

Impact of pedestrianization and traffic calming on retailing

A review of the evidence from Germany and the UK

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Germany has implemented many ambitious pedestrianization and traffic-calming schemes over the last 20 years, and has carried out quite large-scale research studies on their effect on retailing. The schemes implemented in the UK and the research carried out on them have been more modest. However, they broadly show the same picture. There is generally a positive effect on retailing, with shops inside pedestrian areas being more successful than those outside. Part of the increased turnover is transferred to the landlord, in the form of higher market rents. More extensive schemes have more substantial positive effects. However, there can be a reduction in turnover during a transition period of 1-2 years, and the effects can be unfavourable for fringe shops just outside the developed area, unless the scheme is carefully designed.

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The question of what the impact is of pedestrianization¹ and traffic calming² on retailing has been asked many times. The answers which are usually offered fall into a pattern. The local retailers are sceptical, the representatives of national chain stores are neutral or optimistic, pedestrians are normally enthusiastic, and the local authority is con-

vinced that pedestrianization will bring about the total and long-dreamed of transformation of the town-centre investment. However, the issues that determine the success or failure of these policies are complicated, and success depends on a wide range of factors. It is not possible to isolate the project completely from the following:

- (1) trends in the national and local economies;
- (2) the overall town-centre strategy pursued by the local authorities;
- (3) the degree of accessibility by public and motor-vehicle transport;
- (4) the detailed design of the scheme;
- (5) the population density within walking distance of the pedestrian area.

Therefore, any researchers who want to study the effects of pedestrianization or traffic calming have to be aware of these external factors, which can influence the results significantly.

This paper reviews past and current literature describing research carried out on this issue in Germany and the UK.

Effects of pedestrianization: results from Germany

Increase in pedestrian flows

Germany started to pedestrianize town-centre streets on a large scale 10–15 years earlier than the UK. The first studies concentrated on changes in the number of pedestrians, as this was the simplest and most obvious measure of whether the schemes were popular and successful. The most important studies were collated by Monheim (1975; 1980) (partial summaries are available in English in Hall and Hass-Klau, 1985; Hass-Klau, 1990). Pedestrian counts were carried out in the pedestrianized areas of 14 German cities during 1965–75, repeating counts which had been carried out during 1955–70, before the areas were closed to traffic. Monheim expressed the results in terms of annual rates of growth, averaged over the entire period between the 'before' and 'after' surveys, but it is probably more helpful to return to the original data to look at the total changes. The following summary only includes those German towns for which the 'before' survey was within two years or less of the pedestrianization; those for which the gap is much too long were omitted. (Most of these cases also indicated substantial increases in pedestrian flow as compared with a much earlier count, but the conclusion that this is because of pedestrianization must be weaker).

- (1) *Aachen*: 25% increase in pedestrian flow after 12 years;
- (2) *Bamberg*: 38–40% increase in two counts within one year of the change;
- (3) *Darmstadt*: 18% growth three years after completion;
- (4) *Herford*: 31% growth after one year, and 40% after four years;
- (5) *Nürnberg*: 92% and 69% growth in two counts five years after completion;
- (6) *Osnabrück*: 26% growth two years after completion;
- (7) *Wiesbaden*: 20% increase and 3% reduction in two counts following street closure, but before reconstruction was complete.

While the results show a considerable variation, it is noticeable how many of the towns show increases in pedestrian flows of 20–40%. These results can be compared with surveys carried out in eight shopping streets in Vienna, Austria, for eight years during 1973–84. The total pedestrian flow for four pedestrianized streets increased by 48% over these 11 years, while the total pedestrian flow in four nonpedestrianized streets decreased by 2.6% in the same period (TEST, 1987).

Two other sets of spectacular pedestrian-growth results relate to two Bavarian towns, where the author has collected data for several years. In München,

72 000 pedestrians were counted in the main city-centre streets on one day in 1967. As a result of pedestrianization, which was completed in 1972, the number of pedestrians rose to 175 000 in 1978, and it has continued to grow significantly since then. Nürnberg, where regular pedestrian counts have been available for more than 20 years, has seen a similar success story. In 1971, 65 000 pedestrians were counted in the main city-centre streets on a weekday before Christmas. Cars were banned in 1972, and, by 1990, the figure had increased to 160 000 in the same streets.

Monheim showed that the biggest increases in pedestrian flows were in the largest pedestrian areas, and that, contrary to orthodox expectations, public transport provided the largest number of shopping trips to city-centre stores.

However, representatives of the retailers themselves were not very impressed with evidence of pedestrian counts, being more concerned with the fluctuations of turnover, rent, other costs, and profits. They argued that statistics about growth in pedestrian flows may say little about the spending power of pedestrians and their actual expenditure in town-centre shops.

Increases in turnover in pedestrianized areas

In 1978, the Research Institute of Trade (FfH) in Berlin, published its findings on the importance of pedestrianized areas in relation to structural changes of retailing from a study which had been commissioned by the German Federal Ministry of the Economy (Bundesministerium für Wirtschaft). It compared the pedestrianized streets of 11 towns of different population sizes with streets which were located outside the car-free areas (see Table 1). Different types of business were included: retailing, restaurants, pubs, hotels, handicraft businesses and other

Table 1 Proportions of retail hotel and restaurant businesses reporting changes in annual turnover

	Turnover Increase, %	Turnover Decline, %	Turnover No change, %	Total
Pedestrianized areas^a				
Retailing	83	3	14	100
Hotels	28	8	64	100
Restaurants	63	1	36	100
Outside pedestrianized area^b				
Retailing	20	17	63	100
Hotels	20	2	78	100
Restaurants	25	5	70	100

Towns: Augsburg, Gelsenkirchen, Hildesheim, Köln, Nürnberg, Offenbach, Oldenburg, Rheine, Stade, Unna, Wolfenbüttel. Most pedestrianized areas in these 11 towns opened during 1967–70.

^a Results relating to 1066 businesses

^b Results relating to 750 businesses

Source: (FfH, 1978)

service-sector firms. Questions were asked about the structures, experiences and attitudes of these establishments. One of the main issues was evidence for increases or decreases in turnover following pedestrianization.

As shown in Table 1, the results of 1800 questionnaires showed the great majority, 83% of retailing businesses within the pedestrianized areas reporting an increase in turnover, compared with only 20% of retailing businesses outside the pedestrian areas. The same pattern was seen for restaurants (63% compared with 25%), although the pedestrianization advantage was much less marked for hotels. Clearly, one has to interpret these results in the light of the fact that the German economy was growing rapidly. For each category of business, those inside the pedestrian areas were more successful than those outside.

However, not only the turnover increased. Costs increased also, irrespective of whether the turnover increased or declined. Most importantly, costs in pedestrianized streets increased more consistently than in the areas outside. The percentage changes in the turnovers, costs and profits of all the establishments in the 11 towns in Table 1 are shown in Table 2.

It is clear that more businesses were faced with increases in costs than reductions, both inside and outside the pedestrian areas. The incidence of cost increases was greater in the pedestrian areas. In retrospect, this is not surprising: pedestrianization itself has to be paid for, and, if there is an increase in turnover, not only are more inputs used, but the working of normal market forces would be expected to increase the rents that are chargeable for the best shopping locations.

To some extent, but not completely, these costs even out the advantages of carrying on business inside or outside the areas. Even after the increases in costs, 47% of the enterprises inside the area reported an increase in profits, and 16% reported a decrease.

Table 2 Proportions of businesses reporting changes in turnover, costs and profit

	Pedestrianized area, %	Outside, %
Turnover		
Increase	66	39
Decline	7	15
No change	27	46
Costs		
Increase	75	51
Decline	1	4
No change	24	45
Profit		
Increase	47	32
Decline	16	19
No change	37	49

Source: (FfH, 1978)

Outside the areas, 32% reported an increase in profits and 19% a decrease. It should be remembered that, in all business conditions, it is normal for some businesses to be expanding and others contracting (and the managers of the ones that are contracting always tend to blame whatever local or national policy is most in the news at the time). The important point is the difference in the results between pedestrianized and nonpedestrianized areas, and those firms trading inside the areas are consistently favoured.

Table 3 shows some additional examples from Germany. By the end of the 1970s, Germany had about 500 pedestrianized areas in 300 towns. In 1979, the German Industry and Commerce Association (Deutscher Industrie und Handelstag) published a booklet, *Einkaufsmagnet Fussgängerzone* (literally, 'shopping-magnet pedestrianized area'). The results in the booklet were based on a survey which included 80% of all the German local authorities that had pedestrianized town-centre streets. 233 local authorities were covered, and 331 pedestrianized areas.

As before, a wide range of questions were asked, including the changes in the range of shops, the effects on streets outside the pedestrianized area, servicing, accessibility by public transport, design, parking spaces, and increases in rents.

It was reported that 141 pedestrianized areas experienced an increase in turnover (83%), 24 experienced no change (14%), and only five (3%) saw a reduction. In streets outside the pedestrianized areas, 24 saw an increase, 75 saw no change, and 20 experienced a decline in turnover.

The publication concluded that 153 pedestrianized streets showed an increase in the number of pedestrians. There was a decline in only four streets, and 27 streets saw no change (DIHT, 1979, pp. 15, 16).

Rents increased in 110 pedestrian areas, were unchanged in 30, and declined in two. 76 areas did not provide a conclusive answer (DIHT, 1979, p. 16).

These two pieces of work, one published by a research institute and sponsored by a government department, and the other published by a major trade

Table 3 Increases in turnover: examples of German towns

Town	Street	Shopping turnover increase, %	Date
Köln	Pedestrianized area	30-40	1970-72
Köln	Hohe Strasse	50-100	1970-72
Essen	Pedestrianized area	15-35	1969-70
Mannheim	Breite Strasse	16	1979-81
Nürnberg	60% of shops in pedestrianized area recorded an increase		1972-74
München	Pedestrianized area	40	1972-80

Sources: (BAG, 1988; Essen Stadtplanungsamt, 1971; Hermanns, 1972; München Landeshauptstadt, 1980; Nürnberg Stadt, 1979).

association¹, had a considerable impact in Germany. After this, opposition by traders against pedestrianization in any town was made much more difficult to sustain.

Official court decision: owners gain through pedestrianization

While the research was being carried out, the institutional and legal basis for pedestrianization was also changing. In an interesting example of how research can influence law, an important court decision was made (OVG NW, 1976) that concluded that, generally, pedestrianization creates economic advantages for the owners, and, because of this, owners have to contribute to the cost of its implementation. This was not welcomed by some retailers, and, in several court cases, owners tried to prove, sometimes successfully, that they had experienced no commercial advantages in their specific circumstances. However, it became common knowledge that retailers as a whole gained when parts of town centres became car-free.

Measuring change in turnover in small towns

Most of the results discussed above relied on the measurement of how many enterprises reported increases or reductions in their business. The advantage of this measure is that it is relatively easy to obtain, requiring little effort from the responding enterprises; it does not ask for figures about which traders can be sensitive. One major disadvantage is that it fails to distinguish between large and small changes in turnover.

One important study that tackled this question was carried out by Kolck (1979). It was based on the research methodology of the German Research Institute of Trade (FfH, 1978), and it included for comparison their earlier results. The study covered six small north-German towns with populations of 17 000–30 000. As shown in Table 4, the study classified businesses by the sizes of the changes in turnover that they reported. The study covered 581 businesses, and the 1066 businesses of the FfH study.

¹ There is an interesting postscript to this story. The two surveys, the first covering 11 towns, and the second covering 331 pedestrianized areas, were independent pieces of work, and the general tones of the results certainly reinforced each other. However, there is an ambiguity in the results quoted for retail turnovers in the second survey, which have previously been interpreted as reports from the areas surveyed. The reader may have noticed, as the author of this paper only did for the first time while preparing the paper, that the percentage retail changes quoted are implausibly identical in the two studies. What seems to have happened is that the DIHT pamphlet applied the FfH percentages to their own results, calculating what they expected to have happened, rather than producing new figures. If this is so, then the retailing figures in the second study should certainly not be treated as independent confirmation of the first study. Therefore, the subsequent 14 years of German town-centre development may not have been based on quite as firm a research foundation as was thought. Luckily, Monheim's original work was robust.

In this study, figures for businesses outside the pedestrianized areas are not included, and so it is not possible to control for general movements in the economy in the same way as for Tables 1 and 2. The bottom row of Table 4 should correspond with the figures for the 11 towns in Tables 1 and 2, though there is actually a small unexplained discrepancy in the proportions of revenues remaining the same or increasing. It is noted that, of those firms that reported an increase in turnover, the largest proportion (32.4%) report an increase of between 5–10%, with 15.8% of firms reporting increases of 10–20%, and 6.8% of firms reporting increases in turnover of over 20%.

Comparing these figures with those for the six small towns, it seems that there is a slightly greater likelihood of turnover being reduced in the small towns, and that the increases are slightly less. However, the distinction is not very marked, and some of the small towns, notably Cuxhaven, Hildesheim and Oldenburg, have done consistently better than the average of the 11 bigger towns. This suggests that size is only one (and perhaps not the most important) reason for the very substantial differences between towns.

What could be concluded from these analyses is that the majority, but not all, of the retailers in pedestrianized areas enjoy an increase in turnover, that this is true for small towns as well as for bigger ones, and that the size of the increase for most of them is likely to be 5–20%.

Later research results

Similar results were found in a survey carried out about ten years later by the author of this paper (Hass-Klau, 1988). Three middle-sized German towns, Hameln, Göttingen and Freiburg, were included, with populations ranging in size from 57 000 (Hameln) to 175 000 (Freiburg). Town-centre establishments were asked about the effects of pedestrianization and traffic calming on retailing. 777 of 4000 retailers returned the questionnaire. The results revealed that 71% of the respondents in Freiburg, 74% of those in Göttingen, and 85% of those in Hameln thought that pedestrianization had had a positive impact on their turnover. Only 10% of the traders in Göttingen and Hameln believed that pedestrianization had had a negative influence, and only 5% of those in Freiburg, the town with the longest and most consistently environmentally friendly transport policy.

Traffic calming and retailing

In the following years, most town-centre businesses were aware that pedestrianization could increase both profits and turnovers considerably; therefore, many enterprises urged towns which had not already pedestrianized to implement such a scheme. Importantly, there was also a demand in towns which had already pedestrianized to increase the size of their car-free

Table 4 Average annual development of turnover after pedestrianization or opening of business in pedestrian area

	Decrease by 5% or more	Decrease by less than 5%	Remain the same	Average annual development of turnover				Increase by 20% or more				Total
				Number	%	Number	%	Number	%	Number	%	
Cuxhaven	2	5.3	—	15	39.5	—	—	7	18.4	11	29.0	38
Stade	4	6.2	1	1.5	20	30.8	12	18.5	22	33.8	4	100
Verden	6	15.0	4	* 10.0	14	35.0	2	5.0	11	27.5	2	65
Hildesheim	3	3.2	2	2.1	14	14.9	10	10.6	35	37.2	20	10.7
Oldenburg	5	2.0	9	3.6	74	29.8	29	11.7	80	32.3	22	8.9
Wolfenbüttel	5	15.6	2	2.1	40	41.7	6	6.2	22	22.9	9	9.4
FhF Total*	49	4.6	29	2.7	305	28.6	97	9.1	345	32.4	169	15.8
											72	6.8
											1066	100

* Augsburg, Gelsenkirchen, Hildesheim, Köln, Nürnberg, Offenbach, Oldenburg, Rheine, Stade, Unna, Wolfenbüttel (but without Cuxhaven and Verden).
Source: (FhF, 1978) IHK Stade.

areas, because it was apparent that shops on the fringe of pedestrianized streets did not do particularly well.

However, by the middle of the 1980s, the new development of traffic calming started to be perceived as a threat by businesses. As with pedestrianization, ten years earlier, most retailers were united in the belief that traffic calming would be bad for business. This was obvious to them, because car drivers, their most valued customers, had to manoeuvre through numerous chicanes and road humps, as did service-vehicle drivers.

In response to these fears and complaints by retailers, the German Federal Ministry of Regional Planning, Housing and Urban Development (BMBau) included research on the effects on businesses in the demonstration project of area-wide traffic calming which was started in 1980 and concluded in 1992. Extensive research was carried out in districts or town centres of five towns and one village of different sizes and structures (Berlin, Mainz, Esslingen, Buxtehude, Ingolstadt and Borgentreich) on a very wide range of issues (for more details, see (Döldissen, 1988; Keller, 1990; Hass-Klau, 1990)).

One of the most important questions which was asked was whether area-wide traffic calming influenced turnover. As with studies on pedestrianization, it was clear that the results were influenced by external factors. 'Before-and-after' surveys were carried out using interviews and in-depth discussions. The surveys were planned using a panel, with the same businesses being interviewed before and after traffic calming. In Esslingen and Mainz-Bretzenheim, there were financial and political difficulties which had an impact on the research. The results from the other four towns were as follows.

Berlin-Moabit. The details of this area were as follows:

- (1) population size: about 3M;
- (2) traffic-calmed area: 30 000 inhabitants;
- (3) area size: 1 km² and 7000 employees;
- (4) number of businesses in research area:
main roads: 258 (1983), 245 (1987); residential roads (traffic-calmed): 415 (1983), 401 (1987).

The response rate for the main roads was 18% (46 firms), and for the residential areas it was (29%) (117 firms). The differences in the response rates may have distorted the results, which are shown in Table 5.

Despite the small sample size, there is some indication that slightly more of the businesses in the traffic-calmed streets did better than did the businesses on the main roads.

Borgentreich. The details of this area were as follows:

- (1) population size: 9200 inhabitants;
- (2) traffic-calmed area: 2300 inhabitants;
- (3) number of businesses in research area: traffic-calmed area: 47 (1985), 46 (1987).

Table 5 Turnover of all enterprises in 1985-88, Berlin

	Main roads		Traffic-calmed residential streets	
	Number	Percentage	Number	Percentage
Increased	6	13	27	23
Unchanged	20	44	37	32
Reduced	13	28	31	26
Not known	7	15	22	19
Total	46	100	117	100

The response rate in the traffic-calmed area was 74% (34 firms). A control area (Borgentreich-Borgholz) provided information from 16 firms.

The results, shown in Table 6, show higher proportions of firms reporting increases and decreases in turnover in the control area than in the traffic-calmed area, although the sample size for the control area is not very convincing. The traffic-calmed area showed no declines in turnover.

Buxtehude. The details of this area were as follows:

- (1) population size: 33 000 inhabitants;
- (2) traffic-calmed area: 10 000 inhabitants;
- (3) area size: 2.20 km².

The traffic-calmed Old Town contained 205 businesses in 1983 in the 'before' survey, and 209 in 1987 in the 'after' survey. The control area, Bahnhofstrasse, had 120 businesses 'before', and 125 'after'. Detailed information was available about 78 businesses in the traffic-calmed area, and 26 in Bahnhofstrasse.

The results are shown in Table 7. 37% of responding businesses in the Old Town (traffic-calmed area)

Table 6 Enterprises turnovers in 1985-87, Borgentreich

	Traffic-calmed area		Control area	
	Number	Percentage	Number	Percentage
Increased	11	32	7	44
Unchanged	17	50	4	25
Reduced	0	0	1	6
Not known	6	18	4	25
Total	34	100	16	100

Table 7 Turnovers of businesses in 1983-87, Buxtehude

	Old Town		Bahnhofstrasse	
	Number	Percentage	Number	Percentage
Increased	29	37	6	23
Unchanged	23	30	5	19
Reduced	12	15	5	19
Not known	14	18	10	39
Total	78	100	26	100

showed an increase in turnover. The turnovers of 30% stayed unchanged, and 15% of turnovers declined. The control area showed fewer increases in turnover, and more decreases (IfS, 1991, p. 46).

Ingolstadt. The details of this area were as follows:

- (1) population size: 100 000;
- (2) traffic-calmed area: 5500;
- (3) area size: 1.2 km²;
- (4) number of businesses in research areas: 968 (1985), 1087 (1988).

Detailed information about 154 businesses was available.

The results are shown in Table 8. The most notable result is that the pedestrianized area showed the highest proportion of increases in turnover.

Research outcome. The study came to the conclusion that area-wide traffic calming had some impact on turnover. In most of the towns, businesses in the traffic-calming areas did slightly better than those in the control areas. However, during the period of construction itself, there can be significant traffic disruption, and it is suggested that some of the 'after' surveys were carried out too quickly after the implementation of traffic-calming measures. This would increase the proportion of enterprises reporting a decline. The most important result may be that, in the two areas in which traffic calming has been carried out comprehensively, Buxtehude and Borgentreich, a high number of businesses have increased their turnovers, and a low number of businesses have seen a decline in turnover. This is a somewhat similar pattern to that found with the more ambitious pedestrianization schemes, and it may suggest that the design of pedestrian-friendly traffic calming needs to be quite ambitious to have a positive effect.

Car-free city: a nightmare for retailers?

The car-free policy, which is now widely discussed and partly implemented in some German towns, is called *die autofreie Stadt* (literally, the 'car-free city'). In fact, none of the existing German examples are really car-free, but more serious attempts are now being made to

close town centres completely to cars, and to reduce the negative impacts of motor-vehicle traffic as far as possible in other built-up areas.

German businesses, which eventually happily agreed to large-scale pedestrianization, and which had just been convinced that traffic calming was not as damaging to their trade as had been assumed, have now become agitated about the threat of the implementation of the car-free city, the most radical green transport policy so far suggested. Every town which has started discussions along these lines has experienced opposition from its traders. Included here is the example of Aachen.

Aachen. Aachen was the second town, after Lübeck, to use the phrase 'car-free' town centre, although there are a number of other German towns which have, in fact, reduced the dominance of car traffic far more than Lübeck or Aachen.

Aachen's city centre is closed to car traffic every Saturday over the period, 10.00–15.00; since October 1991, once a month, this period has been extended to 17.00. After 10.00, access to the centre is provided by buses from several park-and-ride stations; some multistorey car parking facilities are open all day.

Traders were, from the beginning, opposed to this scheme, and they very quickly complained about a decline in turnover. Aachen's Chamber of Commerce and Trade commissioned the University of Köln to study the effect that the closure has had on turnover in the town centre (Universität zu Köln, 1993). Turnover figures were made available for November 1990–August 1992 (for ten months 'before' (November 1990–August 1991), and ten months 'after' (November 1991–August 1992)).

151 (24%) enterprises (retailers, other service sectors, craft enterprises, and one out of 60 restaurants/pubs) responded to the survey. A smaller number, 131, answered questions on their turnover.

It was found that there was indeed a fall in turnover in the very short period June 1992–August 1992. About 60 enterprises experienced a decline in turnover, while 28 enterprises showed a significant increase. Smaller enterprises showed a decline of 2.5–3.0%. As with pedestrianization, enterprises at the edge of the city centre showed the greatest decline.

Table 8 Enterprises turnovers in 1985–88, Ingolstadt

	Pedestrianized area Number	Percentage	Distributor roads ^a Number	Percentage	Residential roads ^a Number	Percentage
Increased	15	46	2	18	36	33
Unchanged	10	30	5	46	33	30
Decline	5	15	3	27	19	17
Not known	3	9	1	9	22	20
Total	33	100	11	100	110	100

^aTraffic-calmed streets. No control area was included in this town

Comparing turnovers on the 47 Saturdays 'before' and the 47 Saturdays 'afterwards', there was a 5% decline in total turnover. The large businesses experienced a decline in turnover of about 3%, but the small and middle-sized businesses had a reduction in turnover of nearly 9%. Again, the decline was greatest at the fringe of the city centre. Note that, although the Saturday business went down, the monthly turnover of the respondents as a whole went up by 0.3% in the period of the study.

Therefore the research, at first sight, seemed to show that the traders' campaign against the scheme was, to a certain extent, justified. However, the Chamber of Commerce then decided not to continue with its opposition, and to support the town's policy. What appears to have happened is that a minority of businesses whose trade did indeed go down (although not by much, and perhaps not for reasons related to the car-free policy) were outnumbered by a majority of businesses which had not joined in the campaign, and had not answered the questionnaire, but whose turnover was stable or increasing. The fact that 59 out of 60 restaurants did not reply may be significant. This experience indicates the weight of conventional short-term thinking and inertia among articulate traders. However, at the end of the day, money counts, and it seems that, once again, action to reduce excessive traffic was felt to be an advantage for most businesses.

Effects of pedestrianization: results from UK

Increases in turnover: research less conclusive

Growth in pedestrianization in the UK has tended to mirror German developments, but more slowly, and with smaller schemes. In view of the importance of the retailing issue, it is remarkable how little research has been carried out on this question in the UK. What there is has mostly been carried out via small-scale studies by private research institutes with limited external funding, rather than by major commercial organizations and government departments, as has been the case in Germany.

Even so, there are a number of results which can be considered together.

Wyborn reported an increase in pedestrian flow but virtually no change in trade in the year following pedestrianization in Leeds, although Cashmore (1981) later suggested a possible positive effect on sales (Wyborn, 1973).

Roberts (1981) summarized a number of studies that were available in 1981. These included the following:

- (1) In 1978, an OECD study included 13 UK cities, of which half had noticed any change in sales.
- (2) In 1976, the Durham Civic Trust reported an initial decline of 20% in turnover in Durham, but a survey after four years of 84 businesses found that

52% reported an increase in trade, 44% no change, and 3% a decline.

- (3) Increases in turnover were reported for Bridlington, Hull, Lincoln, Bangor, Chichester, Norwich and Portsmouth, but with the data being in a form which made it difficult to draw the definite conclusion that this was due to pedestrianization.

Davies (1984) reported a very large growth in turnover in a large purpose-built shopping centre at Eldon Square in Newcastle in 1976-77, suggesting that 37% of its total turnover had been abstracted from the shops in the existing surrounding streets (which were still open to traffic), although three years later the surrounding streets appeared to be benefiting from an increased number of shoppers brought to the area in general; there were 51 vacant shop sites in the central area just before the development opened, 69 a year later, and 27 two years later.

TEST (1987) reported a survey carried out with traders in a traffic-calmed street in Covent Garden, London, in which 60% of the respondents said that turnover had increased, and local estate agents reported that the 'traffic scheme had probably resulted in higher pedestrian flows and thus higher rents and property values' (TEST, 1987, p. 178).

It can hardly be said that these early results were conclusive, although, bearing in mind the modest scale of the schemes that they refer to, in most cases, perhaps this is to be expected.

Three more recent studies help to fill out the picture.

Rateable value as measure of turnover and profit

Lynch (1991) summarized an MA thesis carried out at Oxford Polytechnic, UK. In this study, six towns were compared: Poole and Fareham, which had enclosed shopping precincts or malls, Chichester and Kings Lynn, which had pedestrianized streets with traffic totally excluded, and Oxford and Reading, which had semipedestrianized streets with bus access.

In each case, the growth in the rateable values of shops in the pedestrianized schemes in 1973-90 was compared with the growth of rateable values in the same period in town-centre streets which remained open to traffic.

It was found that all three classes of pedestrian shopping showed higher rateable-value increases than those in nearby traffic streets. The greatest premium was that in the precincts/malls, and then (fairly close behind) the traffic-free streets; the pedestrian streets with buses showed only a small increase compared with traffic streets.

The author commented that, in the schemes with total exclusion of traffic, there was greater polarization of retail types, which seems to have reduced the number and range of functions of small independent shops. This had not been so apparent in the pedestrianization schemes that allowed limited vehicle access.

It should be explained that the UK system of rateable values is based on professional valuation for local taxation purposes, and it is related only indirectly to market rents, which are used in the other study reported below. Thus the fact that the shopping precincts had the highest premiums may be related to the predominance of new building, rather than increased turnover or profits.

This also raises a number of other questions. For instance, how do precincts compare with both types of pedestrianized streets (with traffic excluded or public-transport access) within the same town centre? Further, how do precincts which were built 20 years ago and have aged and lost their appeal compare with well and newly designed pedestrianized streets, generally, and within the same town centre?

Empty shops as indicator of retail success or failure

Wiggins (1993) examined 29 street sections in Leicester city centre, including streets which were pedestrianized or had pedestrian priority, and also streets open to traffic, although some of these had a variety of restrictions. In each section, the proportion of shop sites which stood vacant was calculated, and this was compared with the traffic flow, number of parked cars, and location. 'Shops' included banks, insurance companies and building societies. Shops which were temporarily closed for refurbishment, or which announced a definite opening date were not counted as vacant.

Wiggins reported a statistically significant correlation between the motorized traffic flow and the proportion of shops vacant. The higher the traffic flow, the more shops were vacant.

There were 674 shops in the sample, of which 9.1% were vacant. Table 9 (recalculated from data provided in an appendix to the report) shows vacancy rates in relation to the levels of traffic flow.

These results are interesting, and are comparable with the Newcastle study discussed above. It seems valid to assume that a high proportion of empty shops is one of the indicators of general decline in a shopping area.

Market rents and pedestrianization

Possibly the most important study in this field was carried out by Edward Erdman Research (Edward Erdman Research, 1989) in a study of market rents in the prime shopping sites of a sample of over 400 UK

towns, in the years 1987, 1988 and 1989. (It is currently carrying out further work to update the results).

The sites were divided into three categories: (a) 'vehicular streets', in which shopping took place alongside ordinary traffic, (b) 'schemes' that were shopping precincts which provided a traffic-free environment, enclosed and open, and (c) 'pedestrianized streets', which included completely and partially traffic-free streets.

Table 10 summarizes the results of this survey, for the country as a whole.

As shown in Table 10, the highest rents were commanded in the pedestrianized streets, the next highest in the precincts, and the lowest in the traffic streets. This was true in both 1987 and in 1989, but the differential increased during the period: in 1987, the 'pedestrianized-street premium' was 45% over the traffic-streets rents, but, in 1989, the premium had gone up to 80% over the traffic-streets rents. This was reflected in the differential growth rates in rents, which were about the same in the precincts and the pedestrianized streets, but, in both cases, they were more than twice as high as in the vehicular streets. Note that the overall increase in rents was connected with the property boom during this period.

One interesting feature of the research is that it looked separately at a sample of streets in 14 towns in which pedestrianization was actually implemented between the survey periods of 1987-88. In these streets, the average increase in prime rents during the following year was 28%, which is hardly distinguishable from the overall UK average figure of 27% over the same period. This is entirely consistent with the picture that has emerged from the German results, in which pedestrianization does not have a marked positive effect on trade in the first year. One would expect that the differential growth in rents would pick up later, and it will be most interesting to see whether the forthcoming results support this hypothesis.

Table 10 Rents per square foot and rental growths for prime shopping sites in UK towns

Site	1987 rent (index)	1989 rent (index)	Growth 1987-98, %
Vehicular street	100	100	19.7
Precinct	129	155	40.9
Pedestrianized street	145	180	42.5

Table 9 Vacant shops in relation to traffic flow (town centre, Leicester, UK, 1992)

Traffic flow in street section	Number of street sections	Total number of shops	Number of vacant shops	Vacancy rate, %
Zero	2	64	2	3.1
Low (up to 200 vehicle/h)	10	250	16	6.4
Medium (200-500 vehicle/h)	11	221	23	10.4
High (over 500 vehicle/h)	6	139	21	15.1

Edward Erdman Research also provide regional breakdowns showing that the regions in which the pedestrian rental premium is highest are (in order of the size of the premium) Yorkshire and Humberside, East Anglia, Wales, the South East, the North, Scotland, and the East Midlands. All these regions had prime-site rents in pedestrianized streets that were more than 50% higher than those in traffic streets. The effect was present, but much less marked, in London (central London was excluded), the South West, the North West and the West Midlands.

Table 11 shows that, in eight regions, the pedestrianized streets commanded the highest prime rents, but, in three regions, precincts commanded the highest rents (although by a smaller margin). There was no region in the country in which prime sites in streets open to general traffic commanded the highest rents.

Conclusions

There have now been over 20 years of experience of extensive pedestrianization and traffic calming in Germany, and over ten years of rather less ambitious schemes in the UK. The expected effects of these measures on the commercial viability of the developed area, especially for the retail trade, has been a recurrent concern. This paper is based on the general experience of a significant number of German towns, together with more detailed studies of a small number of towns. The conclusions are reinforced by some data from UK towns, including a survey of 400 shopping centres, and studies (although these are not particularly in-depth) of a small number of towns.

It can now be taken as established that a well designed pedestrianization scheme results in a substantial increase in the number of pedestrians visiting the pedestrianized area. Increases of 20–40% in the first year are not uncommon.

It is more difficult to determine how much money these additional pedestrians bring to the town centres, but there are typical patterns which seem fairly well established. There is not usually an immediate large increase in trade, and there may even be a small drop,

which can last for about a year; the decline depends on the size of the business, its structure and its location. The economic cycle must also always be taken into account. After the transitional period, retail turnovers may be expected to increase, showing growths which are greater than those seen previously, and greater than those in other shopping centres which have not been developed as discussed above.

Not all of the increased financial benefits go to the retailers. Profits can increase, but by less than the increase in turnover. This may be because of the following:

- (1) Some part of the increased revenue is absorbed in the higher rental values that typically result from pedestrianization. This benefits the landlord, rather than the shopowner.
- (2) Some part of the increased revenue is allocated to the costs of designing and implementing the town-centre improvement and providing better public transport to the town centre. German legislation requires owners to contribute to the cost of pedestrianization.

Thus the benefits are shared between a wide range of private and public town-centre services, the landlords, the pedestrians, and the town itself.

There is little evidence that the benefits of increased turnover are passed on to the customer in the form of reduced prices (indeed, prices are sometimes lower, owing to market pressures, in the depressed zone outside the centre). The benefits to shoppers are mainly in the form of a substantially improved urban environment and, in some cases, improved public-transport facilities.

It seems to be a law of nature that retailers will resist the implementation of pedestrianization and traffic calming; this may be because they do not yet have information networks from which they can learn about other towns' experiences. However, they virtually never campaign for the abandonment of a scheme once it has come into operation. It is notable that, once a scheme has been put in place, traders are often the main people to voice a desire to extend its boundaries or period of operation.

There are different levels of pedestrian-friendly transport treatment. The one that appears to have the greatest effect on retailing success is the use of traditional street structures and street patterns over relatively large areas, providing a coherent and interesting pedestrian network. Small sections of pedestrianized streets or covered pedestrian precincts can also have a positive effect. However, one has to be aware that covered precincts age and become unfashionable; they are far more difficult and costly to modernize than pedestrian streets.

The effects of traffic calming on retailing are normally much smaller, although it still has worthwhile effects on safety and the pleasantness of the pedestrian environment.

Table 11 Prime-site rent premiums for pedestrian shopping streets and precincts

Regions in which pedestrian streets have highest rent premiums	Regions in which precincts have highest rent premiums	Regions in which traffic-calmed streets have highest rents
South West	Greater London	None
East Anglia	South East	
East Midlands	West Midlands	
Yorkshire and Humberside		
North West		
North		
Scotland	Wales	

Source: (Edward Erdman Research, 1989)

In conclusion, retailing considerations, in general, reinforce the other reasons that have made the evolution of pedestrian-friendly city space one of the most important transport-planning developments in recent years. This evolution is not yet complete, and one may well see developments in which private cars are completely banned in city centres, and severely restricted in other parts of the built-up environment.

In the past, some transport and planning policies have tended to erode the social importance, economic vitality and political power of cities. This was at first connected with a general antiurban movement, which saw towns as centres of disease, crime, corruption and threatening politics. The most recent history of transport-planning decisions has left scars and built structures that create their own constraints. There are many towns that have already destroyed much of the traditional town-centre fabric by taking motorway-standard roads too close to the heart of the city, dividing residential and shopping areas, and therefore partly wrecking interesting and complex street patterns within which pedestrian movements flourish. It will not be effective in these cases simply to pine nostalgically after a lost urban structure: it will be necessary to invent new design principles, new traffic-engineering methods, and new ways of treating the built environment which are not yet in the transport-planning textbooks.

Putting this development into a political context, one is now seeing an increasing interest in the future of cities themselves. In European discussions, it may not be an accident that the debate about 'subsidiarity', which was initially about the power of the institutions of the European Commission in comparison with that of the national governments, is now including ideas about recreating important elements of urban autonomy. Pedestrianization, traffic calming and traffic restraint, mostly implemented because of the demands of local residents and, increasingly, local traders, can be seen as part of this process.

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Editorial note: Information Exchange: we would be interested to receive short summaries of results from other cities and countries on this topic — not longer than a page or so each, initially, but with references to supporting reports if available. If there is sufficient material, it will be collated and published in a future issue. All contributors to this exchange will be sent copies of whatever we receive.