

The Environmental Noise Directive (END) requires EU member states to assess exposure to noise from key transport and industrial sources with two initial reporting phases: 2007 and 2012. Where the recommended thresholds for day and night indicators are exceeded, action plans are to be implemented. This country fiche presents data related to END assessments as reported to EEA by 15th April 2016 for the two key END indicators: L_{den} (day evening and night exposure) and L_{night} (night time exposure). 2012 strategic noise maps reported are presented, as well as HIA calculations for annoyance and sleep disturbance, hospital admissions and mortality. Trends are presented as the change in exposure from 2007 to 2012, for comparable sources only.

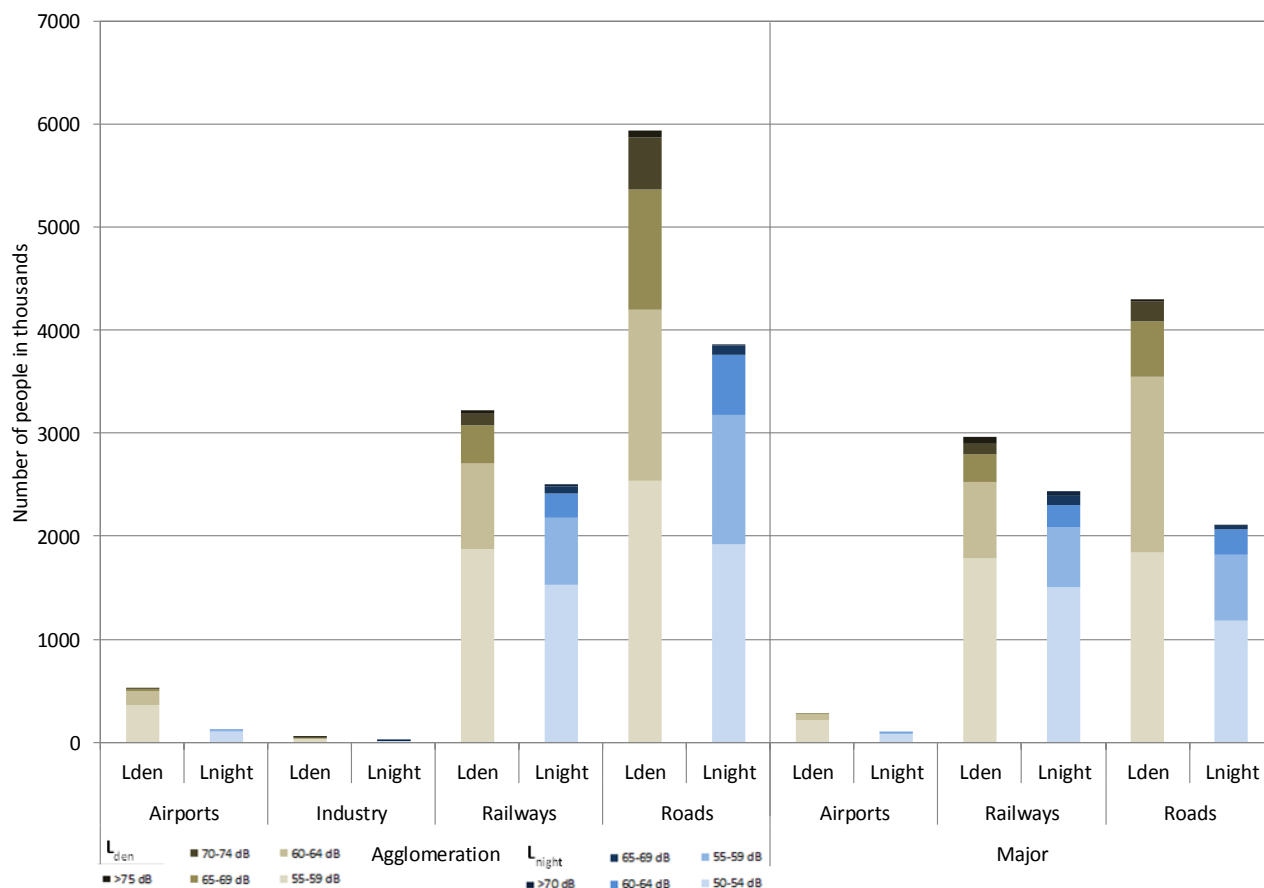


GERMANY

Noise sources covered by this assessment

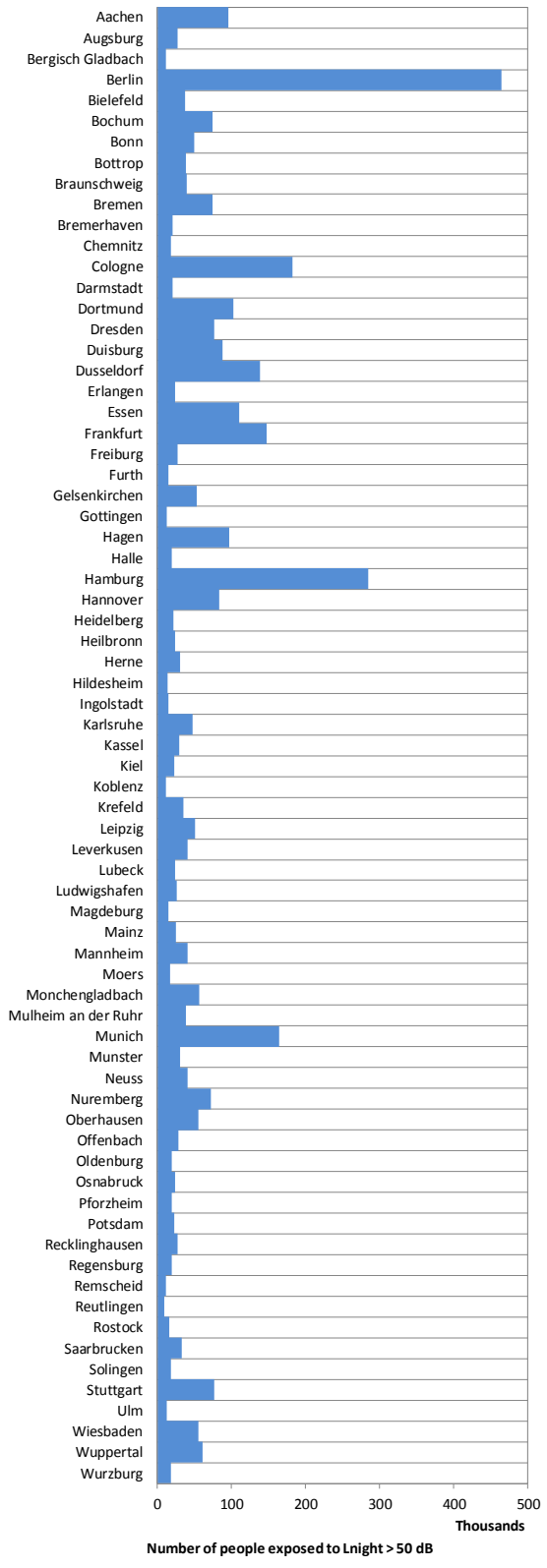
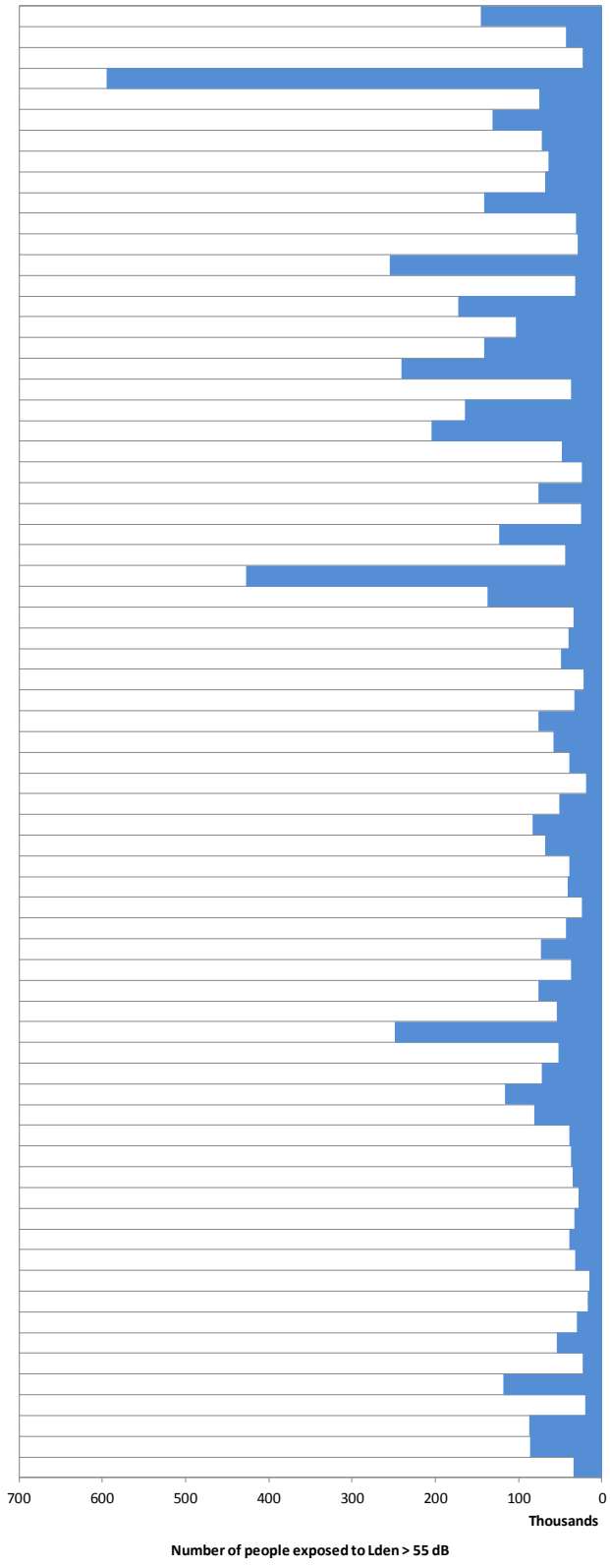
Agglomerations > 100.000 inhabitants	<p>Aachen, Augsburg, Bergisch Gladbach, Berlin, Bielefeld, Bochum, Bonn, Bottrop, Braunschweig, Bremen, Bremerhaven, Chemnitz, Cologne, Darmstadt, Dortmund, Dresden, Duisburg, Dusseldorf, Erlangen, Essen, Frankfurt, Freiburg, Furth, Gelsenkirchen, Gottingen, Hagen, Halle, Hamburg, Hannover, Heidelberg, Heilbronn, Herne, Hildesheim, Ingolstadt, Karlsruhe, Kassel, Kiel, Koblenz, Krefeld, Leipzig, Leverkusen, Lubeck, Ludwigshafen, Magdeburg, Mainz, Mannheim, Moers, Monchengladbach, Mulheim an der Ruhr, Munich, Munster, Neuss, Nuremberg, Oberhausen, Offenbach, Oldenburg, Osnabruck, Pforzheim, Potsdam, Recklinghausen, Regensburg, Remscheid, Reutlingen, Rostock, Saarbrucken, Solingen, Stuttgart, Ulm, Wiesbaden, Wuppertal, Wurzburg</p> <p>71 agglomerations in total, covering 24.438.010 inhabitants</p>
Major airports > 50.000 movements per year	<p>Berlin Schonefeld Airport, Berlin Tegel Airport, Stuttgart Airport, Munich Airport, Nuremberg Airport, Frankfurt am Main Airport, Hamburg Airport, Hanover Langenhagen Airport, Cologne Bonn Airport, Dusseldorf Internatinal Airport, Leipzig/Halle Airport</p> <p>11 major airports in total</p>
Major roads > 3 million vehicles per year	<p>37424 km in total</p>
Major railways > 30.000 train passages per year	<p>14271 km in total</p>

Number of people exposed to different noise bands per L_{den} and L_{night} (2012)



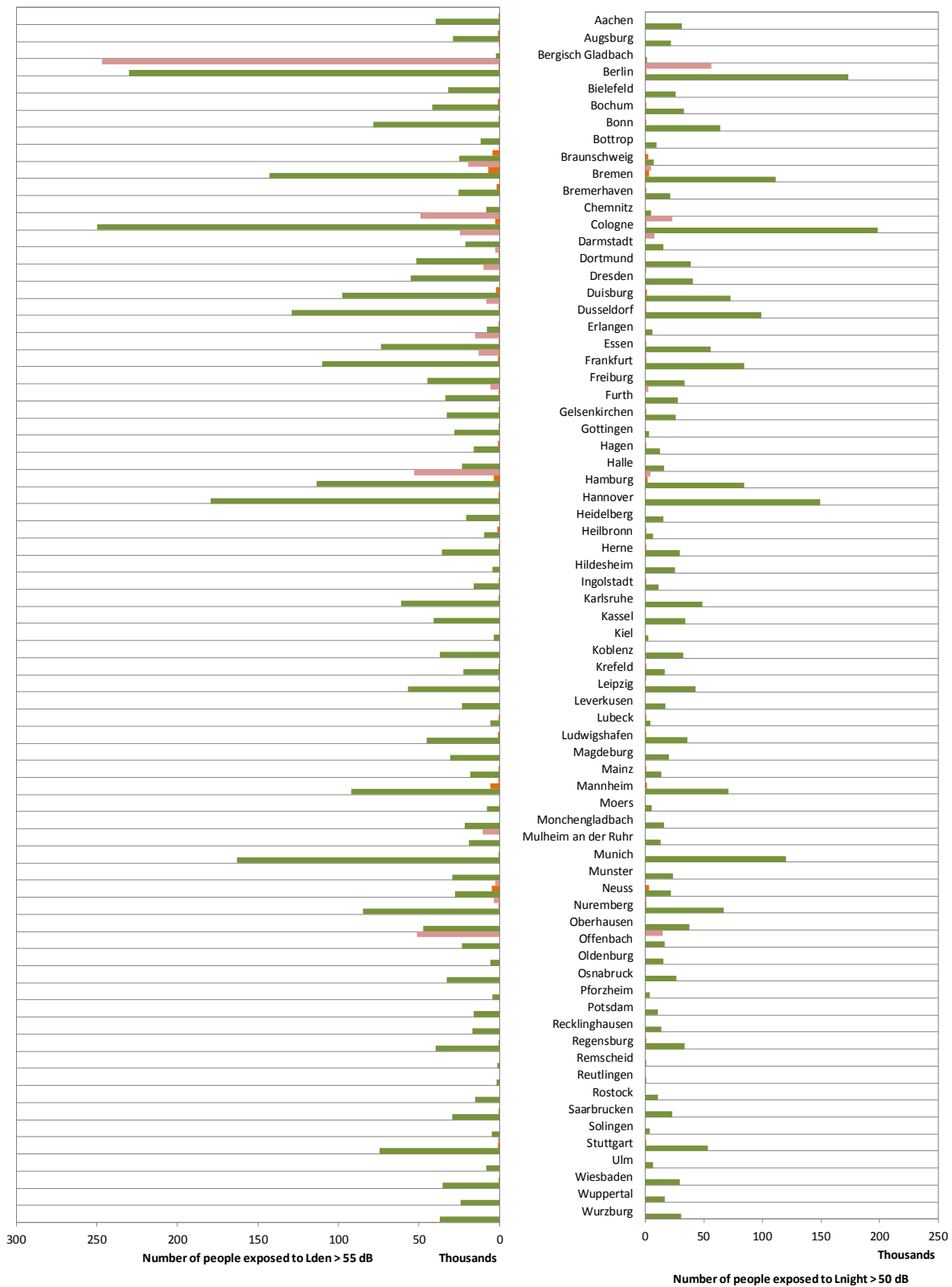
Data not applicable in 49 agglomerations for aircraft noise and in 6 agglomerations for industrial noise, out of 71 agglomerations.

Total number of people exposed to road noise inside agglomerations (2012)

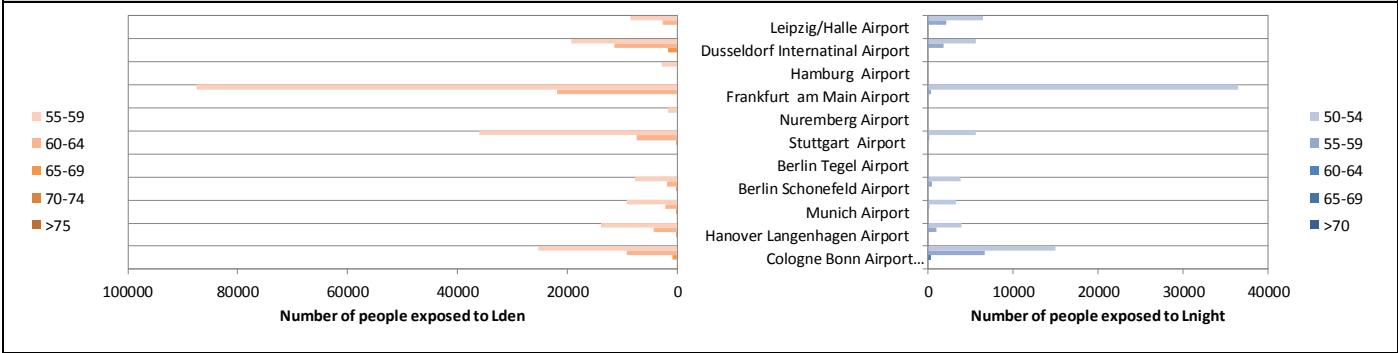


■ Roads

Total number of people exposed to railway, aircraft and industrial noise inside agglomerations (2012)

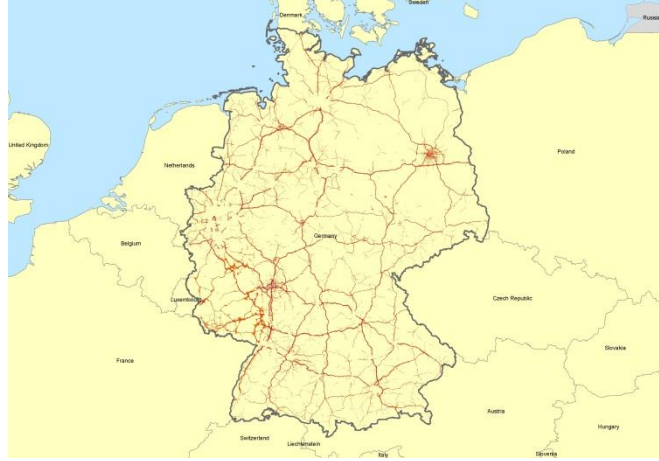


Total number of people exposed to Major Airports outside agglomerations (2012)



Noise contour maps (2012)

Major roads

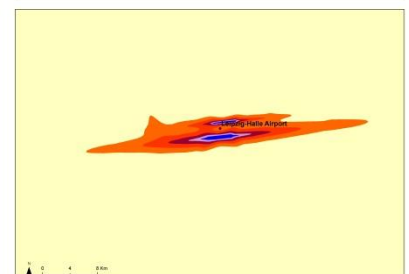
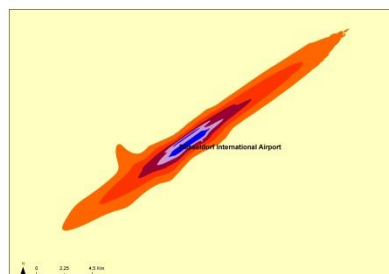
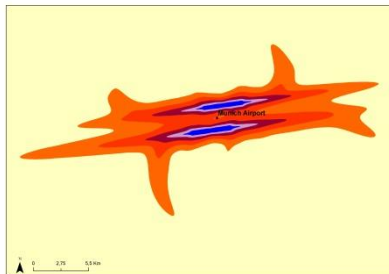
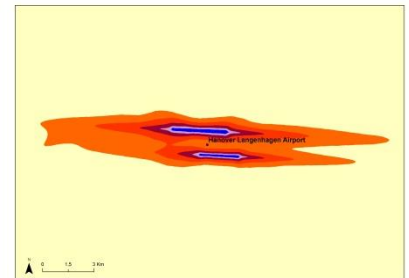
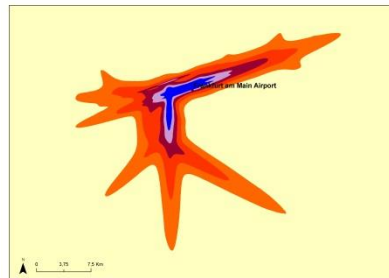
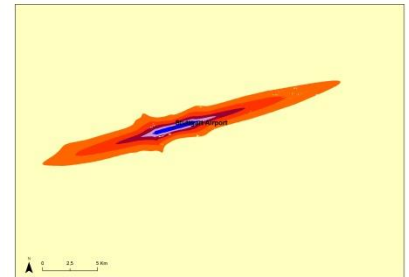
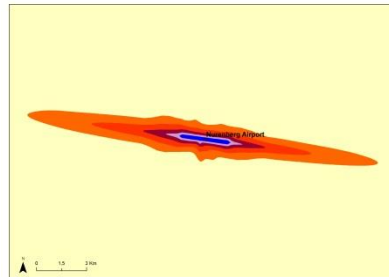
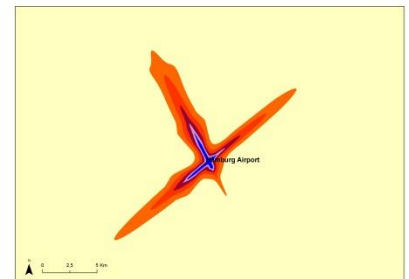
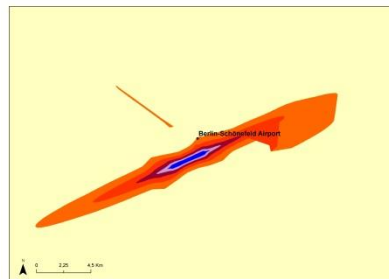


Major railways



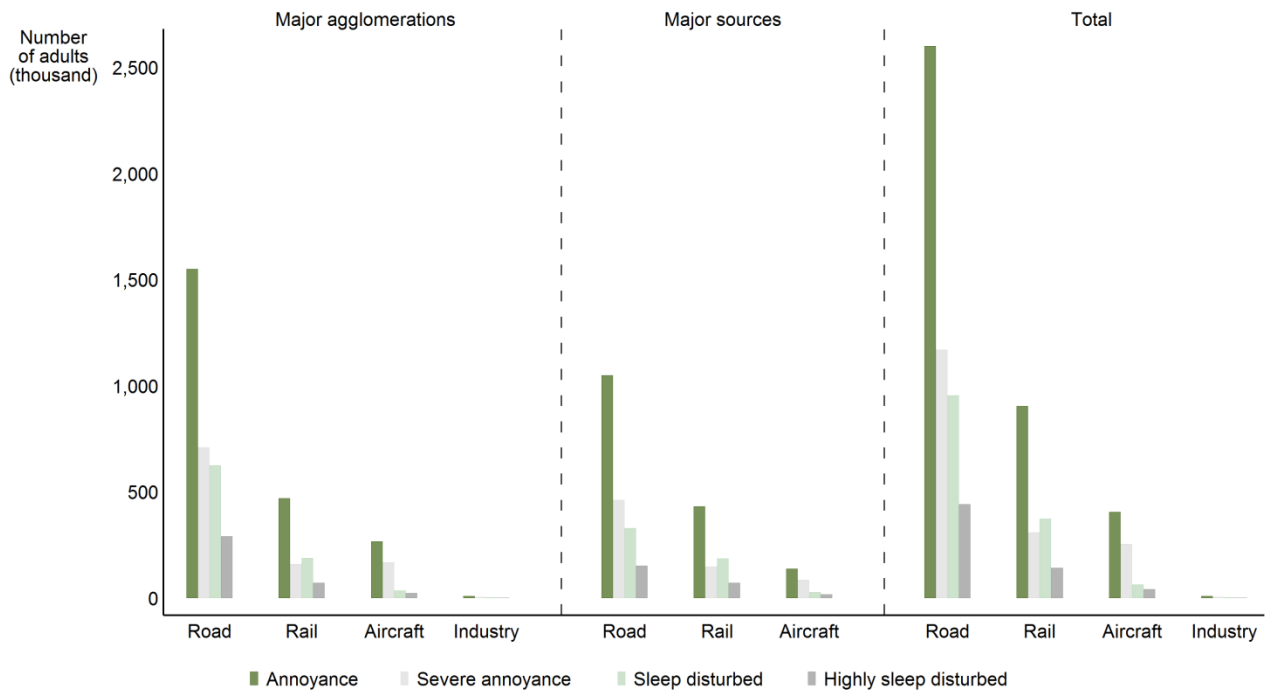
Major airports

Airport	ICAO	Annual traffic
Berlin Schönefeld Airport	EDDB	76607
Berlin Tegel Airport	EDDT	143050
Stuttgart Airport	EDDS	164736
Munich Airport	EDDM	411440
Nuremberg Airport	EDDN	73778
Frankfurt am Main Airport	EDDF	487162
Hamburg Airport	EDDH	158309
Hanover Langenhagen Airport	EDDV	86000
Cologne Bonn Airport	EDDK	135938
Düsseldorf International Airport	EDDL	225089
Leipzig/Halle Airport	EDDP	64906

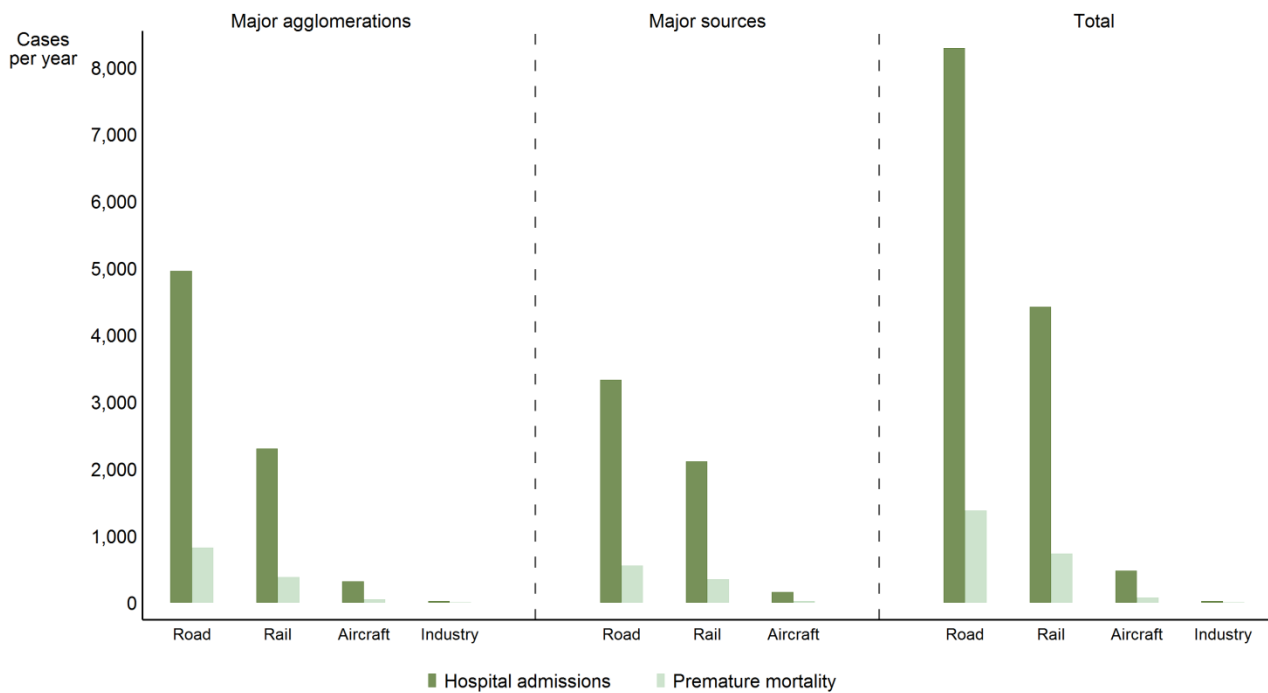


Health impact assessment

Annoyance and sleep disturbance



Hospital admissions and mortality



Trends on noise exposure 2007 - 2012

Trends on noise exposure are shown only in those cases where data is available for both implementation rounds:

- For major airports: total number of people exposed to more than 55 dB Lden and to more than 50 dB Lnight outside agglomerations.
- For agglomerations: percentage of population exposed to more than 55 dB Lden and to more than 50 dB Lnight due to different noise sources.

Major airports:

	L _{den}		L _{night}	
	First Round	Second Round	First Round	Second Round
Munich Airport	7800	11300	800	3400
Nuremberg Airport	1400	1600	0	0
Hanover Langenhagen Airport	26300	18300	10500	4900
Dusseldorf Internatinal Airport	30900	32300	6600	7400
Cologne Bonn Airport	31400	35400	19900	22000
Hamburg Airport	51100	2800	5400	0
Frankfurt am Main Airport	225200	109200	107200	36800
Berlin Tegel Airport	251300	0	74000	0
Stuttgart Airport	43500	43500	5700	5700




Agglomerations:

Air (values in %)	L _{den}		L _{night}	
	First Round	Second Round	First Round	Second Round
Berlin	7.5	7.4	2	2
Bremen	3	4	0	1
Cologne	5	5	2	2
Dortmund	1	0	0	0
Dresden	0.6	2.0	0.2	0.2
Dusseldorf	1.2	1.4	0.2	0.2
Essen	0.6	2.6	0	0
Frankfurt	2.0	1.9	0.1	0.0
Hamburg	2.5	2.6	0.3	0.2
Hannover	0	0	0	0
Leipzig (*)	0	0	0	0
Mannheim	0.3	0.3	0	0
Nuremberg	0.7	0.7	0	0
Stuttgart	0.1	0.1	0	0

Industry (values in %)	L _{den}		L _{night}	
	First Round	Second Round	First Round	Second Round
Aachen	0.00	0.04	0	0
Augsburg	0.59	0.26	0	0
Berlin	0.01	0.02	0.01	0.01
Bielefeld	0	0	0	0
Bochum	0.21	0.27	0.08	0.08
Bonn	0.19	0.18	0.16	0.15
Bremen	0.50	1.25	0.06	0.53
Cologne	0.72	0.25	0.58	0.08
Dortmund	0.02	0.05	0	0

Railway (values in %)	L _{den}		L _{night}	
	First Round	Second Round	First Round	Second Round
Aachen	21	15	16	12
Augsburg	10.5	10.8	8.1	8.2
Berlin	5.1	6.9	3.7	5.2
Bielefeld	8.9	9.9	7.5	8.1
Bochum	9.9	11.2	7.7	8.9
Bonn	26.5	23.9	21.9	19.5
Bremen	22	26	17	20
Cologne	24	25	20	20
Dortmund	8	9	6	7
Dresden	4.2	11.1	3.2	8.2
Duisburg	13.2	20.0	9.3	14.9
Dusseldorf	16.4	21.8	11.9	16.7
Essen	9.5	12.9	7.4	9.7
Frankfurt	14.4	15.9	11.2	12.2
Gelsenkirchen	12.1	12.7	9.7	10.1
Hamburg	5.1	5.7	3.7	4.2
Hannover	29.3	34.5	25.0	28.7
Karlsruhe	11.3	21.1	9.1	16.8
Kiel (*)	1	1	1	1
Leipzig (*)	4	11	3	8
Mannheim	19.1	29.7	14	23
Monchengladbach	18	8	14	6
Munich	9.4	11.8	6.9	8.7
Nuremberg	17.0	16.5	13.5	13.1
Stuttgart	9.0	12.8	6.7	9.2
Wiesbaden	14	13	12	11
Wuppertal	8	7	6	5

Dresden	0	0	0	0
Duisburg	0.44	0.47	0.10	0.29
Dusseldorf	0.05	0.10	0.02	0.02
Essen	0.15	0.09	0.07	0.02
Frankfurt	0.50	0.10	0.24	0.06
Gelsenkirchen	0.04	0.19	0.00	0.04
Hamburg	0.21	0.17	0.13	0.10
Hannover	0.04	0.04	0	0
Karlsruhe	0.07	0.07	0	0
Kiel (*)	0	0	0	0
Leipzig (*)	0	0	0	0
Mannheim	1.78	1.87	0.52	0.55
Monchengladbach	0	0	0	0
Munich	0.05	0.04	0	0
Nuremberg	0.06	0.08	0.02	0.02
Stuttgart	0.12	0.17	0.02	0.07
Wuppertal	0.03	0.00	0	0

	Decrease in population exposed
	No change
	Increase in population exposed

Road (values in %)	L _{den}		L _{night}	
	First Round	Second Round	First Round	Second Round
Aachen	32	56	19	37
Augsburg	17	16	11	10
Berlin	19	18	16	14
Bielefeld	38	23	14	12
Bochum	26	35	17	20
Bonn	37	22	26	15
Bremen	29	26	16	14
Cologne	33	25	23	18
Dortmund	30	30	19	18
Dresden	21	21	16	15
Duisburg	27	29	7	18
Dusseldorf	28	41	20	23
Essen	30	29	20	19
Frankfurt	31	30	20	21
Gelsenkirchen	24	30	7	21
Hamburg	21	21	15	14
Hannover	28	27	17	16
Karlsruhe	21	26	14	17
Kiel (*)	12	15	8	9
Leipzig (*)	20	16	13	10
Mannheim	20	24	12	13
Monchengladbach	46	29	14	22
Munich	22	18	14	12
Nuremberg	28	23	18	14
Stuttgart	18	20	11	13
Wiesbaden	25	31	16	20
Wuppertal	29	25	20	17

(*) Increase of the number of inhabitants bigger than 10% between 2005 and 2010

For further information about environmental noise in Europe please consult <http://www.eea.europa.eu/themes/human/noise> or visit the Noise Observation & Information Service for Europe at <http://noise.eionet.europa.eu/> and EEA Data Service <http://www.eea.europa.eu/data-and-maps/data/data-on-noise-exposure-2>.