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专题会议 A. 可持续发展与城市规划

Session A.3 Urban services and infrastructures

小组会议A.3 城市服务与基础设施

Land use and transport: accessibility and mobility styles 土地使用与交通：可达性和出行方式



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Land use and accessibility: context

土地使用与可达性：背景



- Accessibility → “ease with which activities may be reached using a particular transportation system” (Morris et al., 1979)
 - ➔ accessibility → territorial cohesion → social exclusion
- 可达性 → “采用某种特定交通系统可以轻松地前往活动”（Morris等，1979年）
 - ➔ 可达性 → 领土凝聚（territorial cohesion） → 社会排斥（social exclusion）
- Opportunity (Kwan, 1999; Dijst, 2001)
- 机遇（Kwan, 1999年；Dijst, 2001年）

- The EU Cohesion Report (CEC, 2004) includes the spatial distribution of accessibility in the list of indicators to measure the existing disparities among regions
- 《欧盟融合报告》（欧盟委员会，2004年）包括了可达性的地理分布数据，将可达性作为区域发展差异程度的计量指标之一。



- The economical crisis → people residential and mobility behaviour change: in US: less travels, more walk-ability. In Italy less use of soft modes. In UK: PTAL (Public Transport Accessibility Levels)
- 经济危机→人们的居住和出行行为发生改变：在美国，人们减少开车，更多地选择步行；在意大利，人们较少采用软模式；在英国，人们更加重视公共交通可达性水平（PTAL）
- Worsening of the quality of urban space or of the accessibility ? Change of habits and perceptions concerning mobility and soft modes ?
- 城市空间质量或城市可达性不断恶化？出行和软模式习惯和观念的转变？
- To investigate the relationship between mobility styles and accessibility, as a function of both different territorial contexts (city centre, suburbs, and outer city) and cities' geographical location/size
- 调查出行方式与可达性之间的关系，随着其所处区域（城市中心、郊区和外围城市）和城市地理位置/规模的不同而变化。

1. Division of the cities in three different zones (axial criterion):
将城市分为三个不同区域（轴向标准）：

- core: the centre of the city
- 核心区：城市的中心
- suburbs: the near-area around the city centre
- 郊区：靠近城市中心的地区
- outer city: the area just beyond the city boundaries

2. Survey (CATI) on sample of 1345 households (at least one under-16 child), stratified according to the residence location

对1345户采样家庭（至少有一名16岁以下儿童）进行调查（计算机辅助电话访问系统，英文简称为“CATI”），根据居住地点进行分层。



3. Questionnaire design to test:

问卷设计用来测试:

- influence of the urban structures on the presence/specificity of the opportunities;
- 城市结构是否会影响发展机遇的存在/发展机遇的特点;
- influence of the location of the residential areas and of the opportunities, together with the available transport mode, on the mobility patterns, the accessibility to opportunities and, hence, the urban and social inclusion.
- 住宅区所在位置和机遇所在位置以及可采用的交通方式等, 对出行模式、机会的可达性以及城市和社会融合产生的影响。

4. Data analysis: different statistical methods, according to the typology of variables: test of independency χ^2 , ANOVA, correspondence analysis, EFA, cluster analysis

数据分析: 根据变量种类的不同, 采用不同的统计方法: 独立性 χ^2 的测试、单因素方差分析 (ANOVA)、对应分析、探索性因素分析 (EFA)、集群分析



Results: accessibility to work and to opportunities

结果：对工作和机遇的可达性

✓The workplace is the hardest to get to

✓工作地点最难到达

✓Over 50% of households can walk to services

✓超过50%的家庭可以步行抵达服务地点

✓PT stops are the most reachable service (89% take 5 min. to reach them)

✓公共交通车站是最容易获得的服务（89%的受访者5分钟即可到达公交站）

Area	MILANO				BOLOGNA				TORINO		
	Core		Suburbs	Outer city	Core	Suburbs	Outer city		Core	Suburbs	Outer city
Opportunities	Milano centre	Milano Garibaldi	Milano Affori	Seregno	Bologna centre	Bologna suburbs	Argelato	Castel Maggiore	Torino centre	Torino Santa Rita	Orbassano
Work place	45,9	25,3	16,8	18,8	32,9	22,0	15,8	1,9	45,2	25,8	20,4
	Commercial services										
Supermarket	93,2	90,7	97,3	89,9	94,6	92,7	80,2	80,8	88,8	96,0	87,8
	Health services										
Pharmacy	100	100,0	100,0	82,6	99,3	99,3	83,2	80,8	97,5	97,6	92,5
Family doctor	86,5	89,3	87,9	61,1	73,2	72,7	67,3	67,3	74,1	78,2	88,2
	Educational/school services										
Crèche	87,8	85,3	94,0	75,2	81,2	90,7	76,2	75,0	78,2	77,8	73,7
Elementary school	89,2	90,7	95,3	83,9	91,3	90,7	77,2	84,6	79,7	82,3	88,6
Secondary school	74,3	82,7	87,9	71,1	71,1	70,0	37,6	48,1	67,0	83,1	74,9
	Public services										
Post office	98,6	94,7	95,3	67,8	81,9	64,7	82,2	80,8	94,9	88,3	84,3
Library	48,6	70,7	87,9	65,8	67,8	68,7	79,2	57,7	67,5	76,2	84,7
	Services for leisure time and recreational activities										
Parish Youth Club	89,2	96,0	97,3	87,2	83,9	90,0	68,3	71,2	61,4	80,6	85,9
Park	97,3	84,0	97,3	93,3	96,0	94,0	92,1	90,4	84,3	93,5	94,9
Gym	77	73,3	84,6	66,4	75,8	79,3	79,2	65,4	61,9	75,4	65,1
Church	98,6	100,0	98,7	96,0	98,7	96,7	82,2	86,5	88,3	89,9	93,7
	Public transport services										
PT stop	98,6	100,0	100,0	83,2	98,0	98,7	94,1	92,3	96,4	96,4	93,7
Railway station	56,8	68,0	84,6	69,1	67,1	59,3	61,4	53,8	83,8	9,3	0,8

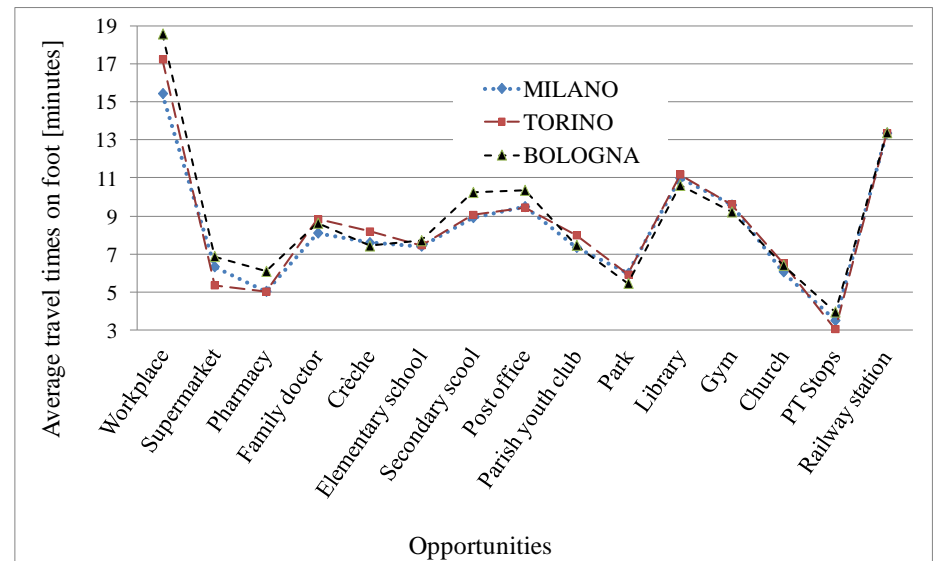


Results: accessibility to work and to opportunities

结果：对工作和机遇的可达性

- Good accessibility on foot, BUT walking is the most frequent choice only when the distance does not exceed five minutes. Over half of the sample (about 63%) uses the car to get to work against a 10% using public transport and 10% going on foot.
- 步行可达性良好，不过人们仅在步行时间不超过五分钟时会将步行作为最常用的出行选择。样本家庭上班的通勤方式如下：超过半数的家庭（约63%）开车上班，10%的家庭乘坐公共交通工具上班，10%的家庭走路上班。

Opportunities	Metropolitan area		
	Milano	Torino	Bologna
Workplace	15.4	17.2	18.6
Supermarket	6.3	5.4	6.9
Pharmacy	5.0	5.0	6.1
Family doctor	8.1	8.8	8.6
Crèche	7.6	8.2	7.4
Elementary school	7.4	7.5	7.7
Secondary school	8.9	9.1	10.2
Post office	9.5	9.4	10.3
Parish youth club	7.3	8.0	7.5
Park	6.0	5.9	5.5
Library	11.0	11.2	10.6
Gym	9.6	9.6	9.2
Church	6.1	6.5	6.4
PT Stops	3.5	3.1	4.0
Railway station	13.3	13.4	13.4





Results: accessibility to work and to opportunities

结果：对工作和机遇的可达性

The scores of accessibility are quite high, and different by the preferred mode ($p < 0.05$)

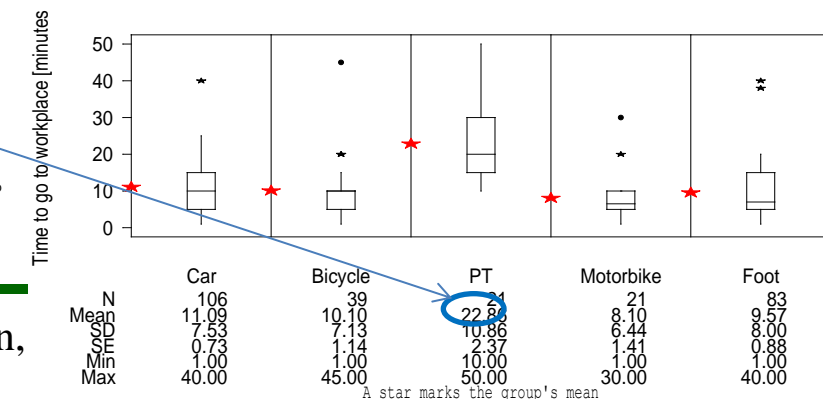
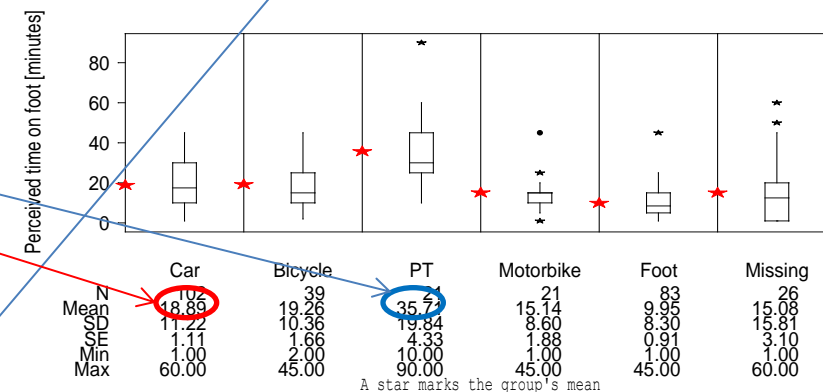
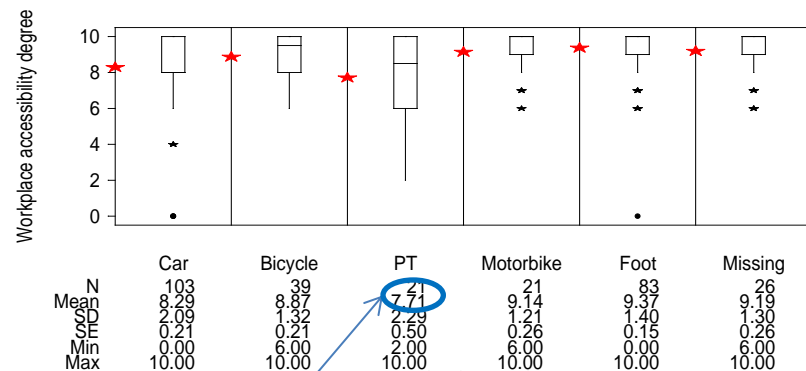
可达性的分数较高，不同大都会地区的首选出行方式不同 ($p < 0.05$)

The mode effectively used to get to work affects their perception of the time taken to get it on foot. PT users perceive as accessible a wider area than car users

随着上班采用的有效出行方式不同，样本家庭对步行上班所花费时间长短的感受也有所不同。以搭乘公共交通的人和开车的人比较，前者能接受比较长的交通距离，他们认为可达的区域面积比较大。

However, PT users take longer times than those using other modes and, thus, assign the lowest scores to accessibility to work

不过，由于公共交通使用者比采用其他出行方式出行的人花费的交通时间更长，因此，他们的工作地点可达性得分还是最低。



Results: mobility profiles

结果：交通出行特征



TORINO			MILANO				BOLOGNA			Groups of variables	Label	Description of the variable
FACT_1	FACT_2	FACT_3	FACT_1	FACT_2	FACT_3	FACT_4	FACT_1	FACT_2	FACT_3			
<i>Accessibility to opportunities</i>	<i>Accessibility to work</i>	<i>Household</i>	<i>Accessibility to services</i>	<i>Accessibility to school</i>	<i>Accessibility to work</i>	<i>Household</i>	<i>Accessibility to opportunities</i>	<i>Household</i>	<i>Accessibility to work</i>	Variables regarding the household	TotFam	Number of members of the family
											Tot_figl	Number of children
										Variables regarding the accessibility judgements to opportunities	AccLv	Accessibility to work
											AccSup	Accessibility to supermarket
											AccFar	Accessibility to pharmacy
											AccAmb	Accessibility to family doctor
											AccNid	Accessibility to crèche
											AccEle	Accessibility to elementary school
											AccMed	Accessibility to secondary school
											AccPos	Accessibility to post office
											AccOra	Accessibility to parish youth club
											AccPar	Accessibility to park
											AccBib	Accessibility to library
											AccSpo	Accessibility to sport facility
											AccChi	Accessibility to church
											AccTP	Accessibility to public transport stop
											AccFer	Accessibility to railway station
										Variables regarding the trips (travel diary)	TempSp1	Duration of the first trip [minutes]
											TempSpos	Duration of all the trips during the day [minutes]
											TemLavDi	Duration of the work trip [minutes]

家庭的大小在对可达性认知中发挥重要作用；这与居住地点完全没有关系，因为在所有三个大都会地区中都存在“通勤者满意，但家庭其他成员的需要无法满足”的情况。

CLUSTERS			
Metropolitan area	Cluster 1	Cluster 2	Cluster 3
TORINO	Satisfied small urban households	Frustrated commuters	Satisfied commuters, but insatiable clans
BOLOGNA	Satisfied small urban households	Frustrated commuters	Satisfied commuters, but insatiable clans
MILANO	Satisfied urban clans	Insatiable small extra-urban households	Resigned suburban commuters
ALL THE SAMPLE	Satisfied small urban households	Frustrated commuters	Satisfied commuters, but insatiable clans



Conclusions

结论

- Both the hypotheses to be tested lead to the conclusion that:
- 通过对如下两个假设的验证得出如下结论：
 - the urban structure does not influence the presence and specificity of opportunities as they cut across the three areas (city centre, suburbs and outer city);
 - 城市结构不影响机遇的存在和特点，只要同一城市里的三个不同区域（城市中心、郊区和外围城市）都享有机遇的存在和特点；
 - if the declared travel time on foot to the opportunities is different in the three metropolitan areas, the clusters show that the zones within the metropolitan area are not different in terms of accessibility perception;
 - 虽然都灵、博洛尼亚、米兰这三个大都会地区的被调查对象所声称的步行到达机遇所在地点花费的时间有所不同，但不同的集群显示，同一个大都会地区里的不同区域里不同的样本家庭对可达性的认知没有差异；
 - the location of the residential areas and of the opportunities, together with the available transport mode, do not influence the mobility patterns, the accessibility to opportunities and, hence, the urban and social inclusion.
 - 住宅区的位置、发展机遇所在的地点以及可采用的出行方式，都不影响出行模式、发展机会的可达性，因此也并不影响社会融合。



Conclusions

结论

- The modern society, more and more affected by new standards of life promised by the new technologies, shows higher expectations in terms of enjoyment of opportunities and demands them quickly and easily
- 现代社会受新生活标准的影响越来越大，因此表现出更高的期望值，亦即人们对享受机会和方便快捷地取得这些机会的期望有所提高。
- The perception of travel times, in any area people live, is often unrelated to the actual time spent travelling, but to the several activities carried out during the day: more these activities are numerous, the more people complain, feeling dissatisfaction towards the transport means to access to them
- 在任何地区居住的人们对出行时间的认知往往都与他们的实际出行时间无关，而与在一天内进行的活动次数多寡有关：人们的活动越多就越容易抱怨，更容易对抵达这些活动地点所采取的交通方式感到不满意。



Thanks for your attention
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