NorSIKT IP
A harmonized Nordic definition of average daily road traffic
Summary
This report is based on an investigation in a previous project (Norsikt 2) where definitions of average daily traffic (ADT) in the Nordic countries were mapped and harmonized definitions were proposed. The report starts with a summary of these proposals. Thereafter, some adjustments are made of the proposed definitions, initiated at project (NorSIKT IP) meetings in Trondheim and Uppsala 2017/2018. The following aspects on the ADT concept are discussed in the report.

- Which unit should "ÅDT" be counted in?
- Should ADT be defined for total traffic or are specific definitions for individual vehicle classes (especially light and heavy traffic) needed?
- Should ADT be defined for weekdays and weekends?
- Should ADT be counted in one or two directions?
- What time period should ADT be related to?

The report proposes conceptual definitions of ADT, i.e., definitions that formulate what you want to measure, regardless of the current data collection method. Each country may then need to formulate - for each measure of average traffic - an operational definition where the parameter ADT is described in terms of what can be measured, given the data collection method used. For estimation of the parameters there exists a variety of methods not reported here. Thus, in this report, only conceptual definitions are proposed.

The report concludes with suggested harmonized definitions of average daily traffic (ADT), annual ADT (AADT), ADT for heavy traffic, ADT for weekdays and ADT for weekends.

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Appendix 1 and 2
1. Summary

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2. Introduction

The project "NorSIKT IP" aims to implement a number of proposals for the harmonization of definitions and quality requirements for different traffic parameters that affect traffic flows and vehicle speeds. An evaluation of existing measurement methods is also included in the project. The project is implemented jointly by the six Nordic
countries and is formally ordered by the Swedish Transport Administration. Contractor is Statisticon AB. Part-assignment 1 (suggestions 4 and 5), as reported here, concerns definitions of different measurements of average daily traffic, commonly referred to as ADT.
3. Summary of a previous investigation within the NorSIKT2 project

The report (1) presented results from a survey on the ADT definitions to the Nordic countries carried out in 2012 within NorSIKT2. In addition, an Internet search was carried out after definitions in English. It was found that the definitions throughout were fairly brief. One typical approach to a definition was a measure of the "traffic" volume without a more precise description of what the term "traffic" means. For example

"Den totale trafikken i et snitt eller på en trafikklenke i løpet av et kalenderår dividert med antall dager (365)." (Vejleder i Trafikkdata, Statens Vegvesen, Norway)

A reason for the vague definitions may be that it has not been considered necessary to have an exact definition. However, it was agreed that for the NorSIKT2 project, a more detailed definition of ADT was needed in order to formulate quality requirements for ADT estimates and recommended calculation methods.

3.1 Aspects on the ADT concept

The report (1) discussed a number of different aspects of the definition of ADT.

• Which unit should "ÅDT" be counted in? It is not clear in the definitions found in the 2012 investigation which unit ADT is counted in, although it is usually understood that the unit should be vehicle of some kind. This led to the definitions of the terms "vehicle" and "motor vehicle" as set out in Appendix 1.

• Should ADT be defined for total traffic or are specific definitions for individual vehicle classes (especially light and heavy traffic) needed? It was concluded in the report (1) that especially heavy traffic is of great interest and there was consensus among the Nordic countries that the limit for heavy traffic is at the "total weight" of 3.5 tonnes. The concept Maximum permissible laden weight ("total weight"), and related concepts such as unladen vehicle weight and load

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1 In Appendix 1 the text is in Swedish, which was the original language for report (1).

2 Maximum permissible laden weight (MPLW) is in the road freight transport the total weight of the vehicle and of the load declared permissible by the competent authority of the country of registration of the vehicle. Eurostat definition.

3 Unladen vehicle weight is weight of vehicle (or combination of vehicles) excluding its load when stationary and ready for the road. Eurostat definition.
capacity⁴ was introduced, see Appendix 1. It was also found that different measuring equipment in the Nordic countries led to different operational definitions of heavy traffic. In the final report from NorSIKT2 it is proposed that a common Nordic conceptual definition for heavy vehicles should be worked out. See report (2), suggestion 4.

• Should ADT be defined for weekdays and weekends? In several Nordic countries there is demand for ADT for weekdays and for weekend days (including holidays). However, all countries concerned have different definitions of these concepts. Harmonization of the concepts would lead to problems with time series for all who have to change their definition. It was also noted that full harmonization of these concepts is not possible because all countries have a number of unique holidays. The report (1) therefore proposed that the concept weekend/weekday should not be harmonized. However, in the final report from NorSIKT2, a common conceptual definition of weekend-/week-days was proposed (report (2), suggestion 5).

• Should ADT be counted in one or two directions? It was found that there seems to be consensus that traffic in both directions should count when estimating ADT. If ADT is reported in just one direction, this is a deviation from the normal which must be clearly stated.

• What time period should ADT be related to? The by far most common time period is a calendar year, which in English has a specific term: Annual Average Daily Traffic, or AADT. This term is naturally related to an average per day over a year. Some of the Nordic countries use only the AADT measure while others have measures for several different time periods. See Appendix 2.

3.2 A proposal based on the 2012 investigation (NorSIKT2)

A proposal for a new, harmonized, definition of ADT was presented in Swedish in the report (1). This definition clarified the above aspects (unit, vehicle class, weekend/weekday, direction and time). In comments, concepts such as vehicles, motor vehicles, heavy traffic and total weight were defined.

The NorSIKT2 proposed definition of ADT is given in Swedish in Appendix 1.

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⁴ Load capacity is in the road freight transport the maximum weight of goods declared permissible by the competent authority of the country of registration of the vehicle. Eurostat definition.
4. Motivation for a new definition of ADT (NorSIKT IP)

At meetings in Trondheim, 10-11 October 2017, in Uppsala 29-30 January 2018 and in Uppsala 15 August 2018, it was decided that the 2012 definition proposal of ÅDT (Appendix 1) should be further developed as follows.

- The definition should be formulated in English only.
- It is expected that in the next few years there will be a need for a broader definition of traffic volume than in the 2012 proposal. The new definition should, in addition to motor vehicles, also include walking and cycling traffic.
- AADT should refer to calendar year while other measurements may refer to any period of time.
- It should be clear from the definition that the ADT concept refers to road traffic.

With these adjustments, the following definitions are proposed.

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5 It can be stressed that the definitions in appendix 1 no longer applies, it is the definitions in chapter 4 that applies
5. Suggested harmonized definitions of average daily traffic (ADT)

5.1 Definition of ADT

A general definition of road traffic ADT is the following

*Suggested definition for road traffic ADT:*

ADT is the total traffic volume, counted as the number of objects, passing a "point" (or a road segment with constant traffic volume) over a period of time, divided by the number of days during the time period. The traffic across the road (in both directions) is counted. Objects may be one, or more, of vehicles, motor vehicles, bikes or persons.

*Comments*

By *vehicle* is meant a device on wheels, continuous belts, runners or the like which is arranged mainly for travel on the ground and does not run on rails.

By *motor vehicle* is meant a vehicle for which propulsion is provided with a motor, but not such an electric vehicle which is considered to be a bicycle.

5.2 Definition of AADT

The concept Annual Average Daily Traffic (AADT) is now defined as

*Suggested definition of road traffic AADT:*

AADT is the total traffic volume, counted as the number of objects passing a "point" (or a road segment with constant traffic volume) over a calendar year, divided by the number of days during the year. The traffic across the road (in both directions) is counted. Objects may be one, or more, of vehicles, motor vehicles, bikes or persons.

*Comment*

The number of days during the period is of course 365 or 366.
5.3 Definition of ADT for heavy traffic

Heavy road traffic ADT is defined as

**Suggested definition of heavy road traffic ADT:**

The heavy traffic ADT is the total traffic volume, counted as the number of motor vehicles with a maximum permissible weight greater than 3.5 tons (including total weight of a trailer, if any) passing a "point" (or a road segment with constant traffic volume) over a period of time divided by the number of days during the time period. The traffic across the road (in both directions) is counted.

**Comment**

Heavy traffic include all types of motor driven vehicles with maximum permissible weight\(^6\) > 3.5 ton. This concerns mainly lorries and busses. For road trains\(^7\) the maximum permissible weight for the trailer or semi-trailer is also included. The maximum permissible weight is the sum of the unladen vehicle weight and the load capacity.

5.4 Definition of ADT for weekdays and weekends

As definitions of weekday ADT and weekend ADT is suggested:

**Suggested definition of weekday ADT:**

The weekday ADT is the total traffic volume, counted as the number of objects passing a "point" (or a road segment with constant traffic volume) on weekdays over a period of time, divided by the number of weekdays during the time period. The traffic across the road (in both directions) is counted. Objects may be one, or more, of vehicles, motor vehicles, bikes or persons.

**Suggested definition of ADT for weekend traffic:**

ADT for weekend traffic is the total traffic volume, counted as the number of objects passing a "point" (or road segment with constant traffic volume) on weekends over a period of time divided by the number of weekend days during the time period. The traffic across the road (in both directions) is counted. Objects may be one, or more, of vehicles, motor vehicles, bikes or persons.

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\(^6\) Maximum permissible weight and maximum permissible laden weight are synonyms

\(^7\) Lorry with trailer or articulated vehicle (road tractor with semi-trailer)
Comment

The definitions of "weekend" and "weekday" varies among the nordic countries. These concepts are not harmonized since all countries have their own time series and, in addition, all countries have national holidays and therefore unique calendars.
References.


Appendix 1.

Below is text copied from report (1) in the original language in the report⁸.

"För definitionen av medeldygnstrafik (MDT) för totaltrafik föreslår vi nedanstående text som bygger på den formulering som fanns i den i november 2012 utsända enkäten och som vi uppfattar har accepterats av alla nordiska länder. Definitionen skiljer sig från andra förekommande definitioner av ÅDT dels genom att tidsperioden inte specificeras, dels genom att det postuleras att MDT skall räknas i motordrivna fordon och det finns en åtföljande specificering av vad som menas med motordrivna fordon.

**Definitionsförslag MDT för totaltrafik:**

MDT är den totala trafikmängden räknat i antal motordrivna fordon som passerar en "punkt" (eller en trafikhomogen vägsträcka) under en tidsperiod, dividerat med antal dygn under tidsperioden. Trafiken på hela vägen (i båda riktningarna) räknas.

**Förklaringar:**

Med **fordon** menas en anordning på hjul, band, medar eller liknande som är inrättad huvudsakligen för färd på marken och inte löper på skenor.

Med **motordrivna fordon** menas fordon som för framdrivandet är försedd med motor, dock inte ett sådant eldrivet fordon som är att anse som cykel.

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⁸ It can be stressed that the definitions in appendix 1 no longer applies, it is the definitions in chapter 4 that applies
**MDT för tung trafik**

För definition av MDT för tung trafik föreslår vi

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**Definitionsförslag MDT för tung trafik:**

MDT för tung trafik är den totala trafikmängden räknat i antal motordrivna fordon med en totalvikt större än 3,5 ton (inklusive eventuella släpfordons totalvikter) som passerar en ”punkt” (eller en trafikhomogen vägsträcka) under en tidsperiod, dividerat med antal dygn under tidsperioden. Trafiken på hela vägen (i båda riktningarna) räknas.

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**Förklaring.**


**MDT för vardagar respektive helger**

För definition av vardags- respektive helg-MDT föreslår vi

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**Definitionsförslag MDT för vardagstrafik:**

MDT för vardagstrafik är den totala trafikmängden räknat i antal motordrivna fordon som passerar en ”punkt” (eller en trafikhomogen vägsträcka) på vardagsdygn under en tidsperiod, dividerat med antal vardagsdygn under tidsperioden. Trafiken på hela vägen (i båda riktningarna) räknas.

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**Definitionsförslag MDT för helgtrafik:**

MDT för helgtrafik är den totala trafikmängden räknat i antal motordrivna fordon som passerar en ”punkt” (eller en trafikhomogen vägsträcka) på helgdygn under en tidsperiod, dividerat med antal helgdygn under tidsperioden. Trafiken på hela vägen (i båda riktningarna) räknas.
Förklaring.

Vad som är vardagsdygn respektive helgdygn definieras av varje land för sig utifrån ländernas redan fastställda definitioner och deras unika kalendrar.”
Appendix 2. Examples on measures on average daily traffic for other time periods than calendar year

Danmark
- Julidögntrafik (JDT)
- Månedsdögntrafik (MDT)
- Ugedögnstrafik (UDT)

Norge
- Julidögntrafik (JDT)
- Månedsdögntraffic (MDT)
- Sommerdögntrafikk (SDT)
- Ukedögntrafikk (UDT)