The Ford Fusion Titanium SYNC® 3 (version 2.0) infotainment system generated high demand on drivers while using it for a variety of tasks, including placing phone calls, sending text messages and tuning the audio entertainment system.

Researchers evaluated 30 new 2017 vehicles’ infotainment systems* to measure overall demand** placed on a driver when using voice command, touch screen and other interactive technologies to make a call, send a text message, tune the radio or program navigation, all while driving down the road.

**Infotainment System: Vehicle system that combines entertainment and information content

**Overall demand measured: visual (eyes-off road), cognitive (mental) and time-on-task

STRENGTHS

- While the vehicle is in motion, drivers are locked out from reading and replying to text messages via the touch screen.
- Audio functions can be completed quickly.

WEAKNESSES

- Drivers can access texting features, the dial pad and phonebook features with voice commands while the vehicle is in motion.
- Very high visual (eyes-off-road) demand was required to place calls via the touch screen compared to using voice commands.
- The center stack touch screen required very high levels of visual attention for placing calls and tuning audio.
VEHICLE OVERVIEW: CONTROLS AND DISPLAYS

- VOICE COMMANDS
- STEERING WHEEL COMMANDS
- INSTRUMENT CLUSTER
- CENTER STACK
### CALLING AND DIALING

The SYNC® 3 system allowed drivers to make phone calls using voice commands or a touch screen, including answering incoming phone calls and hang-up capabilities using steering wheel buttons. To pair the phone, drivers go through a fast and intuitive process using the touch screen while the vehicle is not in motion. While a “do not disturb” feature allows drivers to reject incoming phone calls and send an automatic text message reply, the vehicle settings do little otherwise to limit phone functionality while in motion.

Calling and dialing in the Fusion generated overall moderate demand in the on-road study and using the center stack, drivers were able to complete tasks quickly. With moderate levels of visual (eyes-off-road) demand and high cognitive (mental) demand, the on-road data suggest that the voice system is less distracting to use than the touch screen, which requires higher demand, for calling and dialing contacts. Researchers noted the voice system quick to interpret speech with a capable and intuitive command set.

Researchers noted that although phone functions are easily accessible from the touch screen home menu, the small buttons of the dial pad are difficult to accurately press while driving.

Placing a call using either the center stack or voice recognition system is a short process. However, using the voice recognition system instead of the touch screen may help drivers keep their eyes on the road and result in lower overall demand.

### TEXT MESSAGING

Drivers can access the text messaging feature through voice commands and the touch screen. While the vehicle is in motion, users are locked out from reading and replying to messages via the touch screen. Instead, the system reads messages aloud. Additionally, voice system functionality is limited for text messaging, with drivers only able to reply to the first message in their inbox. The system allows drivers to reply to a message via voice using a list of 15 pre-defined responses.

Drivers took an average of 33 seconds to complete a texting task and experienced high visual (eyes-off-road) and cognitive (mental) demand. Researchers found the voice commands for sending text messages difficult to grasp as on-screen voice prompts did not provide effective guidance. Additionally, when replying to messages, drivers are required to use voice commands to scroll through several pages of predefined messages, which has the potential to be time consuming.

Overall, users are advised against using the text messaging function while driving as it requires very high levels of demand for long periods of time.

### AUDIO ENTERTAINMENT

The audio entertainment system gives access to: AM, FM, and XM radio; a CD player; USB input; Bluetooth audio; Android Auto; Apple CarPlay and other third party audio applications, if present on the paired phone. Selections can be made while the vehicle is in motion via the touch screen and voice recognition, with limited access via steering wheel buttons.

On-road data showed accessing audio in the Ford Fusion generated overall moderate demand on a driver. Researchers noted that the voice system accepted natural and flexible commands, allowing drivers to easily adjust the audio. Changing the audio source using voice commands was quick but was associated with high levels of visual (eyes-off-road) and cognitive (mental) demand.

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* Researchers with expertise about how humans interact with technology evaluated the usability of the infotainment system in stationary vehicles.

* Compared to a recommended maximum of 24 seconds
VOICE COMMANDS

Drivers can give voice commands to interact with a paired phone, change the audio selection, and adjust the climate inside the vehicle. Pressing the Voice Recognition (VR) button on the steering wheel activates the voice command feature and displays recommended voice prompts on the touch screen.

INSTRUMENT CLUSTER

The instrument cluster, located behind the steering wheel, features a speedometer in the center, with a 4.2-inch LCD screen on either side. On the left, the LCD screen displays information about the vehicle’s state, while the right screen displays the driver’s audio and phone selections.

STEERING WHEEL CONTROLS

The Ford Fusion Titanium has 22 dedicated buttons that control the cluster’s LCD displays, and two gearshift paddles behind the wheel. Buttons on the left side let the driver scroll through different information displays on the left screen, while buttons on the right side give access to the audio, phone, and voice recognition controls displayed on the right screen.

CENTER STACK

An 8-inch touch screen is the central point of command for the infotainment system, with access to audio entertainment, phone controls, third-party applications, climate control and system settings. It also displays the rear-view camera feed and parking sensor warnings when in reverse. Below the touch screen is a variety of buttons, housing Heating, Ventilation, and Air Conditioning (HVAC) controls, along with basic audio controls where drivers can adjust audio volume or skip to the next track.

VEHICLE SALES SUMMARY

The Ford Fusion is the 13th best-selling vehicle in the United States, with 265,840 cars sold in 2016.¹

¹ Researchers with expertise about how humans interact with technology evaluated the usability of the infotainment system in stationary vehicles.