

The evolution of bicycle mobility in France

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Data sources

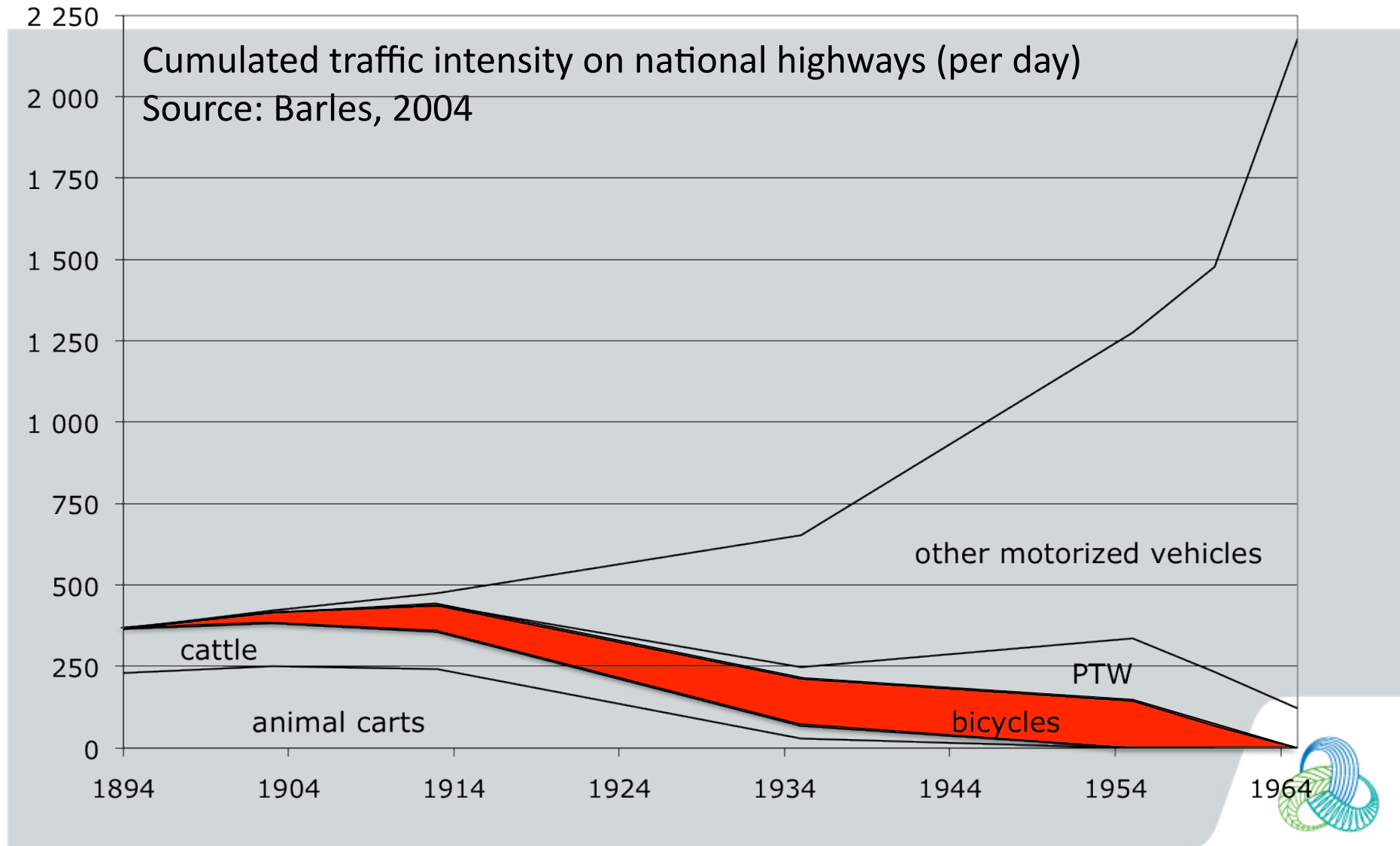
- **Sales:** *Chambre syndicale* then CNPC since 1890
- **Fleet:** *Impôt sur les vélocipèdes* 1893 to 1959,
National Travel Surveys: 1966 to 2008
- **Traffic:** national highways 1903 to 1960, Paris since 1997
- **Accidents:** ONISR since 1982
- **Trips and modal share:** national and local travel surveys in urban areas since 1976



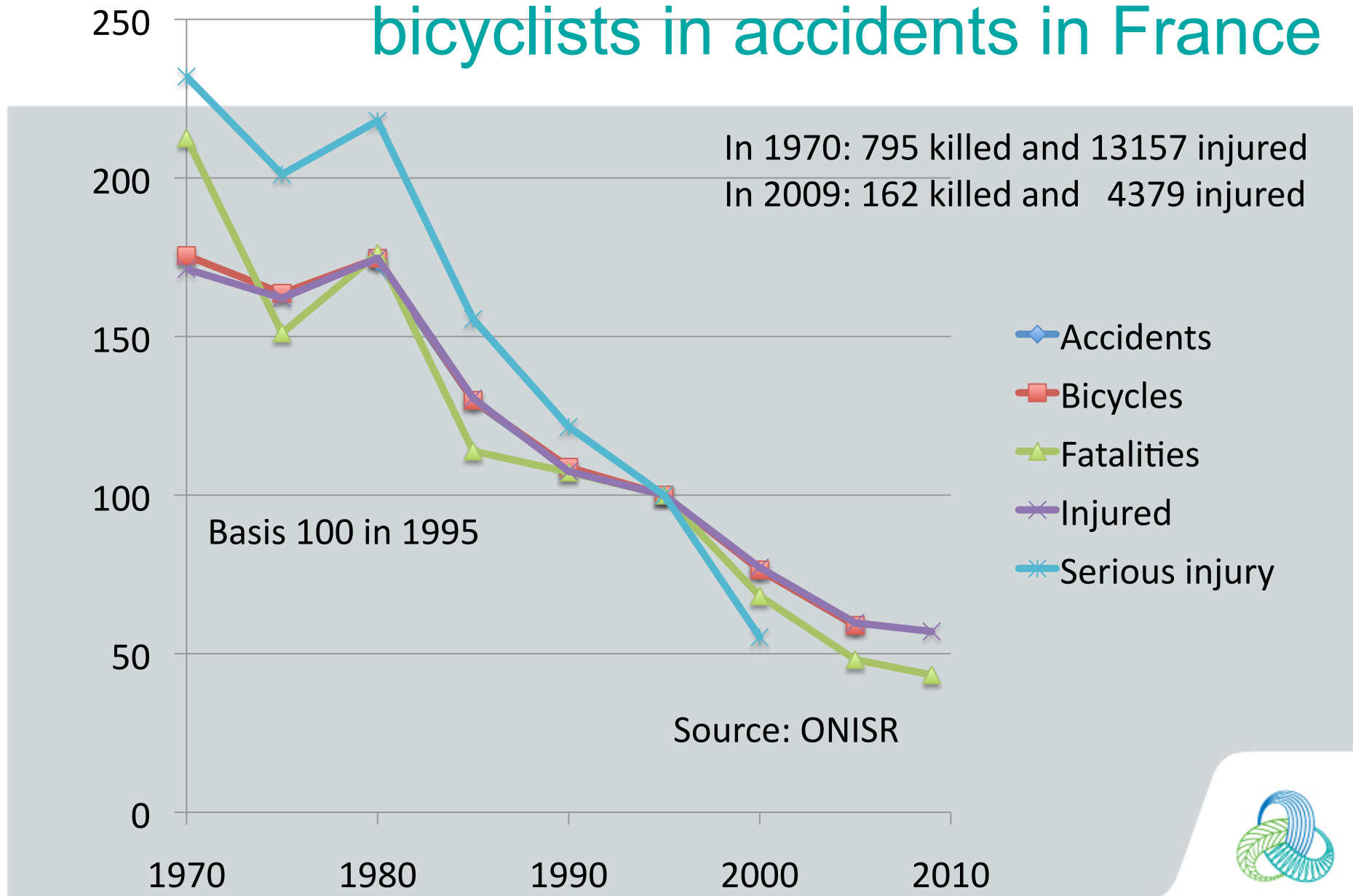
French bicycle market 1992-2006

	Sales	French supply	Imports	Exports
1992	2 878 528	728 035	2 150 493	307 279
1993	3 199 100	667 600	2 531 500	275 600
1994	2 935 569	873 850	2 061 719	400 720
1995	2 870 000	1 040 000	1 830 000	381 150
1996	2 351 026	992 160	1 358 866	342 000
1997	2 242 900	1 092 900	1 150 000	239 400
1998 (*)	2 435 000	1 300 000	1 135 000	206 000
1999 (*)	2 584 000	1 334 000	1 250 000	270 000
2000 (*)	2 690 000	1 580 000	1 110 000	330 000
2001 (*)	2 290 000	1 273 000	1 017 000	
2002 (*)	2 422 000	1 228 000	1 194 000	Source: FIEV
2003 (*)	2 747 000	1 242 000	1 505 000	
2004 (*)	3 087 000	1 375 000	1 712 000	
2005 (*)	3 702 200	1 238 200	2 464 000	
2006 (*)	3 250 000	1 060 000	2 190 000	

Bicycle traffic peaked 1935-1955 on French highways



A decreasing involvement of bicyclists in accidents in France

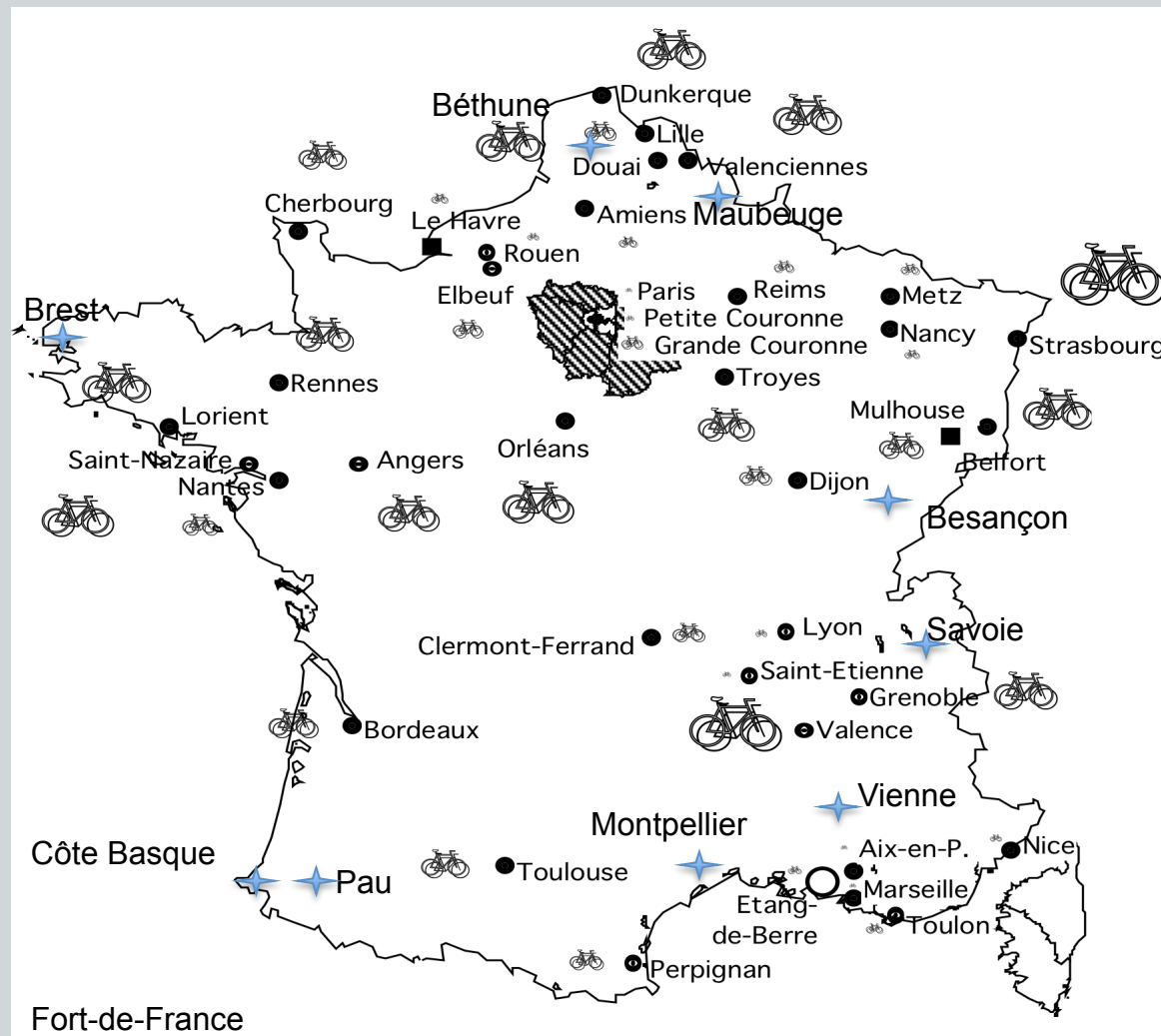


Travel surveys in France

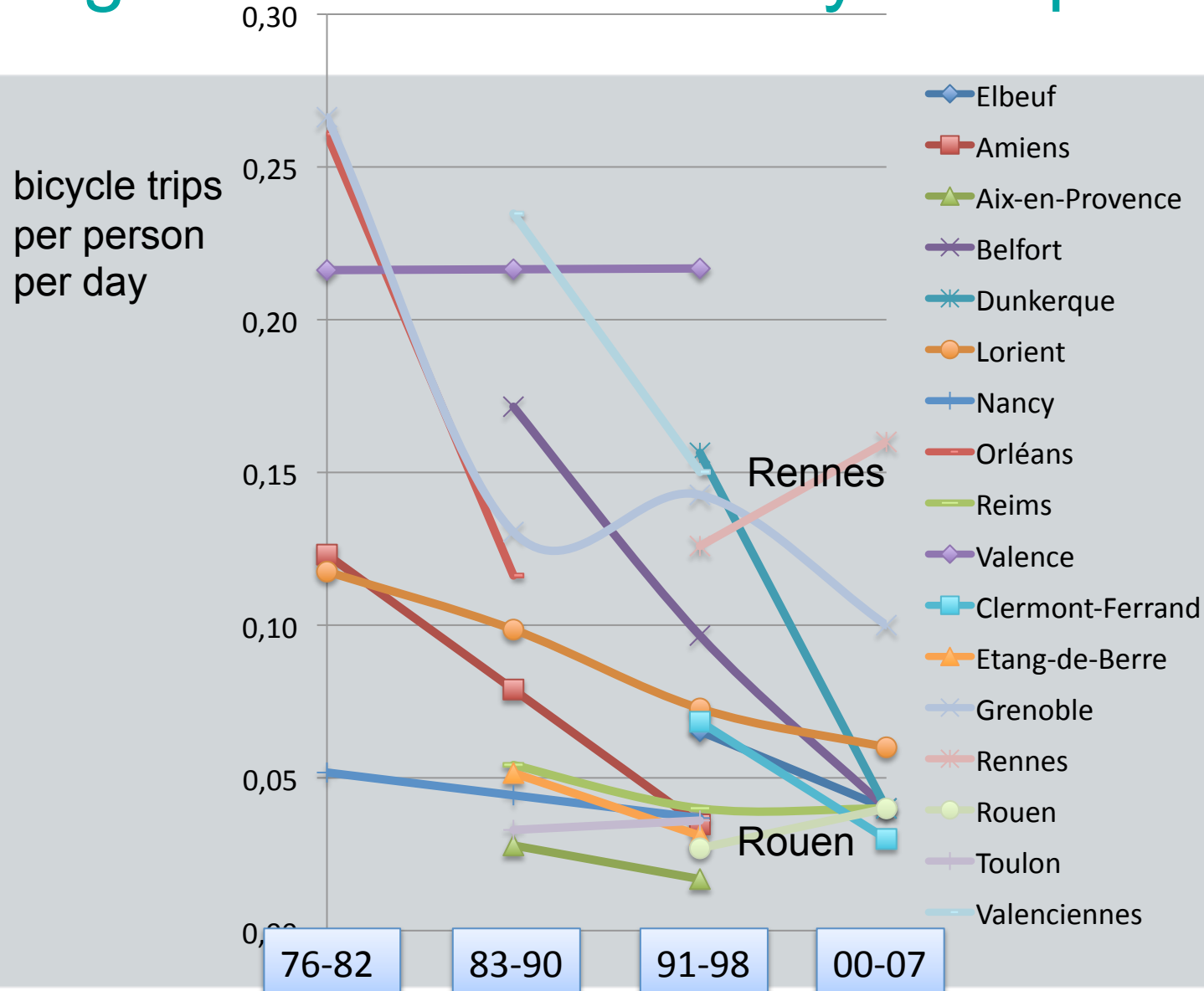
- Over 100 surveys in **French cities** from 1966 to present (Certu, Dreia) but bicycles only since 1976
- **5 National Travel Surveys:** 1966-67, 1973-74, 1981-82, 1993-94, 2007-08 (Insee, Soes, Inrets)
home to work trips 1959
- Old surveys only known from publications



Local travel surveys 1976-1998 and ★1999-2007

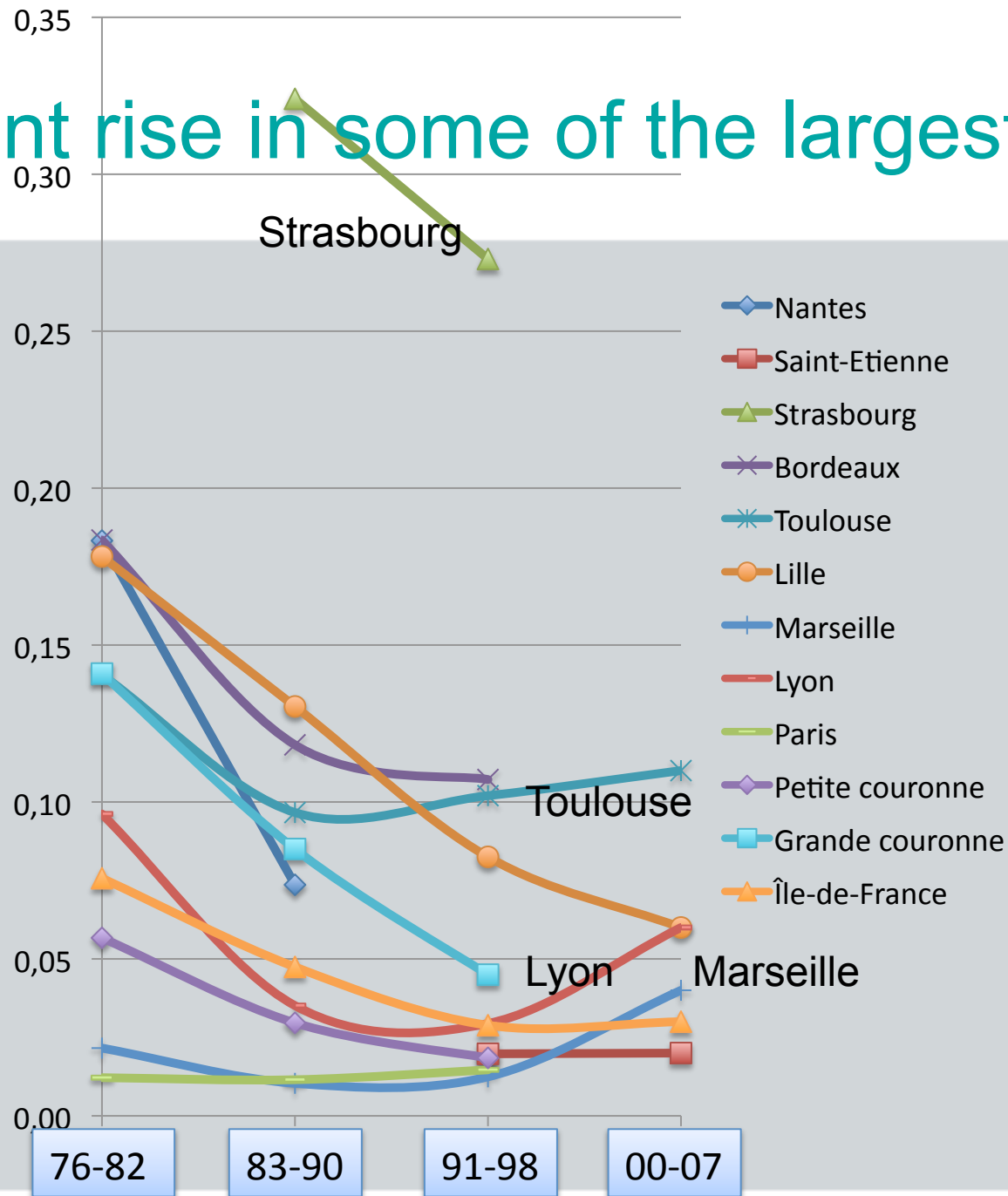


A general decline of bicycle trips

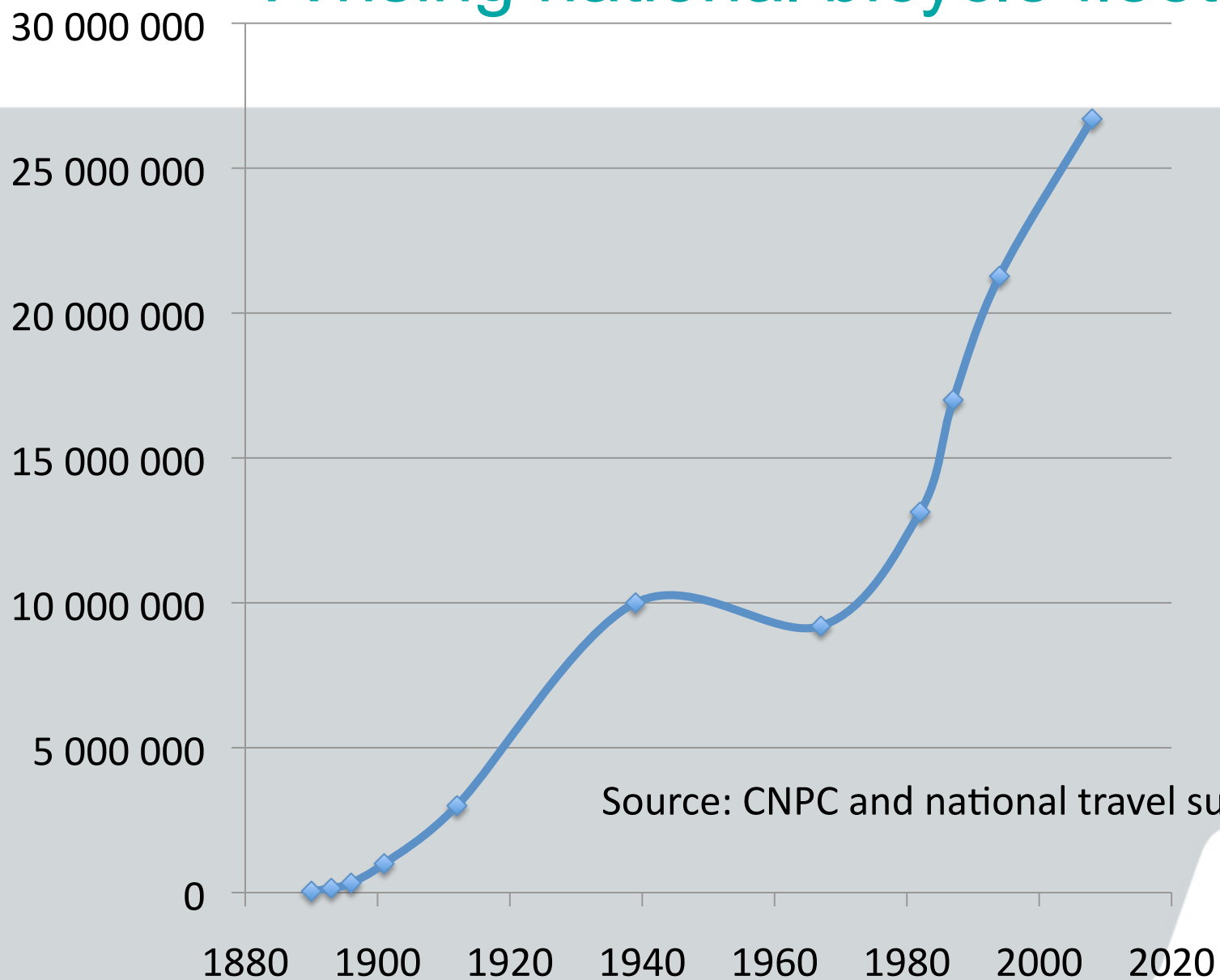


A recent rise in some of the largest cities

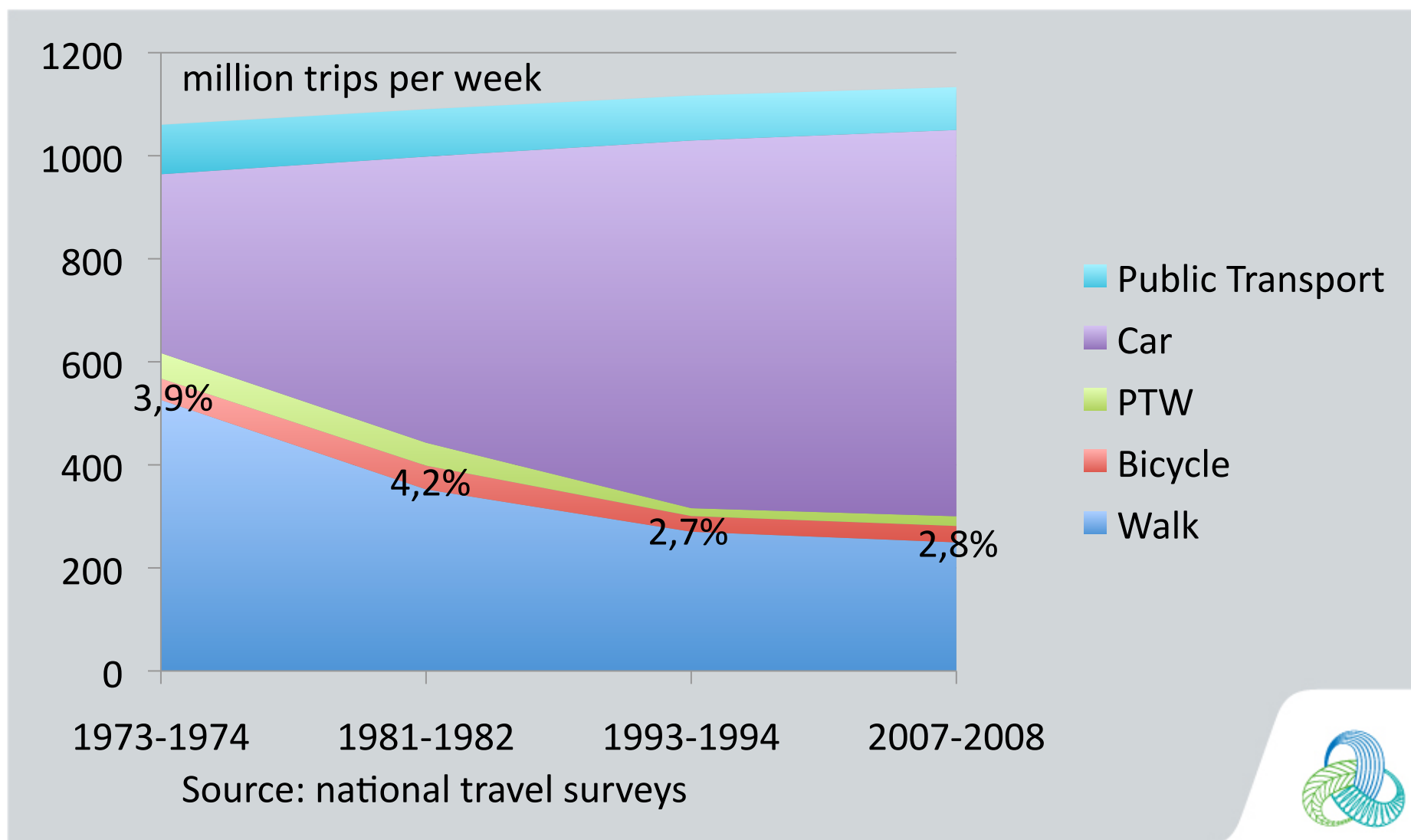
bicycle trips
per person
per day



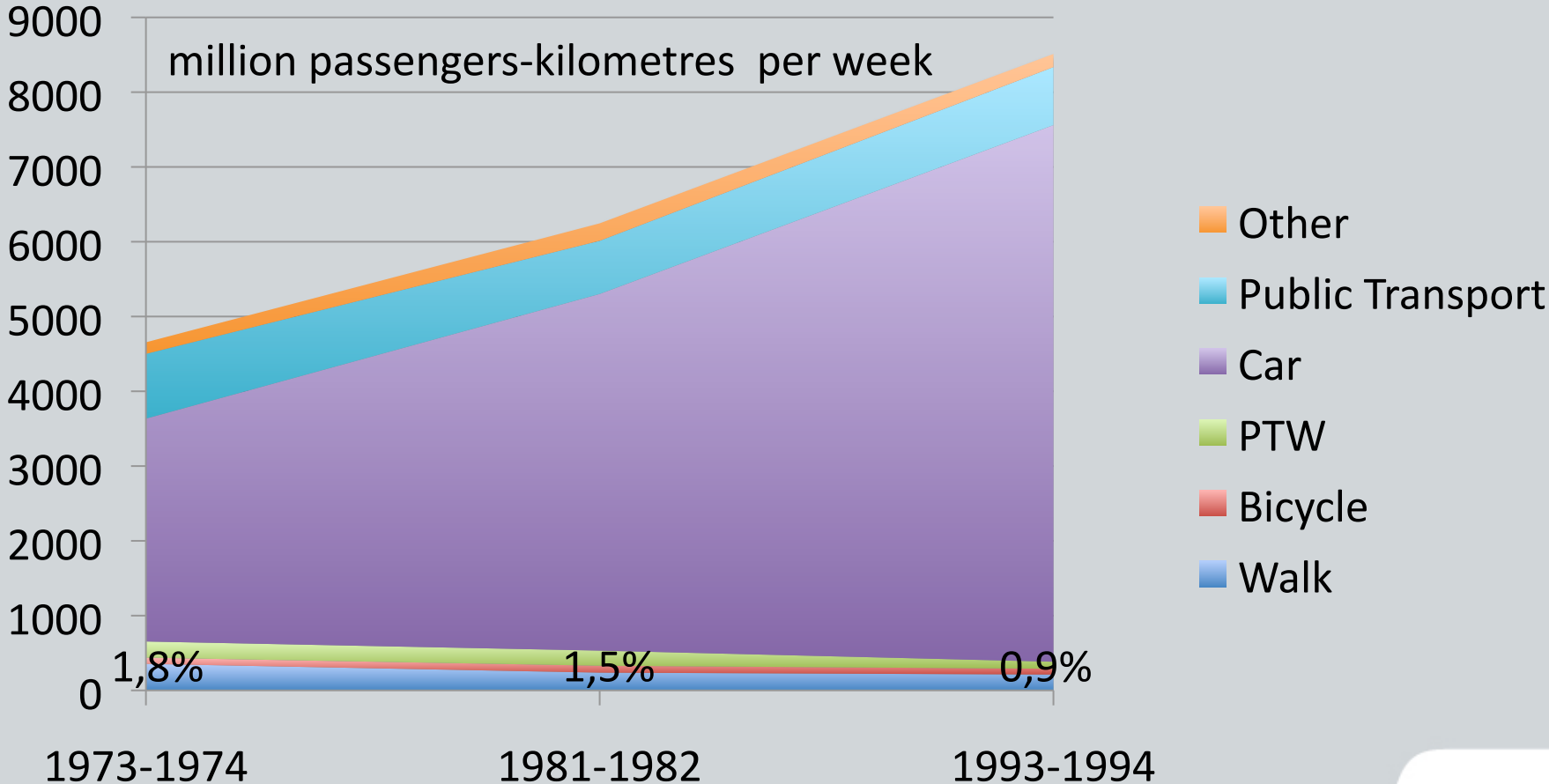
A rising national bicycle fleet



Bicycle narrow share of trips



Bicycle narrow share in mileage



Source: national travel surveys



Evolution of bicycle mobility in France 1959-2008

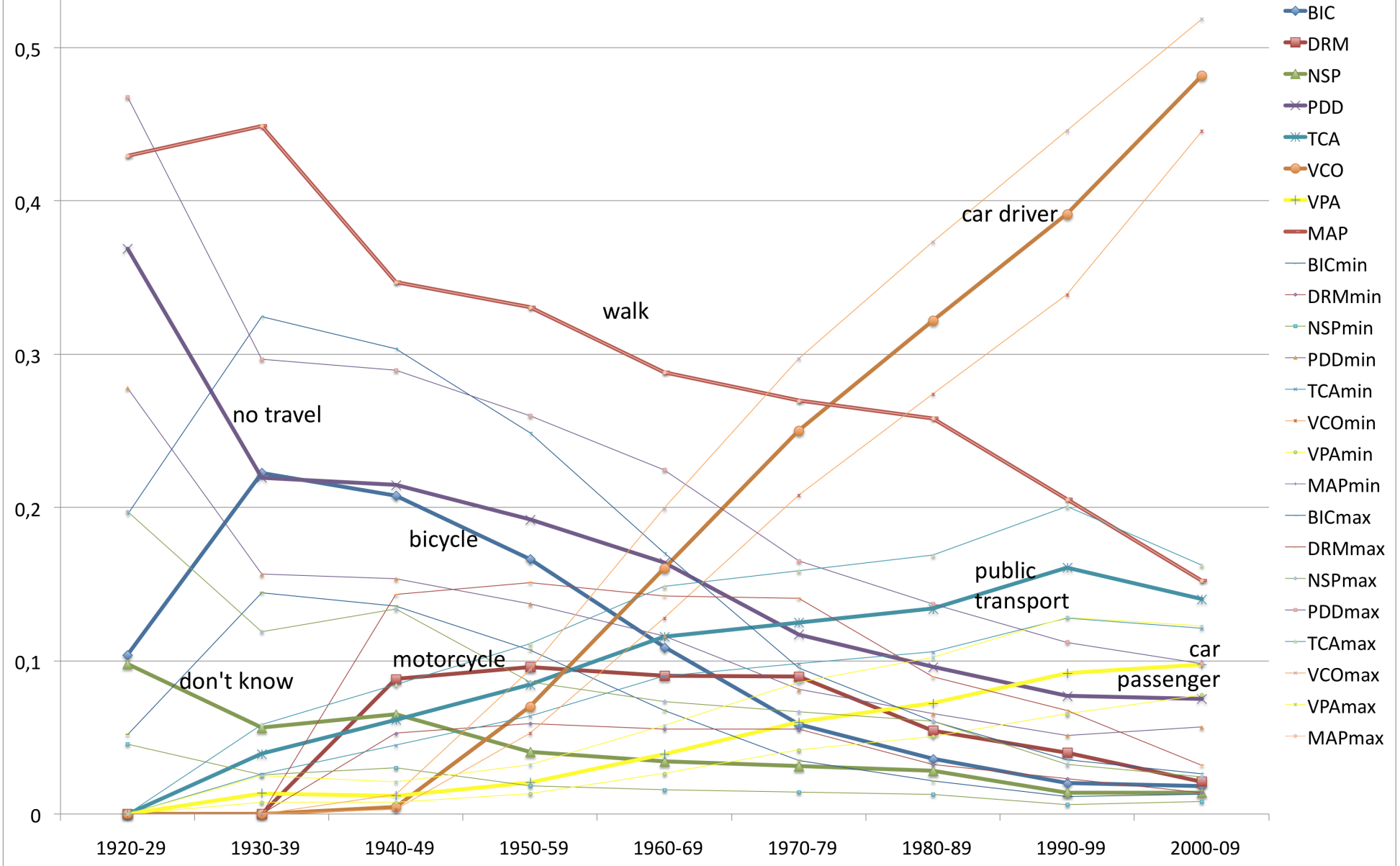
	1959	1967	1973-76	1981-82	1993-94	2007-08
Bicycle fleet '000		9 167	14 600	13 133	21 270	26 700
Bicycle share (%) in Home to work trips	9	7	5	4	2,7	2,2
Bicycle trips per person per day		0,15	0,13	0,13	0,08	0,08
Bicycle mileage (km) per person per year		116	98	102	83	97

Source: national travel surveys



Main means share 1920 -2008

Source: biographies in national travel survey 2007-08



Thank you

Merci pour votre attention

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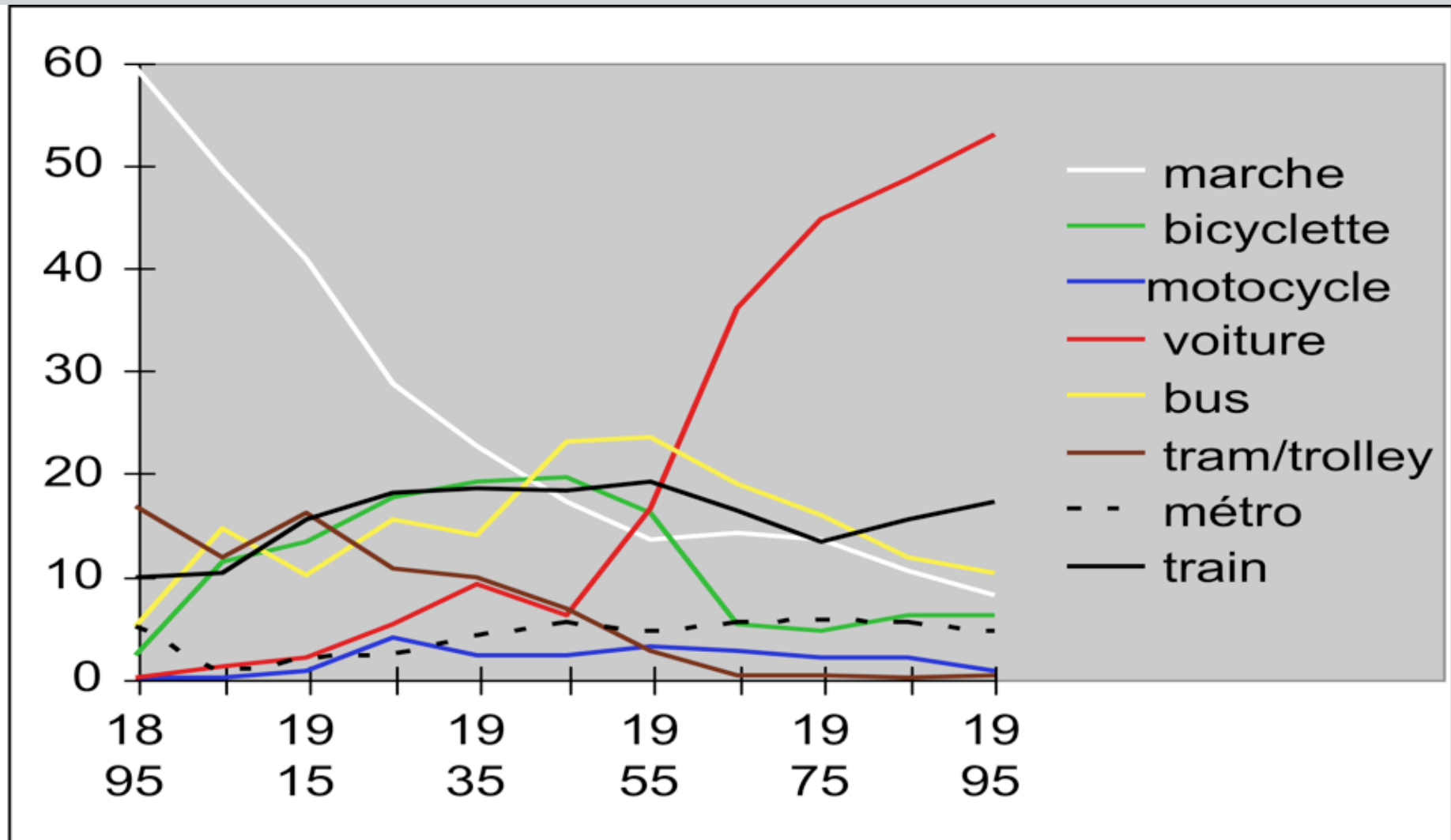
French transport biographic survey

- Retrospective surveys use people's **memory**
- Other studies in France outside transport
- Transport biographies in UK, Switzerland, Germany
- In France biographic survey in NTS 2007-2008
- 1150 **grids** filled
- One **line** per year
- One **column** for each variable: dwelling place, household size, number of children, number of motorcycles, number of cars, main activity, activity place, main transport means
- Two **aims**: historical and longitudinal



Main home to work means share in Britain 1890-1998

Source: Pooley & Turnbull, 2000

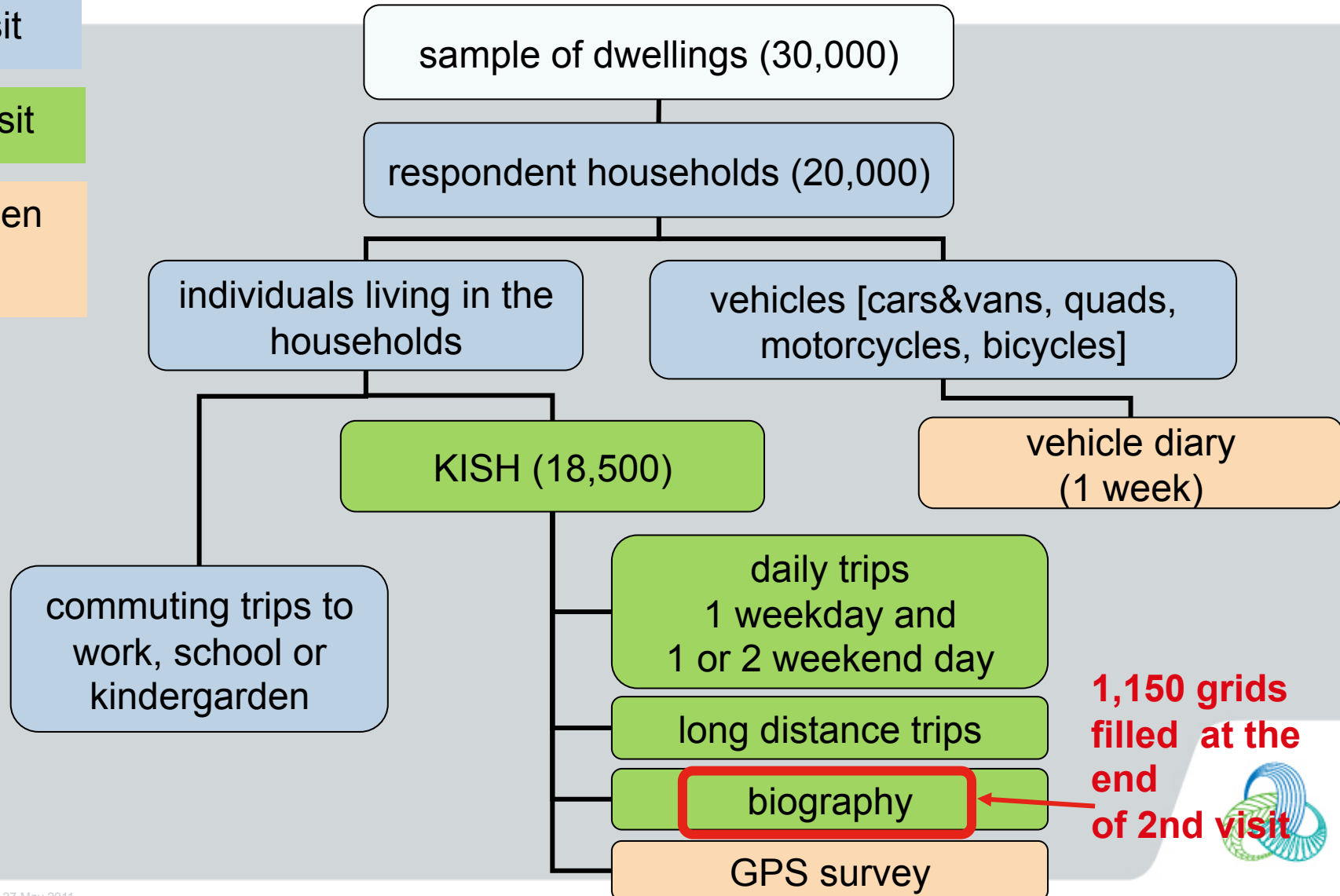


The French National Travel Survey 2007-2008

1st visit

2nd visit

Between visits

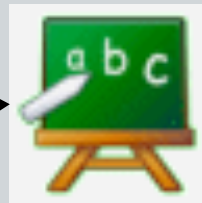


Comparability with historical cross section surveys (1)

Biases in biographic survey

Problem	Solution
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- **Mobility definition:**
Only one main mode to a regular place (work or education), or other trips, per year



- Comparison of main transport mode for three groups
 - those commuting to work
 - those commuting to education
 - others



Comparability (2): Biases in biographic survey

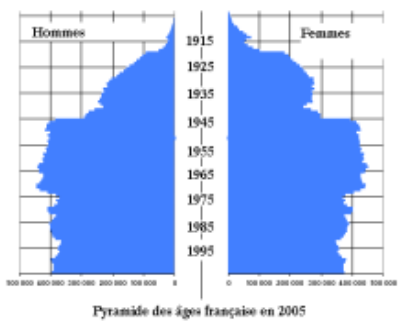
Problems

Solution



- **Geography:** Only 17 regions were surveyed
- **Sampling:** Over-sampling of multi-car households
- **Structure:** The structure of the population from the biography sample differs from the actual structure that existed then

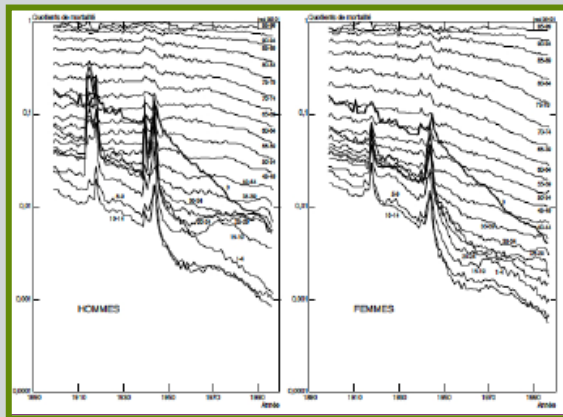
Weighting correction for recovery of the sample



Comparability (3): Biases in biographic survey

Problem

- **Survival:** Only survivors in 2008 from 1907 to 2002 generations were recorded



Solution

- Survival rate weighting
- Extrapolating backwards previous generations behavior



Comparison biographies vs cross section surveys

Biographies yield reliable modal share for regular trips

En %	Âge									
	18-24		25-34		35-44		45-54		55-64	
Marche	13	<i>15</i>	9	<i>12</i>	9	<i>13</i>	12	<i>11</i>	18	<i>11</i>
Vélo	2	<i>1</i>	2	<i>2</i>	3	<i>2</i>	3	<i>1</i>	4	<i>6</i>
Deux roues motorisés	5	<i>1</i>	2	<i>6</i>	2	<i>7</i>	1	<i>4</i>	2	<i>1</i>
Voiture conducteur	52	<i>53</i>	64	<i>59</i>	63	<i>59</i>	63	<i>55</i>	55	<i>64</i>
Voiture passager	8	<i>8</i>	7	<i>4</i>	7	<i>4</i>	6	<i>5</i>	5	<i>3</i>
Transport en commun, autres	19	<i>18</i>	15	<i>15</i>	15	<i>13</i>	15	<i>21</i>	17	<i>12</i>
Pas de déplacement et ne sais pas		<i>4</i>		<i>2</i>		<i>2</i>		<i>2</i>		<i>2</i>

Source: NTS 1993-1994, regular trips, **NTS 2007-08, biographies 1988-00**



Biographies: bicycle main means modal share

Decade vs age (bicycle share in %)

Décennie	Âge décennal									ensemble
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80 et +	
1930-39	1.1	12	ns	ns	.	.	.	.	.	9.9
1940-49	1.8	20	19	ns	ns	.	.	.	.	13
1950-59	1.3	19	19	14	ns	ns	.	.	.	13
1960-69	0.7	13	9.6	11	13	ns	ns	.	.	9.7
1970-79	3.1	4.3	3.1	7.4	9.0	5.8	ns	.	.	5.4
1980-89	0.7	6.5	1.6	2.6	4.4	6.5	3.2	.	.	3.6
1990-99	.	2.4	0.9	2.5	1.5	4.7	2.6	2.5	.	2.1
2000-08	ns	0.3	2.4	3.2	0.9	0.9	3.8	2.1	2.3	2.0
ensemble	1.2	9.3	7.1	6.5	6.0	5.6	4.8	2.0	1.7	5.7

Source: NTS 2007-08, biographies



Biographies: bicycle main means modal share

Decade vs generation (bicycle share in %)

Décennie	Génération décennale							ensemble
	1907-29	1930-39	1940-49	1950-59	1960-69	1970-79	1980-2002	
1930-39	5.5	1.3	.	.	.	.	.	9.9
1940-49	25	9.4	1.4	.	.	.	.	13
1950-59	21	21	7.7	0.7	.	.	.	13
1960-69	16	10	14	3.3	0.8	.	.	9.7
1970-79	10	6.9	6.1	2.4	4.9	1.2	.	5.4
1980-89	4.9	5.7	3.4	2.7	4.1	3.9	.	3.6
1990-99	3.6	3.1	2.9	3.4	0.9	1.9	0.7	2.1
2000-08	3.3	1.4	3.1	0.3	1.9	4.2	0.4	2.0
ensemble	11	7.8	6.2	2.3	2.7	3.0	0.5	5.7

Source: NTS 2007-08, biographies



Biographies: bicycle main means modal share

Generation vs age (bicycle share in %)

Génération	Âge décennal									
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80 et +	ensemble
1907-29	0.3	19	20	17	16	7.0	4.2	3.5	3.2	11
1930-39	1.8	18	15	8.3	5.7	6.1	1.8	1.0	.	7.8
1940-49	1.6	17	6.7	5.0	2.9	3.1	6.3	.	.	6.2
1950-59	0.7	4.5	2.1	4.1	1.0	0.3	.	.	.	2.3
1960-69	2.8	6.0	1.1	1.5	1.3	.	.	.	.	2.7
1970-79	1.2	4.7	2.1	4.7	.	.	.	.	.	3.0
1980-2002	.	0.9	0.4	.	.	.	.	.	.	0.5
ensemble	1.2	9.3	7.1	6.5	6.0	5.6	4.8	2.0	1.7	5.7

Source: NTS 2007-08, biographies



Estimation of an age-period model

- Different generalized **logistic model** tested
- To estimate **main means share**
- Many variables difficult to know in the past
- Low effect of generation, **high effect of period**
- **Age-period model** easiest model to estimate past modal share, taking into account past age groups share
- **Walk** is reference mode
- **Confidence intervals** computed for other modes
- **Bicycle share** highest in 1930's and 1940's

