi seront livrées à Londres le lendemain matin à première heure.

LES EXPÉDITEURS QUI EN FONT LA DEMANDE RECEVRONT A DOMICILE UN BULLETIN DÉTAILLÉ DE CE NOUVEAU SERVICE  
Pour tous renseignements complémentaires s'adresser: Gare S<sup>t</sup> Lazare et Bureaux de Ville de la Comp<sup>te</sup> - Services internationaux, 21, Rue d'Amsterdam, PARIS

# CHEMINS DE FER DE L'ÉTAT

## PLAGES DE L'OcéAN

SAISON 1905



107, VILLEMARIE PL & ST PARIS

E. HATEUX 5017 Avenue d'Orléans Tours, Paris



The image features two topographic maps of Britain and France, rendered in shades of green to represent elevation. Overlaid on these maps are red lines representing railway routes. In Britain, the railway network is concentrated in the lowlands and around major urban centers. In France, the network is more extensive, following major river valleys and connecting coastal ports to inland regions. The background is a solid blue color.

# Railways, Uneven Geographic Development, and Cultural Change in Britain and France 1840-1914

Robert Schwartz  
Mount Holyoke College

