National Transport Strategy (NTS) Review:Strategic Framework Group

NTS 2006: Performance against outcomes and learning for the NTS Review

Draft working paper for discussion at Transport and Travel Statistics Advisory Committee, 5 December 2017 – Please see comments for additional notes on issues still being worked upon

Summary

- This paper documents the degree to which progress on the 2006 NTS outcomes can be measured – based on the indicators originally set out in the 2006 publication – and considers what lessons can be learned for the development of NTS2 through the course of the NTS Review.

- Of the 15 original 2006 NTS indicators (12 as stated in the 2006 NTS with some having multi-modal components): 6 show evidence of **improving;** 3 are **maintaining**; 3 are **worsening;** and for a further 3 **no assessment can be made.**

- However, success or failure to achieve strategic outcomes should not be determined by a tally of how many measures show progress or worsening; it is necessary to have a clear theoretical framework that defines how activities and outputs are expected to relate to outcomes, that are then measured with appropriate indicators.

- Such a fully formed framework did not exist for the 2006 NTS, however it is clearly needed for the NTS Review.

- General learning for the NTS Review from this exercise of reviewing the 12 original 2006 NTS indicators include: being clearer about what success and failure looks like; mapping out how outcomes and indicators work together or are in conflict with one another; considering how 'flexible' we need to be in selection of indicators (e.g. must they all have national coverage, or can we accept sub-group data); ensuring adequate coverage of all important aspects of the outcome in question; defining appropriate comparison groups; considering differential impacts on different groups in society; and specifying the measurement framework and any risks to continuity of data in advance.

- Specific commentary on the strengths and limitations of each of the original indicators is provided in the full text, however overarching observations to think through when developing future indicators include: considering how to improve our data on journey times and connections (for example: on congestion, accessibility) to better serve the outcomes that the NTS Review process settles upon; making better use of existing air quality data for health/emissions related outcomes; and ensuring that 'quality, accessibility and affordability' indicators better isolate aspects of the outcomes that we are most interested in tracking performance on.

Comment [RM1]: Please note that some of the data in presented in this report can now be updated with an additional year of data, so these assessments are still subject to change.

1. Background

1.2. In August 2016 it was announced that a full review of the National Transport Strategy (NTS) would take place within the lifetime of the current parliament, building on the work of the NTS Refresh which was published in January 2016.

1.3. As part of the 2016 NTS Review, Transport Scotland (TS) has set-up the Strategic Framework Group comprised of representatives from TS, Society of Chief Officers of Transportation in Scotland (SCOTS), CoSLA, Regional Transport Partnerships (RTP) and Napier University.

1.4. A key task for this group is to review the 2006 NTS's strategic framework (the vision, objectives, outcomes and indicators) to consider whether it still provides the correct strategic focus for transport policy over the next 20 years.

1.5. To support this work the Strategic Framework Group commissioned a report from Transport Scotland on the extent to which performance against the 2006 outcomes can be measured and to highlight lessons that could inform the work of the NTS Review.

2. Scope and approach to this paper

2.1. This paper focuses on documenting:

- The degree to which progress on the 2006 NTS can be measured *based on the indicators originally set out* in the 2006 publication;

- Strengths and limitations in the measurement indicators originally chosen, and commentary on how closely the 2006 indicators are associated with the 2006 stated outcomes;

- Lessons that can be leaned for the development of outcomes for 'NTS2', and suggestions for alternative sources and methods (if the 2006 outcomes were still considered to be relevant and important for NTS2).

2.2. This paper *will not*:

- Detail the delivery of specific commitments (i.e. outputs rather than outcomes) given in the 2006 NTS – this has already been published as part of the 2016 NTS Refresh;

- Exhaustively consider all potential alternative indicators for the 2006 outcomes – a document providing a wide range of indicators comparing a 2006 baseline to 2014 values was published as part of the 2016 Refresh and continually updated and extensive time series data for a wide range of measures is available in the *Scottish Transport Statistics* and *Transport and Travel in Scotland* publications.

2.3. This paper will consider each of the three 2006 outcomes and associated 2006 indicators in turn, while providing as assessment of *performance* on the indicators, *strengths* and *limitations* of the indicator data sources and methods used, and potential *learning* and *alternative indicators* to consider for the ongoing NTS Review.

2.4. The three 2006 outcomes and associated indicators are provided in the table below, for more commentary and background around how these outcomes fit into the strategic context of the time, refer to the 2006 NTS.

2006 NTS Outcome	Associated indicators
Improve journey times and connections, to tackle congestion and the lack of integration and connections in transport which impact on our high level objectives for economic growth, social inclusion, integration and safety	1. Congestion 2. No. of international routes from Scottish airports 3. ScotRail passenger kilometres 4. Rail punctuality
Reduce emissions, to tackle the issues of climate change, air quality and health improvement which impact on our high level objective for protecting the environment and improving health	1. Carbon emissions from the transport sector 2. Tonnes of carbon saved 3. Average distance walked and cycled per person per year
Improve quality, accessibility and affordability, to give people a choice of public transport, where availability means better quality transport services and value for money or an alternative to the car	1. Passenger numbers on buses, through lifeline airports and on lifeline ferries 2. Satisfaction of bus and rail passengers 3. Walking time to nearest bus stop and frequency of bus service at nearest bus stop 4. Access to key services

3. Outcome: Improved journey times and connections

3.1. *Congestion*
(Outcome: Improved journey times and connections)

Performance

Percentage of car / van journey stages delayed by traffic congestion, 2003-2015

There is not consistent evidence of improvement on this measure.

The percentage of car/van journey stages (a journey can consist of multiple stages) delayed by congestion has fluctuated between around 10% and 15% between 2003 and 2015. The 2015 figure (12.5%) is slightly higher than the 2003 value of 10.8%, but lower than the peak of 14.3% in 2007.

Note: This item is also a National Indicator in Scotland's National Performance Framework, where performance on this indicator is also shown as 'maintaining' rather than improving or worsening.

Source: Scottish Household Survey: Travel Diary, *in* **Transport and Travel in Scotland 2015**

Strengths

- The indicator is taken from a large Scottish Government funded major survey, with considerable trend data and potential to break down the analysis by other characteristics.
- Although the measure is self-reported, it can be argued that this is appropriate for congestion, as the impact and experience of delayed journeys (frustration, uncertainty) is itself subjective.

Limitations

- This measure relates to self-reported experience of congestion, not that actually observed, and we do not know whether respondents are more or less sensitive to classifying a journey stage as experiencing congestion over time.
- It does not quantify the magnitude of the delay experienced, all self-reported delays are counted equally whereas the actual impact of differing lengths of delays is obviously not equal.
- The data is from a randomly sampled survey so values are subject to approximately +/- 1 percentage point of random error.

Learning and alternative indicators

- This measure provides a consistent time series on self-reported experience of delay due to congestion at a national level.
- Limitations mean that it is unlikely to sensitive enough to detect changes (either improvement or worsening) due to transport policy or infrastructure changes that nevertheless could be meaningful for those who experience them.
- The lack of quantification of the magnitude of congestion (all delays are treated equally in the current indicator) is likely to mask changes such as reduced journey times on particular routes that have experienced infrastructure improvement; this could be addressed by including, e.g., a component of time delayed as a proportion of overall journey time or adding another element to capture temporal aspects.
- Future indicators around journey time/congestion should be considered in light of what we know about how people respond (or do not respond) to transport interventions).
- Measures of improved journey times by road should consider car, bus and freight separately.

3.2. *Number of international routes from Scottish airports*
(Outcome: Improved journey times and connections)

Performance

Number of Foreign airports served and routes to/from the main* Scottish international airports, 1996-2015

Both the number of foreign airports served and routes to/from the main* Scottish international airports have increased over time.

The number of foreign airports served increased by just over 40% between 2006 and 2015 while the number of routes increased by around 50%, continuing an increasing trend that was present prior to 2006.

A similar trend is present when looking at passenger numbers on scheduled services from the same airports.

* Aberdeen, Edinburgh, Glasgow and Glasgow Prestwick.

Source: Civil Aviation Authority, *in* Scottish Transport Statistics No 35: 2016 Edition

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Strengths

- Although not considered national statistics, these are consistently gathered statistics provided by the relevant UK authority.
- The statistics could be further broken down (e.g. looking at particular countries or zones) to target particular route or travel patterns.

Limitations

- These figures do not cover all scheduled international traffic.
- In their current form, they say nothing about the type of passengers or the types of journey being made.
- The measure is not balanced against other considerations that arise from increased air travel; most obviously, carbon emissions.

Learning and alternative indicators

- This indicator provides a consistent time series of data on one form of connectivity, though it is a broad brush measure and does not capture information about the types of passengers or the nature of journey being made (which are important factors to examine when considering the reasons that the 2006 strategy wanted to improve journey times and connections – *"to tackle congestion and the lack of integration and connections in transport which impact on our high level objectives for economic growth, social inclusion, integration and safety"*).
- A modification of the indicator to look at particular selected destinations, or from different sources that allowed greater profiling of passenger/journey types (business/leisure etc) could provide more evidence on whether we are achieving outcomes related to inclusive growth and fairness.
- The measure should be considered more directly alongside balancing measures that articulate the disbenefits of increased aviation; as a minimum it should look at increased carbon emissions.

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3.3. *Scotrail passenger kilometres*
(Outcome: Improved journey times and connections)

Performance

Scotrail Passenger kilometres (million) 2004/5 to 2015/16

Scotrail passenger kilometres* increased from 2.3 billion in 2006/7 to over 3 billion in 2014/15.

The increase in Scotrail passenger kilometres has been consistent over this period, 2015/16 excepting for 2015/16 where the apparent decline is a result of a definitional issue when the Caledonian Sleeper separated from the Scotrail franchise.

The absolute number of passenger journeys has also increased over the period, rising consistently from 71.6m in 2006/7 to 93.2m in 2015/16.
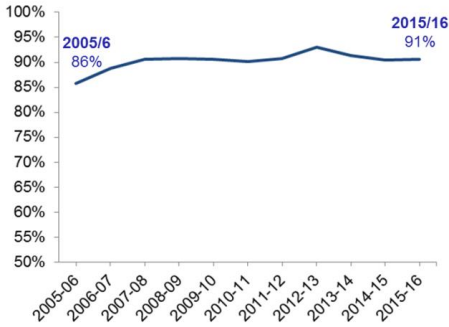
Source: Office of Rail Regulation, in Scottish Transport Statistics No 35: 2016 Edition

Strengths

- Consistent time series, regularly published
- 2015/16 data definition issues aside, it is a relatively straightforward and reliable measure
- Even though, alone, it is relatively simple, in combination with other measures on rail and other modes, it can provide a more nuanced picture on whether journey time and connectivity outcomes are being influenced by policy actions

Limitations

- The measure could relate to the outcome more directly: because the data is very high level, the underlying change driving these figures is not explicit (e.g. the seemingly positive trend could be driven by mode shift from other public transport rather than private cars, more passenger kilometres does not necessarily mean than connections are experienced as 'improved' by users of the service)

Learning and alternative indicators

- Scotrail passenger kilometres provides a useful but high level and narrow measure of one aspect of railway performance
- However, it should be more explicitly considered in light of other measures of railway performance (and possibly data on other modes) in order to provide more insight into whether the changes observed are a result of policy actions, and to make an assessment on whether positive movement on this indicator is actually a positive in terms of user experience (it would be possible for passenger kilometres to increase while users have a poor experience and journey times and connectivity worsen, or vice versa)

3.4. *Rail punctuality*
(Outcome: Improved journey times and connections)

Performance

Percentage of trains arriving on time (within five minutes of timetabled time), 2005/6 to 2015/16

Punctuality increased from 86% in 2005/6 to 91% in 2015/6 and, with some year-to-year fluctuation, has remained at similar levels since.

This trend is similar in general direction and absolute performance to the overall values for GB regional operators.

Source: Office of Rail Regulation, *in* **Scottish Transport Statistics No 35: 2016 Edition**

Strengths

- Consistent time series, regularly published.
- Aligns with the public performance measure (PPM) for the Scotrail franchise.
- Relates directly to the outcome of improved journey times.

Limitations

- It is unclear from the data currently published what an appropriate comparator (i.e. one that operates a similar mix of routes and services) should be in order to make as close to a like-for-like comparison as possible to better judge performance.
- The indicator appears relatively high performing and stable over time at the national level, so it may not be very sensitive to sub-national changes that could affect credibility in terms of perception (e.g. the "how can this be true, my train was cancelled 3 days in a row this week")

Learning and alternative indicators

- This measure is attractive as it aligns with existing public performance measures, and directly rates to the outcome of improved journey times.
- Further work could be done to track performance against a suitable comparison operator/set of operators to determine whether changes are as a result of policy decisions in Scotland or wider trends.
- Because the indicator is quite stable at the national level, it could be supplemented by taking a particular focus on areas/services that experience poorer performance (i.e. trying to bring those areas closer to the national average); if this is possible it would have analytical advantages in terms of providing more information about performance where it matters, but also in terms of perception around what we value in transport outcomes.
- It could be argued that this indicator focuses on trains and not customers; to meet PPM targets, Scotrail has been criticised for stop skipping (not stopping at intermediate stations in order to make up lost time).
- A focus on this measure could reinforce undesirable incentives; some services in Scotland now have a longer timetabled travel time than 10 years ago with the same running stock – this can actually improve PPM but is obviously undesirable in terms of journey times experienced by passengers.

4. Outcome: Reduce emissions

4.1. *Carbon emissions from the transport sector*
(Outcome: Reduce emissions)

Performance

Thousand tonnes of carbon dioxide equivalent

↔

Total transport emissions have decreased from a peak of 15 megatonnes of carbon dioxide equivalent in 2007 to 13 megatonnes in 2014, however due to substantially larger decreases in the carbon emissions of other sectors the proportion of total emissions attributable to transport has increased from 23% to 28% in the same period.

Assessing performance in this indicator is complex; while there has been a modest reduction in transport emissions in absolute terms (despite increases in some of the contributors such as vehicle kilometres travelled), larger reductions in other sectors result in transport having a higher proportional share.

Source: Greenhouse Gas Inventories for England, Scotland, Wales and Northern Ireland, *in* **Scottish Transport Statistics No 35: 2016 Edition**

> **Comment [RM2]:** Further discussed in the 'learning' section below, but there is a question around whether this is improving (there is a modest absolute reduction), or whether the poor relative performance compared to other sectors should be taken into account. By what standards do we judge performance here?

Strengths

- The indicator relates directly to the outcome of interest in the clearest way possible.
- It is a regularly published and consistent time series that can be broken down by mode.

Limitations

- Interpretation over performance, as described above, is complex and subject to disagreement over what success looks like; from some perspectives (containment/offsetting of emissions despite growth) transport emissions reductions can be viewed as a success, but it can be challenged by other perspectives (a poor relative comparison to other sectors).

Learning and alternative indicators

- It seems very likely that this indicator in some form will be maintained, as it is central to binding commitments to climate change targets and associated policy actions.
- Limitations around differing perspectives on what success looks like for transport in this area should be resolved during the NTS review process to obtain a shared understanding of what is expected (and achievable) for transport in terms of emission reduction over the lifetime of the new NTS; a situation where there is division over whether transport is performing well or poorly based on the same data should be avoided.
- There is potential to be more specific (by using mode breakdowns) to use the carbon emissions data as balancing measures that can be considered alongside other indicators, to avoid different indicators and outcomes being in direct conflict with each other, and to better understand where we need to do more.

4.2. *Tonnes of carbon saved*
(Outcome: Reduce emissions)

Performance	
Not applicable (no assessment of performance can be made).	From the 2006 NTS it appears that this indicator related to modelled estimates of the 'Scottish Share' carbon savings by 2010 given various devolved and reserved policy actions intended at the time, supported by the 2006 (then) Scottish Executive Climate Change Programme.
	As stated in the 2006 Climate Change Programme, carbon savings anticipated from devolved policies at the time are *'unlikely to match emissions trends in the disaggregated Greenhouse Gas Inventories'* (which are the basis for indicator 4.1) as actual emissions are influenced by other factors including the impact of reserved policies, economic growth and demand.
	Because of this, it is not clear that this was an appropriate indicator for the 2006 NTS, what it adds to the previous indicator 4.1 on actual carbon emissions from the transport sector, or how performance against it would be measured.
	Source: 2006 NTS , 2006 Climate Programme

Strengths	**Limitations**
• n/a	• n/a

Learning and alternative indicators

- The original intent as to how this could be measured or what this adds compared to actual emissions is unclear; this indicator should not be continued in the same form.

4.3. *Average distance walked and cycled per person per year*
     (Outcome: Reduce emissions)

Performance

Average distance walked and cycled per person per year (kms), Scotland

Walking: ▼ **Cycling:** ▲

Average distanced walked per year decreased from 190 miles in 2006/7 to 184 miles in 2011/12, while average distance cycled increased from 28 miles to 36 miles during the same period.

The data source for this measure (the National Travel Survey) ceased collection in Scotland from 2011/12 onwards, and no direct equivalent is published.

Source: Department for Transport, National Travel Survey 2011/12 Scotland Results (discontinued)

Strengths

- Average distance travelled by walking and cycling has advantages compared to related alternative measures that take no account of distance when it comes to mode shift (e.g. the % journey modal share, or the % using one of these methods as their means of travel to work/school).

Limitations

- DfT no longer collected data in Scotland for this survey, and no direct replacement is available.
- Overall distance travelled without other information is inadequate for judging the impact on reduced emissions (e.g. if increases in cycling were people who would otherwise have walked), though it may be more useful about the health improvement aspect of the outcome.

Learning and alternative indicators

- The general principle of this measure is sound as total distance travelled by active travel methods is closer to the outcome of reduced emissions than alternatives that take no/limited account of distance.
- While the data source itself is no longer available, it may be possible to produce similar estimates from the Scottish Household Survey Travel Diary, experimental statistics have been investigated by Transport Analytical Services in recent years.
- However, it would be advantageous for any new measure to be able to take better account of (or, be supplemented by other measures that can take account of) where any shifts to increased average distance travelled to walking and cycling are coming from, as the biggest benefits in terms of emission reduction will be shifts from private vehicles rather than other forms of active travel or public transport.

## 5. Outcome: Improve quality, accessibility and affordability

5.1. *Passenger numbers on buses, through lifeline airports and on lifeline ferries*
(Outcome: Improve quality, accessibility and affordability)

Performance

Passenger journeys on local bus services (*millions*), 2005/6 to 2015/16

Buses: ⬇ **Airports:** ⬆ **Ferries:** ⬇

Local bus service passenger journeys have decreased from 476m in 2006/7 to 409m in 2015/6. Selected 'lifeline airport' terminal passengers have increased from 1.2m in 2006 to 1.3m in 2015. 'Within Scotland' ferry passenger numbers have decreased from 8.5m in 2006 to 7.8m in 2015.

This indicator covers several modal components that are moving in different trajectories. Particularly when it comes to the definition of 'lifeline' – discussed further below – there are decisions that need to be made regarding inclusion and exclusion criteria as to what is to be considered a lifeline service.

Lifeline airport and ferry passenger numbers (*thousands*)

Source: DfT Bus Statistics, *in* Scottish Transport Statistics No 35: 2016 Edition

Ferry Operators / Civil Aviation Authority, *both in* Scottish Transport Statistics No 35: 2016 Edition

Strengths

- Consistent time series, regularly published.
- Sub-national breakdowns are possible to further understand the national trends.

Limitations

- Sub-national variation (e.g. in bus patronage trends where the national decline is driven by a decline in one large region) is hidden in these figures and would need to be further explored.
- 'Lifeline service' definition is problematic, open to interpretation, and different interpretations change the 'take home' message for some indicators (e.g. whether to include or exclude Inverness airport as a lifeline airport for these purposes makes a substantial difference).
- Passenger numbers in themselves do not tell a very complete picture about whether a service is accessible, affordable or high quality.

Learning and alternative indicators

- An agreed position on what points of departure/regions are considered 'lifeline' for the purposes of this indicator is necessary – in addition, a clearly articulated picture of what success would look like in terms of passenger numbers travelling to areas where the population is in decline is needed (transport links may be a contributor to any such decline, but they are unlikely to be the sole factor)
- Sub-national assessment could supplement the national picture to understand local variation that is driving the national average (as is the case in bus patronage in Scotland)

5.2. *Satisfaction of bus and rail passengers*
(Outcome: Improve quality, accessibility and affordability)

Performance

Adults' satisfaction of public transport, 2007-2015

Overall Scotrail satisfaction with journey Autumn 2012 to Spring 2017
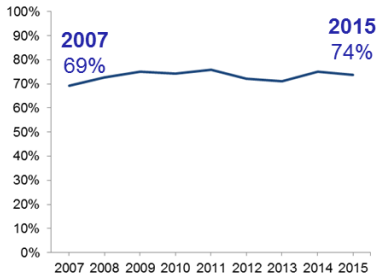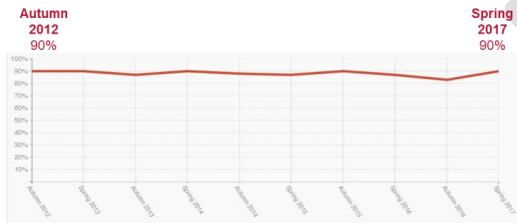

Public transport: ⬆ **Rail:** ↔

The percentage of adults in Scotland 'very' or 'fairly' satisfied with public transport increased from 69% in 2007 to 74% in 2015, with some fluctuation between years. Scotrail satisfaction has stayed relatively high at around 90% in recent years.

The Scottish Household Survey asks a general question on satisfaction with public transport. Scotrail satisfaction comes from the National Rail Passenger Survey. There is an equivalent survey for buses (Bus Passenger Survey), but due to the regional/operator based nature of the survey the figures are not readily available combined into a national average.

Source: % 'Very' or 'fairly' satisfied with public transport, Scottish Household Survey, *in* **Transport and Travel in Scotland 2015**

Scotrail satisfaction, National Rail Passenger Survey

Strengths

- Consistent time series, regularly published.
- Sub-national breakdowns are possible to further understand the national trends.
- More detailed underlying questions are present in both sources, so it is possible to examine factors associated with satisfaction/dissatisfaction in more detail.
- Self-reported attitudes/satisfaction measures are an appropriate way of addressing this component of the outcome.

Limitations

- The measures are from sample surveys, so are subject to random sampling error.
- For the Scotrail measure, as the figures have been relatively stable and high over the past five years, the measure appears unlikely to be very sensitive to change (it appears to take a large disruption, e.g. like that experienced in the latter half of 2016 to produce a noticeable response in the indicator).

Learning and alternative indicators

- It is likely that some form of self-reported satisfaction with indicators relating to public transport will be required, these sources provide a range of general, or more detailed, indicators, as required.
- The two more general satisfaction indicators here could be replaced or supplemented with ones that address more specific aspects of interest to the NTS2, for example, around perceptions of affordability or accessibility specifically (either in the general population, or in particular sub-groups of interest).

5.3. *Walking time to nearest bus stop and frequency of bus service at nearest bus stop (for urban and rural areas)*
   (Outcome: Improve quality, accessibility and affordability)

Performance	
Not applicable (no assessment of recent performance can be made).	The data supporting this indicator was published in the, now discontinued, *Bus and Coach Statistics* publication. Time series data is available from 1999 to 2010 on walking time to nearest bus stop (in a series of time bands: up to 3 minutes, 4 to 6 minutes etc.) There is no direct replacement currently published. Examining the historic data does not indicate a strong positive trend in measures that could be of potential interest (e.g. there is no apparent reduction in respondents in rural areas reporting a 14 minute or more - the highest time band - walk to a bus stop or an increase in those from rural areas reporting being in the lower time bands). **Source: Bus and Coach Statistics 2011-2012 (discontinued).**

Strengths	Limitations
• n/a	• n/a

Learning and alternative indicators
• In principle, a measure of distance to nearest bus stop, particularly when split by urban/rural status is likely to be a useful indicator to measure an aspect of accessibility, if it is supported by a clear articulation of what we expect success on this measure to be.   • With the development of geographic mapping capability within Transport Scotland and the Scottish Government, an alternative to the discontinued data series could be derived from geographic mapping of bus stops and estimating travel distance without the need to conduct surveys and rely on self-report.

5.4. *Access to key services*
(Outcome: Improve quality, accessibility and affordability)

Performance	
Not applicable (no assessment of performance can be made without further clarification of the indicator).	The Scottish Household Survey includes an item, asked every other year, on self-reported access to a small range of services (post office, doctors survey, shopping, and so on).
	Commonly, this is reported as the proportion of survey respondents who believe that access to each of the services is 'very' or 'fairly' convenient.
	Breakdown of results, for example, by urban/rural split is commonly reported and often shows the pattern that would be expected, with those in rural areas or with no car access less likely to think services are very or fairly convenient.
	Because there are so many variables of potential interest in this question, it is not possible to make a single assessment on performance against the indicator.
	To provide an assessment, decisions need to be made on what services are 'key', and whether 'key services' differ across Scotland or with different population groups.
	Source: Scottish Household Survey, *in* **Transport and Travel in Scotland, 2015**

Strengths	Limitations
• n/a	• n/a

Learning and alternative indicators
• In principle, a self-reported ease of access measure such as that available from the Scottish Household survey could provide some insight into perceptions of accessibility.
• In order to do this effectively, the scope of the indicator should be narrowed to clarify questions on what 'key services' we are concerned with, and who they are 'key' for.

6. Conclusions

6.1. The 2006 indicators reviewed in this paper contain a mixture of measures that include: those that are closely associated with their related outcome and can be clearly measured; those that, while measurable, are less clearly associated with the outcome of interest; and those that were poorly defined at the outset or cannot readily be assessed in 2017 due to changes in data gathering.

6.2. Of the 15 original indicators (12 as stated in the 2006 NTS, but some with multiple modal components):

- 6 are assessed as **improving**;

- 3 are **maintaining;**

- 3 are **worsening;**

- while for a further 3 **no assessment can be made.**

Comment [RM3]: See comment on page 1.

6.3. However, the progress (or failure) to achieve strategic outcomes should not be determined by a simplistic tallying of how many measures show progress or worsening. This is particularly the case in a complex policy area such as transport, where some outcomes (and hence indicators) are in tension with each other.

6.4. Instead, a central principle when taking an outcomes-based approach is to design, at the outset, a theoretical framework that articulates how activities and outputs are anticipated to result in outcomes. If this is not carried out during the design phase of the strategy, while it is developing, it is very difficult to do in retrospect and can result in difficulties in coming to any judgement about how actions have resulted in changes, or force an after-the-event 'cherry picking' exercise where favourable indicators are highlighted and unfavourable ones ignored.

6.5. It is apparent that such a fully formed framework did not exist for the 2006 NTS, however it is a clear need for the present NTS Review.

6.6. Once the desired outcomes of the NTS2 are defined, the following points should be borne in mind for future indicators, following this exercise of reviewing the 2006 indicators:

- Be clear about what **success (and failure) looks like** (who do we expect to benefit, by how much and by when, and who could stand to lose out that we need to be concerned about);

- Map out how **indicators work together or conflict with each other** and ensure that the final overall assessment of performance is considered in light of these features;

- Within the limits of the data available, try to ensure there is **adequate coverage of all important aspects of the outcome in question** (e.g. there is relatively little in the 2006 NTS indicators that directly covers affordability, despite that being an explicit part of the outcomes) and consider whether subnational data is an acceptable proxy for something that is not feasible to gather nationally;

- Where possible, clearly set out **appropriate comparison groups** in advance that performance in Scotland on a given indicator can be contrasted against;

- Consider how **differential impacts of strategy on different groups in society** can be incorporated into a measurement framework.

- Setting out a measurement framework clearly in advance (where will the data come from, are there any risks to continuity of measurement or data sources) can **avoid being unable to assess progress in the future due to scarcity or discontinuation of data sources.**

6.7. In addition to the general points above, some more specific observations for consideration if the NTS2 were to include similar outcomes to the original 2006 NTS include:

- **Improve journey times and connections:** Because personal daily journey times have remained relatively constant over time, outcomes and indicators should be cognisant of this. One way would be for measures relating to this outcome to focus on the accessibility (combining travel times and connectivity across modes) of places rather than the travel time of people and things, if feasible methods of gathering this data can be sourced. Alternative means of gathering data on existing 2006 NTS indicators (e.g. congestion) could be sought if these indicators are retained in the new NTS.

- **Reduce emissions**: The health aspect of this outcome/indicator grouping could be expanded; in particular air quality is measured extensively across Scotland in a form that would be suitable for adoption as an indicator.

- **Improve quality, accessibility and affordability:** Many of the existing indicators do not isolate the aspects of the indicator we are interested in effectively and are difficult to unpick (e.g. quality can improve with declining patronage and vice versa) or largely missing (as is the case with affordability).