

Comparison of scanned data from original papers with original and modified Rosowski criteria.

Because of the complexity of the plot, it was not possible to scan data from individual studies from the Fig 2 left panel of Rosowski et al 2007. Data were therefore scanned from the original papers. See Morse_et_al_2017_supplemental_information_summary.xlsx for description of data in each study and details of each plot that was scanned.

Scanned data was a mixture of LDV studies (9 studies) and round window sound pressure (1 study)

Raw data for the scans is given in the "scannedFigureData" sheet and plotted in the "scannedFiguresPlots" sheet

This contains a mixture of normalized velocity, peak-peak displacement, and round window volume. These are converted into normalized velocities in sheet "unscaledMETFs".

To convert peak-peak displacements in μm into a normalized velocity in mm/s/Pa the following calculation was applied:

$$H_{TV} = \frac{D_{pp} \times \pi \times f}{1000 \times P \times \sqrt{2}}$$

where D_{pp} is the peak-peak displacement in μm ,
 P is the pressure in Pa
and f is the frequency in Hz

To convert round window volume displacement in $(\text{dB re } 10^{-5} \text{ mm}^3 / \text{Pa})$ in μm into a normalized velocity in mm/s/Pa the following calculation was applied:

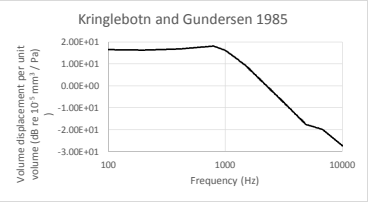
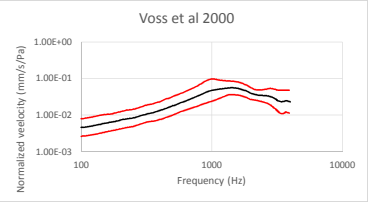
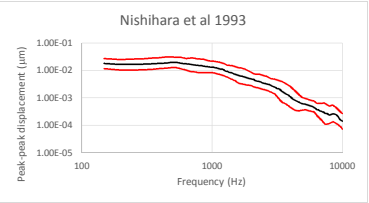
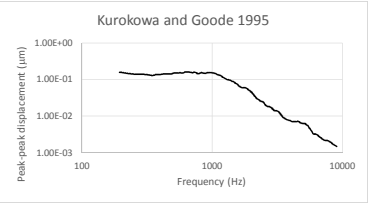
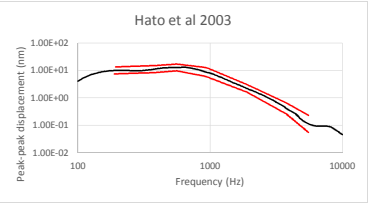
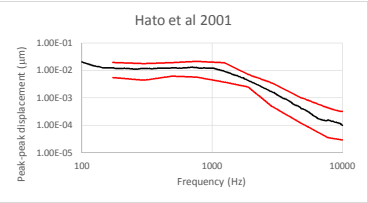
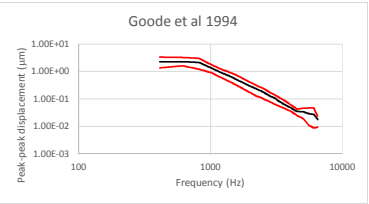
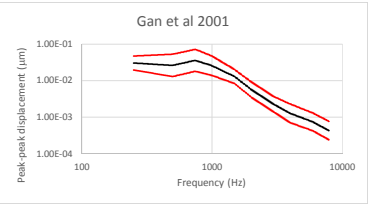
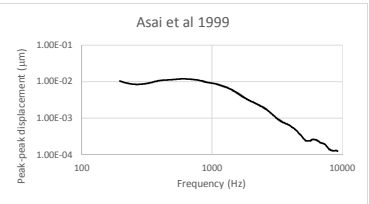
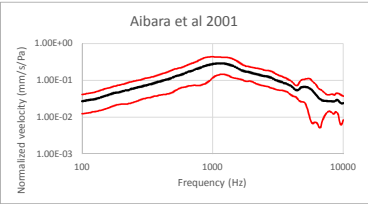
$$H_{TV} = \frac{10^{-5} \times 10^{V/20} \times 2 \times \pi \times f}{A}$$

where V is the volume displacement in $\text{dB re } 10^{-5} \text{ mm}^3 / \text{Pa}$,
 f is the frequency in Hz
and A is the area of the footplate of the stapes in mm^2 , which was taken to be 3.2 mm^2 as in the paper by Kringlebotn and Gundersen (1984).

Following Rosowski et al (2007), each normalized velocity was cosine corrected if the original study did not use cosine correction. These data are in sheet "scaledMETFs". By comparison of the left panel of Figure 2 in Rosowski et al to the unscaled plots, we deduce that a cosine correction of 40° was uniformly applied. Although the original data in Aibara et al 2001 was already a normalized plot and the study used cosine correction, the data plotted in the left panel of Fig 2 in Rosowski et al appears to have been scaled by a factor of 0.66. Although the original data in Aibara et al 2001 was already a normalized plot and the study used cosine correction, the data plotted in the left panel of Fig 2 in Rosowski et al appears to have been scaled by a factor of 0.66. We cannot account for this scaling in this figure and from our validation this scaling does not appear to have been used in calculating the original Rosowski criteria. In our paper we have therefore not scaled the data from Aibara et al.

[illegible][illegible]

Plots of scanned data



Scaled middle-ear transfer functions with inferred scaling applied by Rosowski

[illegible]

Middle-ear transfer functions with and without scaling

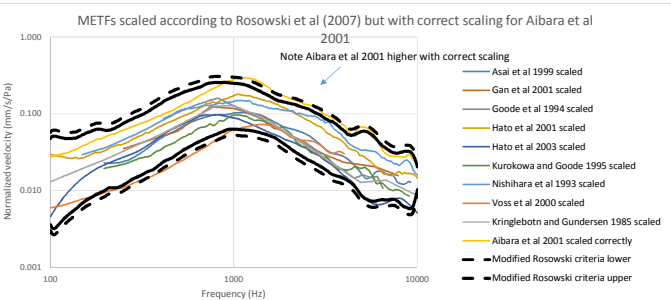
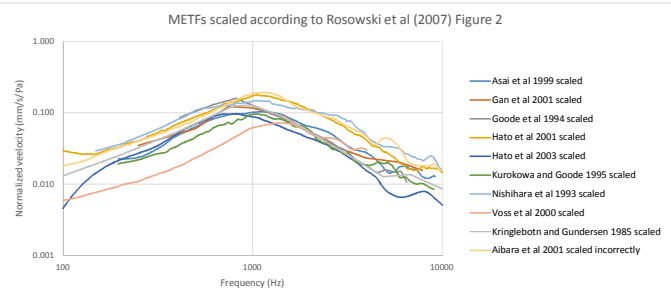
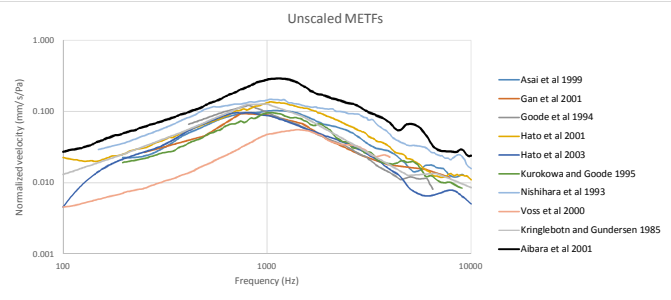
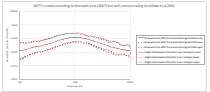


Table with 10 columns: Date, Country, Confirmed, Deaths, Recovered, Active, Hospitalized, ICU, Ventilator, and Fatality Rate. The table contains data for various countries from 2020 to 2022, with columns for Confirmed, Deaths, Recovered, Active, Hospitalized, ICU, Ventilator, and Fatality Rate.



Modified Rosowski criteria

Frequency (Hz)	Rosowski et al 2007 Fig 2 scanned Modified criteria with 20% larger confidence intervals Normalized velocity (mm/s/Pa)		
	Mean	Lower error bar	Upper error bar
100	1.22E-02	2.96E-03	5.71E-02
102	1.23E-02	2.71E-03	6.02E-02
103	1.24E-02	2.67E-03	6.12E-02
105	1.25E-02	2.64E-03	6.13E-02
107	1.27E-02	2.73E-03	6.08E-02
109	1.28E-02	2.86E-03	6.00E-02
111	1.30E-02	2.99E-03	5.92E-02
113	1.33E-02	3.13E-03	5.85E-02
115	1.35E-02	3.28E-03	5.79E-02
117	1.37E-02	3.42E-03	5.75E-02
119	1.39E-02	3.57E-03	5.72E-02
121	1.41E-02	3.72E-03	5.70E-02
123	1.44E-02	3.86E-03	5.69E-02
125	1.46E-02	4.00E-03	5.69E-02
127	1.48E-02	4.14E-03	5.70E-02
129	1.51E-02	4.27E-03	5.71E-02
132	1.54E-02	4.45E-03	5.72E-02
134	1.57E-02	4.56E-03	5.74E-02
136	1.60E-02	4.67E-03	5.76E-02
139	1.65E-02	4.87E-03	5.84E-02
141	1.68E-02	5.02E-03	5.92E-02
144	1.74E-02	5.25E-03	6.05E-02
146	1.77E-02	5.41E-03	6.15E-02
149	1.83E-02	5.66E-03	6.31E-02
151	1.87E-02	5.83E-03	6.42E-02
154	1.92E-02	6.05E-03	6.56E-02
157	1.97E-02	6.23E-03	6.70E-02
159	2.01E-02	6.34E-03	6.78E-02

162	2.06E-02	6.46E-03	6.90E-02
165	2.10E-02	6.61E-03	7.01E-02
168	2.14E-02	6.79E-03	7.11E-02
171	2.18E-02	6.97E-03	7.22E-02
174	2.22E-02	7.15E-03	7.34E-02
177	2.26E-02	7.32E-03	7.49E-02
180	2.30E-02	7.47E-03	7.52E-02
183	2.33E-02	7.62E-03	7.54E-02
186	2.35E-02	7.74E-03	7.51E-02
189	2.38E-02	7.86E-03	7.46E-02
193	2.41E-02	8.04E-03	7.36E-02
196	2.43E-02	8.17E-03	7.29E-02
200	2.46E-02	8.44E-03	7.26E-02
203	2.48E-02	8.70E-03	7.28E-02
207	2.50E-02	8.92E-03	7.31E-02
210	2.52E-02	9.02E-03	7.35E-02
214	2.55E-02	9.06E-03	7.41E-02
218	2.58E-02	9.05E-03	7.50E-02
221	2.60E-02	9.05E-03	7.61E-02
225	2.64E-02	9.05E-03	7.78E-02
229	2.67E-02	9.06E-03	7.95E-02
233	2.71E-02	9.11E-03	8.12E-02
237	2.75E-02	9.22E-03	8.33E-02
241	2.79E-02	9.35E-03	8.55E-02
246	2.85E-02	9.58E-03	8.81E-02
250	2.90E-02	9.80E-03	8.99E-02
254	2.95E-02	1.00E-02	9.15E-02
259	3.02E-02	1.04E-02	9.37E-02
263	3.08E-02	1.06E-02	9.55E-02
268	3.15E-02	1.09E-02	9.74E-02
273	3.23E-02	1.13E-02	9.94E-02
277	3.29E-02	1.15E-02	1.01E-01
282	3.38E-02	1.17E-02	1.03E-01
287	3.45E-02	1.20E-02	1.05E-01

292	3.53E-02	1.22E-02	1.07E-01
297	3.60E-02	1.24E-02	1.09E-01
302	3.67E-02	1.27E-02	1.11E-01
308	3.75E-02	1.29E-02	1.13E-01
313	3.82E-02	1.32E-02	1.14E-01
319	3.90E-02	1.35E-02	1.17E-01
324	3.97E-02	1.38E-02	1.19E-01
330	4.06E-02	1.41E-02	1.23E-01
336	4.15E-02	1.44E-02	1.26E-01
342	4.24E-02	1.47E-02	1.29E-01
347	4.30E-02	1.49E-02	1.32E-01
354	4.40E-02	1.51E-02	1.36E-01
360	4.48E-02	1.54E-02	1.40E-01
366	4.56E-02	1.57E-02	1.43E-01
372	4.66E-02	1.61E-02	1.47E-01
379	4.78E-02	1.67E-02	1.50E-01
386	4.91E-02	1.73E-02	1.54E-01
392	5.03E-02	1.78E-02	1.58E-01
399	5.18E-02	1.85E-02	1.62E-01
406	5.34E-02	1.91E-02	1.67E-01
413	5.51E-02	1.96E-02	1.72E-01
420	5.67E-02	2.01E-02	1.77E-01
428	5.83E-02	2.06E-02	1.81E-01
435	5.96E-02	2.09E-02	1.84E-01
443	6.10E-02	2.13E-02	1.88E-01
451	6.23E-02	2.16E-02	1.91E-01
459	6.36E-02	2.21E-02	1.95E-01
467	6.48E-02	2.27E-02	1.99E-01
475	6.60E-02	2.34E-02	2.02E-01
483	6.73E-02	2.40E-02	2.06E-01
491	6.87E-02	2.48E-02	2.09E-01
500	7.05E-02	2.55E-02	2.13E-01
509	7.21E-02	2.62E-02	2.18E-01
518	7.38E-02	2.69E-02	2.22E-01

527	7.53E-02	2.76E-02	2.25E-01
536	7.68E-02	2.83E-02	2.29E-01
545	7.82E-02	2.89E-02	2.33E-01
555	7.96E-02	2.96E-02	2.37E-01
564	8.09E-02	3.02E-02	2.40E-01
574	8.25E-02	3.09E-02	2.43E-01
584	8.44E-02	3.17E-02	2.46E-01
595	8.63E-02	3.25E-02	2.49E-01
605	8.79E-02	3.32E-02	2.51E-01
616	8.96E-02	3.40E-02	2.54E-01
626	9.13E-02	3.46E-02	2.57E-01
637	9.31E-02	3.52E-02	2.61E-01
648	9.49E-02	3.59E-02	2.64E-01
660	9.69E-02	3.66E-02	2.69E-01
671	9.85E-02	3.73E-02	2.74E-01
683	1.00E-01	3.80E-02	2.80E-01
695	1.02E-01	3.89E-02	2.86E-01
707	1.03E-01	3.97E-02	2.92E-01
719	1.05E-01	4.04E-02	2.96E-01
732	1.06E-01	4.11E-02	2.99E-01
745	1.07E-01	4.19E-02	3.01E-01
758	1.08E-01	4.25E-02	3.03E-01
771	1.10E-01	4.31E-02	3.04E-01
785	1.11E-01	4.39E-02	3.05E-01
798	1.12E-01	4.46E-02	3.06E-01
812	1.13E-01	4.53E-02	3.06E-01
826	1.14E-01	4.61E-02	3.07E-01
841	1.15E-01	4.69E-02	3.07E-01
856	1.16E-01	4.78E-02	3.08E-01
871	1.17E-01	4.86E-02	3.08E-01
886	1.18E-01	4.94E-02	3.08E-01
901	1.19E-01	5.03E-02	3.08E-01
917	1.20E-01	5.12E-02	3.06E-01
933	1.21E-01	5.18E-02	3.05E-01

949	1.22E-01	5.21E-02	3.03E-01
966	1.23E-01	5.23E-02	3.01E-01
983	1.23E-01	5.24E-02	3.00E-01
1000	1.23E-01	5.24E-02	2.99E-01
1017	1.23E-01	5.23E-02	2.97E-01
1035	1.23E-01	5.21E-02	2.97E-01
1053	1.23E-01	5.19E-02	2.96E-01
1072	1.23E-01	5.16E-02	2.94E-01
1091	1.22E-01	5.14E-02	2.93E-01
1110	1.21E-01	5.13E-02	2.91E-01
1129	1.20E-01	5.12E-02	2.88E-01
1149	1.19E-01	5.11E-02	2.85E-01
1169	1.18E-01	5.09E-02	2.81E-01
1189	1.17E-01	5.07E-02	2.77E-01
1210	1.15E-01	5.05E-02	2.72E-01
1231	1.14E-01	5.03E-02	2.67E-01
1253	1.13E-01	5.00E-02	2.62E-01
1275	1.12E-01	4.96E-02	2.57E-01
1297	1.11E-01	4.91E-02	2.53E-01
1320	1.09E-01	4.85E-02	2.48E-01
1343	1.08E-01	4.80E-02	2.43E-01
1366	1.07E-01	4.75E-02	2.38E-01
1390	1.05E-01	4.69E-02	2.33E-01
1414	1.04E-01	4.64E-02	2.29E-01
1439	1.02E-01	4.58E-02	2.24E-01
1464	1.00E-01	4.53E-02	2.20E-01
1490	9.86E-02	4.47E-02	2.15E-01
1516	9.69E-02	4.41E-02	2.11E-01
1542	9.54E-02	4.35E-02	2.06E-01
1569	9.37E-02	4.29E-02	2.02E-01
1597	9.20E-02	4.21E-02	1.97E-01
1625	9.02E-02	4.14E-02	1.93E-01
1653	8.87E-02	4.07E-02	1.88E-01
1682	8.71E-02	4.00E-02	1.84E-01

1711	8.58E-02	3.91E-02	1.80E-01
1741	8.42E-02	3.80E-02	1.78E-01
1772	8.26E-02	3.70E-02	1.75E-01
1803	8.11E-02	3.60E-02	1.73E-01
1834	7.96E-02	3.49E-02	1.71E-01
1866	7.81E-02	3.39E-02	1.70E-01
1899	7.63E-02	3.30E-02	1.68E-01
1932	7.45E-02	3.21E-02	1.67E-01
1966	7.26E-02	3.11E-02	1.65E-01
2000	7.07E-02	3.01E-02	1.63E-01
2035	6.93E-02	2.92E-02	1.62E-01
2071	6.78E-02	2.82E-02	1.61E-01
2107	6.66E-02	2.74E-02	1.59E-01
2144	6.55E-02	2.66E-02	1.58E-01
2181	6.46E-02	2.59E-02	1.56E-01
2219	6.33E-02	2.53E-02	1.54E-01
2258	6.20E-02	2.47E-02	1.51E-01
2297	6.07E-02	2.41E-02	1.49E-01
2338	5.95E-02	2.36E-02	1.47E-01
2378	5.84E-02	2.30E-02	1.45E-01
2420	5.72E-02	2.24E-02	1.43E-01
2462	5.60E-02	2.18E-02	1.41E-01
2505	5.49E-02	2.12E-02	1.39E-01
2549	5.38E-02	2.06E-02	1.37E-01
2594	5.27E-02	2.02E-02	1.35E-01
2639	5.15E-02	1.98E-02	1.32E-01
2685	5.05E-02	1.94E-02	1.29E-01
2732	4.94E-02	1.90E-02	1.26E-01
2780	4.83E-02	1.86E-02	1.23E-01
2828	4.72E-02	1.82E-02	1.21E-01
2878	4.61E-02	1.78E-02	1.18E-01
2928	4.50E-02	1.73E-02	1.16E-01
2979	4.39E-02	1.69E-02	1.14E-01
3000	4.35E-02	1.68E-02	1.12E-01

3031	4.29E-02	1.66E-02	1.10E-01
3084	4.19E-02	1.62E-02	1.07E-01
3138	4.10E-02	1.58E-02	1.04E-01
3193	4.00E-02	1.53E-02	1.02E-01
3249	3.90E-02	1.48E-02	9.91E-02
3306	3.80E-02	1.43E-02	9.72E-02
3364	3.71E-02	1.39E-02	9.59E-02
3422	3.62E-02	1.35E-02	9.46E-02
3482	3.53E-02	1.32E-02	9.29E-02
3543	3.44E-02	1.31E-02	9.08E-02
3605	3.36E-02	1.29E-02	8.81E-02
3668	3.29E-02	1.28E-02	8.50E-02
3732	3.23E-02	1.26E-02	8.18E-02
3797	3.16E-02	1.25E-02	7.87E-02
3864	3.08E-02	1.23E-02	7.60E-02
3931	3.01E-02	1.21E-02	7.36E-02
4000	2.91E-02	1.19E-02	7.10E-02
4070	2.83E-02	1.16E-02	6.82E-02
4141	2.74E-02	1.13E-02	6.54E-02
4213	2.68E-02	1.10E-02	6.38E-02
4287	2.62E-02	1.07E-02	6.28E-02
4362	2.56E-02	1.04E-02	6.24E-02
4438	2.51E-02	1.01E-02	6.26E-02
4516	2.45E-02	9.64E-03	6.33E-02
4595	2.40E-02	9.18E-03	6.44E-02
4675	2.35E-02	8.67E-03	6.58E-02
4757	2.31E-02	8.13E-03	6.73E-02
4840	2.26E-02	7.67E-03	6.86E-02
4925	2.22E-02	7.28E-03	6.97E-02
5000	2.19E-02	7.03E-03	7.06E-02
5011	2.18E-02	6.99E-03	7.07E-02
5098	2.15E-02	6.74E-03	7.09E-02
5187	2.12E-02	6.52E-03	7.05E-02
5278	2.09E-02	6.36E-03	6.99E-02

5370	2.05E-02	6.24E-03	6.88E-02
5464	2.01E-02	6.15E-03	6.74E-02
5560	1.97E-02	6.07E-03	6.55E-02
5657	1.93E-02	6.02E-03	6.34E-02
5756	1.89E-02	6.01E-03	6.12E-02
5856	1.85E-02	6.02E-03	5.88E-02
5959	1.81E-02	6.07E-03	5.63E-02
6063	1.78E-02	6.13E-03	5.37E-02
6169	1.75E-02	6.20E-03	5.08E-02
6277	1.72E-02	6.29E-03	4.84E-02
6386	1.69E-02	6.33E-03	4.67E-02
6498	1.66E-02	6.32E-03	4.53E-02
6612	1.63E-02	6.28E-03	4.40E-02
6727	1.61E-02	6.24E-03	4.28E-02
6845	1.59E-02	6.25E-03	4.16E-02
6964	1.58E-02	6.28E-03	4.03E-02
7086	1.56E-02	6.31E-03	3.92E-02
7210	1.55E-02	6.36E-03	3.83E-02
7336	1.53E-02	6.41E-03	3.74E-02
7464	1.52E-02	6.37E-03	3.69E-02
7595	1.50E-02	6.30E-03	3.65E-02
7727	1.49E-02	6.16E-03	3.65E-02
7863	1.47E-02	5.96E-03	3.68E-02
8000	1.45E-02	5.72E-03	3.71E-02
8140	1.43E-02	5.46E-03	3.76E-02
8282	1.42E-02	5.27E-03	3.81E-02
8427	1.40E-02	5.14E-03	3.86E-02
8574	1.39E-02	5.06E-03	3.88E-02
8724	1.38E-02	4.98E-03	3.89E-02
8877	1.36E-02	4.90E-03	3.90E-02
9032	1.35E-02	4.83E-03	3.86E-02
9190	1.34E-02	4.83E-03	3.80E-02
9350	1.32E-02	4.89E-03	3.65E-02
9514	1.32E-02	5.21E-03	3.46E-02

9680	1.31E-02	6.06E-03	3.13E-02
9849	1.31E-02	7.17E-03	2.76E-02
10021	1.31E-02	8.51E-03	2.43E-02