Phone (44) 01730 829 416
Mobile (44) 07717 222 459
e-mail irfrancis@onetel.com

Sunny Bank,
Church Lane
West Meon,
Petersfield,
Hampshire GU321LD

UK Statistics Authority,
Statistics House,
Tredegar Park,
Newport,
South Wales
NP10 8XG

Complaint about Atkins' Report on Portsmouth's 20mph Area and Portsmouth City Council's Misrepresentation of the Results

Dear Sirs,

I write to draw attention to **serious discrepancies in WS Atkins' reports** for the DfT into **Portsmouth City Council's (PCC's) 20mph area** – in brief, it is incompetent, statistically flawed, biased, selective and misleading.

I also wish to draw your attention to **Portsmouth City Council'**s attempts, based on bogus claims of "encouraging signs", to e**ncourage other local authorities** across the country to spend large amounts of public money on similar scheme. At best the results prove nothing and at worst imply significantly worse results than elsewhere and my fear that other local authorities may be **misled by these bogus claims into wasting money and worsening risk,** as at least two have already done.

The **Department for Transport** (DfT), despite having pointed out to PCC before the scheme started that 20mph areas relying on signs only are a waste of time and money, seemed to be colluding with PCC in promoting such schemes, as seems to be at least **one author of the Atkins reports**. In a Sunday Telegraph report of 3rd October however the DfT now seem to be saying that it is up to local authorities to make their own assessments. Whether those local authorities have the necessary detailed knowledge of these subjects is of course another matter.

I urge you, as expert statisticians, **to make your own assessment in the context of the evidence I provide**. I stress the urgency as local authorities have been subjected for months to this misleading information. When funds are wasted on ineffective or counterproductive schemes they cease to be available for other, better methods that would cut casualties.

I enclose a list of relevant points, each complete with references to more detailed information on the enclosed CD. I would be happy to provide further information or assistance if required.

Yours sincerely,

Idris Francis B.Sc.

1/ Background

Having spent thousands of hours over ten years studying road safety and casualty trends I was astonished late in 2009 to see media reports that PCC were claiming "***encouraging signs***" in the first year of operation of their £572,000 scheme. I was surprised because (as anyone familiar with the subject knows) even on a national scale, casualty numbers are **too volatile** and too much affected by factors such as chance, weather, the economy etc. to provide statistically meaningful indications of trends over a single year. Three years' data is widely recognised as being the minimum basis for interpretation especially for less numerous fatal and serious casualties.

Given these volatility problems even with national data it was immediately obvious to me that **PCC's claims based on data from one city over only one year could not possibly be justified.** Accordingly I used the Freedom of Information Act to obtain more information, and then sent a formal complaint to every Councillor pointing out that they had no basis on which to claim success and no basis on which to encourage other local authorities to copy the scheme.

My complaint has effectively been ignored (though it remains in place) but the **briefing note** sent to all Councillors by Angela Gill of the Council's Traffic Safety and Sustainable Transport section, and leaked to me, **betrays astonishing lack of understanding of even basic arithmetic, let alone statistical principles, and utter determination not to face facts**. My detailed rebuttals of all those errors and misconceptions are interleaved in the text of that note.

While my initial complaints were about PCC's unfounded claims of success, I am now also concerned about many aspects of the Atkins reports themselves, described by Professor Senn as using incorrect terminology, an inappropriate test of significance and the work of someone who seems not to be a statistician. In my view the reports use **biased language and cherry-picks data to create impressions not justified by the facts, and fail properly to compare Portsmouth's results with national trends.**

In short, half a million pounds of public money has been spent on a scheme known in advance to be unlikely to achieve anything, and despite the lack of any meaningful evidence of any benefit, Portsmouth Council are encouraging other local authorities to do the same on the basis of claims of success that have no basis in fact. Road users and taxpayers deserve better than this.

The enclosed CD contains all the Atkins reports, detailed correspondence and analysis so I need not repeat it here. Instead the enclosed summary is essentially a list of the main points, each referenced to the detail on the CD. A list of all documents on the CD is provided at the end of this letter.

2/ Summary of Complaint

a/ Much time and taxpayers' money has been spent analysing in depth modest amounts of data which, from the beginning, **could be sufficient to be statistically meaningful**. Why? Too many people are sitting around analysing data at public expense than could possibly be justified simply because computers make it easy to do – but the old phrase "Garbage in, garbage out" still applies.

b/ PCC implemented the scheme with **no prior assessment** of what benefits might be achieved, and according to their FoI replies, with no records of how, why or by whom the decision was made. Ms. Gill claims that casualty reduction was apparently not part of the objective, rather the scheme was aimed at making residents feel safer!

c/ The Atkins reports are consistently **skewed in favour of the scheme** by using weasel words, cherry-picked data and assumptions not justified by the facts.

d/ One example is the **concentration on all casualties rather than the worse trends of serious casualties.**

e/ The emphasis on the 1.3mph average speed reduction is absurd as averages can hide serious problems and hence there **is no known relationship between average speeds and what really matters**, accidents and casualties.

f/ Atkins and PCC **claim success** despite Atkins' frequent statements that changes in accident and casualty numbers were within normal random variations and hence **not statistically significant.**

g/ The 1st year reports showed separate figures for K, SI and KSI, but the 2nd year **report shows only KSI.** Why? KSI is now widely recognised as an unsatisfactory indicator because fatality trends are masker by 10 times larger serious injury trends.

h/ Claims of public support are **not supported by the polling evidence** provided. In any case it is standard practice in professional safety circles to ignore uninformed public opinion.

i/ Professor Senn, quoted in the Sunday Telegraph report of October 3rd, said that the Atkins report was unsatisfactory because *"The design of the report is very bad. Various statistical terms are used incorrectly and they've probably used the wrong statistical test…"They haven't got a control group, which is pretty basic, and without which it is pretty naive to jump to conclusions."*

He also told me that he believed that "*a statistician was not involved (or if one such person was involved he or she was very junior)".*

I am an electronic engineer not a statistician, and accordingly you and Professor Senn will be better judges of this than I, but I have seen enough warning signs in these reports to be unhappy about them. Further, judging by my correspondence with PCC, the Council's people seem either ignorant even of basic principles or determined to ignore them.

3/ Traffic Volume

a/ The first year report mentions **a 12% reduction in traffic volume**, but this is both ignored in the assessment of accident and casualty changes and completely missing from the final report. Why? Risk assessment is normally based on accidents and casualties relative to traffic volume but here it the fall is ignored and, according to Ms. Gill, deliberately ignored.

b/ Atkins state that "*firm conclusions on traffic volume effects cannot be reached*". **Why ignore the only available data, showing a fall in traffic** (as was anticipated in the scheme objectives) for lack of certainty, when so much else is nebulous and unreliable? Is the 12% fall not the best and most plausible estimate available?

c/ The logical explanation of this fall in traffic, as the planners hoped, is that **a proportion of drivers avoid the new 20mph area** by diverting around it or indeed by not coming to Portsmouth at all. Logically they take their share of accidents and casualties with them, which means that reductions achieved within the 20mph area might well be at the expense of increases elsewhere. Moving accidents from one area to another is not a tangible benefit!

d/ "This traffic volume data was received from PCC for the cordon roads (those on the boundary of the 20 mph speed limit scheme). This was analysed in order to assess whether any traffic migration had taken place". This is self-evident nonsense for reasons described below.

e/ *"The average reduction in traffic (3%) on PCC cordon roads is therefore greater than the national reduction (1%) and as such it is likely that there was no traffic migration".* This again is nonsense - traffic changes on low and high volume roads cannot be compared on the basis of percentages alone. A significant percentage of traffic diverted from a low traffic area to a high volume through route would (other things being equal) show up as a lower percentage increase there. Also the 3% fall on the perimeter roads might have been due to drivers avoiding not only the 20mph area but the routes around it – including not coming to Portsmouth in the first place because of the 20mph area.

No data traffic exists to clarify these points, but drivers have a very long history of carrying on driving regardless of problems such as petrol prices, the economy and indeed anti-car policies.

4/ Traffic Speeds

a/ Professor Senn points out that the **Mann-Whitney test** of statistical significance of average speeds used by Atkins **was inappropriate and implies less than competence**. However in my view this statistical significance is itself of no real importance because **average speeds are not in any case a reliable indictor of risk** – and it is risk that matters. That Atkins and PCC place **so much emphasis** on what is essentially a quite trivial, and in any case **both unreliable and largely meaningless, 1.3mph change** is both astonishing and worrying. If not due to plain incompetence it may well be another example of bias.

b/ Given that speeds were measured only on a sample basis, the observed 1.3mph reduction might well be due to random chance, weather conditions etc. in any case.

c/ Atkins' statement that *"Therefore it is possible, but not certain, that the 1.3mph overall reduction in average speeds in Portsmouth may have been due to the implementation of the 20 mph scheme"* is biased towards the fall having been due to the scheme, when there is no statistical basis to believe it.

d/ Averages can often be seriously misleading because they mask all sorts of nasty surprises. In Portsmouth the 1.3mph fall in average speed masks the fact that while speeds **fell** significantly on some roads they **rose** significantly on nearly as many others.

e/ Another problem with the results provided by Atkins is that speed changes are tabulated in arbitrary groups of speed ranges and by the **number of roads involved, without weighting for traffic volume,** perhaps because that volume data is not available). But without that weighting the **number** of roads on which speeds rose or fell is **almost meaningless** because what obviously matters in terms of safety is the **volume** of traffic that speeds up or slows down, not the number of roads on which each happened. Further, even if that detailed evidence were available it would probably still be useless as an indicator because layout, congestion and other factors also play significant parts in accident causation.

f/ Another aspect ignored by the reports is the distribution of speeds across the observed range. By this I mean that if, prior to the scheme, the great majority drove at modest speeds but a few lunatics at high speeds, forcing those lunatics to drive much more slowly while most continued as before might result only in a modest reduction like the 1.3mph observed yet a significant reduction in risks and accidents. If on the other hand drivers across the speed range all reduced speeds by 1.3mph the safety benefit would have been minimal. (But do lunatic speeders take any more notice of 20mph signs than 30mph signs? I rather doubt it.) But which was it? We do not know, because all we are told is the average.

g/ Yet another problem that Atkins and PCC seem not to understand is that, given that most drivers drive most of the time at speeds they consider safe, the additional **risk associated with increases** above speeds drivers previously thought safe might well be **greater than the reduced risk due to decreases** in speed below those previously thought safe. To illustrate the point - a walker on a cliff path a safe distance from the edge does not become significantly safer if he moves further from the edge but does become markedly less safe if he moves closer.

In other words, for any given road, the graph of risk is unlikely to be symmetrical about the previous average speed, and it is entirely possible (as the results suggest) that the modest **reduction** of 1.3mph in average speeds might well be accompanied by **greater overall risk**. Accordingly the **statistical reliability of the change is essentially irrelevant** because no one knows how it relates

to risk – which in the end is what matters. Indeed the all-too-common assumption that slower speeds automatically mean fewer accidents is demonstrably false:

h/ For example, drivers who **look more frequently at their speedometers** to ensure that they stay within the new limits **are at more risk** of failing to spot in time a hazard, such as a pedestrian stepping off a kerb or a cyclist wobbling. It is a matter of record that speed cameras have caused fatalities in this way, and the risk in congested and narrow streets, with parked cars, is clear.

i/ Another example of is that if **risk is perceived to be less** due to the 20mph limit, pedestrians and cyclists etc. may well be less careful than they otherwise would have been – as undoubtedly happened with seat belts when the 1984 law requiring front seat belts to be worn resulted in fewer occupant deaths at the expense of those the vehicles hit.

j/ Atkins and PCC seek to justify the expensive nonsense of installing 20mph signs where average speeds were already at or near that level on the basis that it will "*support the low driving speeds adopted previously*". Is it any wonder that the scheme had so little effect on average speeds, as the DfT had long known and advised?

k/ Atkins' statement that **"***A detailed examination of the accident causation factors did not show any noteworthy change in patterns, in particular those related to inappropriate speeds and aggressive driving. This indicates that the scheme may not have had a significant effect on influencing the contribution of these factors in accident occurrence*" is a **convoluted, weasel-worded way** of saying that the scheme had **failed in one of its objectives**, to change driver behaviour for the better

5/ Public Opinion

a/ Atkins' statement that *"The scheme is generally supported by the residents who responded*" and PCC's conference presentations **seriously misrepresent the poll findings:**

i) It is well known that opinion polls can be worded to encourage the answers the client wants to see.

ii) Few of those polled have any idea of the accident or casualty results, and to the limited extent they have any basis for forming opinions, they are likely to have been biased in favour of the scheme by PCC's taxpayer-funded propaganda.

iii) It is taken as read amongst safety professionals that uninformed public opinion should be ignored.

iv) The chart on pg. 23 of the Final Report shows that on average only **26%** or so of respondents **agree or strongly agree** with the scheme's supposed advantages **while 42% or so disagree or strongly disagreed**, while the rest, about 32% either did not know or did not care. **How can that be sensibly be described as "*generally supported*"?**

5/ Accidents and Casualties

a/ Atkins' statement that "*The occurrence of both KSI casualties and KSI accidents has actually increased in PCC against a national falling trend*" is another example of **weasel-worded bias**, because it **fails to quantify the substantial differences**. Even ignoring traffic volume, KSI casualties **rose in Portsmouth by 6.1% but fell nationally by 12.5%.** Adjusted for traffic the figures are even worse, a rise of **18.9% compared to the same fall of 12.5%, a difference of 31.4%** - glossed over by those words.

b/ In the same way, Atkins and PCC's concentration on the less bad "All casualty" figures and ignoring the 12% fall in traffic imply **pro-scheme bias.**

c/ Atkins' statement that "*the implementation of the 20 mph Speed Limit scheme has been associated with modest casualty reductions***" ignores that**

(a) the changes in All casualties were **within likely random variations (as they admit elsewhere)**

(b) some of the observed reduction would have been **due to the fall in traffic**

(c) adjusted for traffic, the fall was **no different from the national fall**

(d) surely more important - **KSI rose, despite falling substantially nationally,**

The statement is therefore seriously (and surely deliberately) misleading.

d/ "*Experience from London and Hull suggests that significant safety benefits can be obtained by implementing a targeted area-wide implementation of 20 mph zones in combination with 20 mph speed limit signs, depending on the character and function of each road in the area***" is a weasel worded way of mentioning the alternative, zones with traffic calming,** without mentioning what was well known before the scheme started and as the figures confirm, that such schemes are far more effective.

DfT Circular 1/06 states that: *'Successful 20 mph zones and 20 mph speed limits should be generally self-enforcing. Traffic authorities should take account of the level of police enforcement required before installing either of these measures.* ***20 mph speed limits are unlikely to be complied with on roads where vehicle speeds are substantially higher than this*** *and, unless such limits are accompanied by the introduction of traffic calming measures, police forces may find it difficult to routinely enforce the 20 mph limit.'*

'Research into 20 mph speed limits carried out by TRL (Mackie, 1998) showed that, where speed limits alone were introduced, reductions of only about 1 mph in 'before' speeds were achieved. 20 mph speed limits are, therefore, only suitable in areas where vehicle speeds are already low (the Department of Transport would suggest where mean vehicle speeds are 24 mph or below), or where additional traffic calming measures are planned as part of the strategy.'

e/ "it is noted that the PCC scheme does not comply with this advice, but the advice is not related to any statutory requirement" means in plain English that PCC disregarded DfT advice and went ahead anyway, because it was advice and not law. That they did so by abandoning a previous scheme for a 20mph zone with calming and enforcement in response to a triple fatality suggests a knee-jerk reaction and the desire to be "seen to be doing something".

f/ As pointed out above, the final Report **does not even mention the 12% fall in traffic** in the 20mph area that would logically have led to accidents and casualties being lower than would otherwise have been the case. The results are presented **not only without adjusting for that factor, but also in comparison with the average figures for the same roads** for the 3 years prior to implementation of the scheme. In this way the results fail to allow not only for **long-term trend** but also **other factors such as weather and the economy.**

For these reasons the **only rational basis for comparison** – which Atkins have failed to do but I have done – is to compare what happened in the 20mph area with **what happened nationally** at the same time, and to do so also after adjusting for traffic.

I enclose a spreadsheet of these results for all of the parameters for which I have been able to find the relevant data, from the Atkins report in the case of Portsmouth and from the DfT annual returns in the case of national data. The sheet shows the comparisons both adjusted for traffic volume and not, and the two right hand columns show that the majority of Portsmouth's results are worse or much worse than the national figures, especially in for serious injuries.

I accept of course that these figures, being for only 2 years in a city centre, may well not be statistically significant, **but if they are** they show worse results than nationally at the same time.
That anyone should be encouraging others to do the same – especially in a grave economic crisis – beggars belief. That they do so by the use of selective and misleading figures and refuse to listen to complaints makes it even worse.

I understand of course also that given the nature of the data the figures after the decimal points imply unrealistic degrees of precision, but they are what they happened to be.

List of Documents on the CD

1/ A 2009 Draft 1st Year Report

B 2009 Final 1st Year Report

C 2010 Draft 2 year Report

D 2010 Final 2 year Report

E DfT 20mph guidance

E Jan 2010 Complaint to PCC

F Feb 2010 PCC Briefing Note with rebuttals

G PCC 20mph Presentation, April 2010

H PCC 20mph Presentation, May 2010

J PCC raw data from DfT

K PCC % changes based on Final 2 Year Report

L This complaint to the National Statistical Office

M Sunday Telegraph on 20mph area

END